

**HERITAGE IMPACT ASSESSMENT REPORT FOR THE INSTALLATION OF A FIBRE OPTIC CABLE,
DEVELOPEMENT OF ABLUTION FACILITIES, THE ACTIVATION OF A BOREHOLE WITH
ASSOCIATED ELECTRICAL AND WATER RETICULATION, CONSTRUCTION OF AN
EVAPORATION POND AND VARIOUS RENOVATIONS AND ADDITIONS, RAVENCOURT
RANCH, SABI SANDS GAME RESERVE (MPUMALANGA PROVINCE)**

For



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Report: ACT20/01

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EXECUTIVE SUMMARY

The African Conservation Trust (ACT) was appointed by Emross Consulting (Pty) Ltd to undertake a Phase 1 HIA for the proposed installation of a Fibre Optic Cable, development of ablution facilities, the activation of a borehole with associated electrical and water reticulation, construction of an evaporation pond and various renovations and additions to be established on portions of the Ravenscourt Ranch, Sabi Sands Game Reserve.

Several identified cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. Three archaeological sites were identified and recorded during the physical assessment undertaken. The report will discuss the results of the Scoping and Field Assessment and provide recommendations on mitigating the impact of the proposed development on the cultural heritage resources in the study and development areas. The Palaeosensitivity Map indicates that the area is insignificant as far as its palaeontological potential.

Finally, from a Cultural Heritage point of view, the development should be allowed to continue, once the mitigation measures recommended in the document have been implemented.

DECLARATION OF INDEPENDENCE

I HEREBY DECLARE THAT I AM AN INDEPENDENT SPECIALIST APPOINTED BY THE CLIENT ON A CONSULTANCY BASIS

A handwritten signature in cursive script, appearing to read "K. Adford".

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ABBREVIATIONS

- ACT** African Conservation Trust
- AIA** Archaeological Impact Assessment
- APM** Archaeology, Palaeontology and Meteorites unit at SAHRA
- CMP** Cultural Management Plan
- DEA** Department of Environmental Affairs
- EAP** Environmental Assessment Practitioner
- EIA** Environmental Impact Assessment
- FOC** Fibre Optic Cable
- GPS** Global Positioning System
- HIA** Heritage Impact Assessment
- I&APs** Interested and Affected Parties
- LIA** Late Iron Age sites (usually demarcated by stone-walled enclosures)
- NEMA** National Environmental Management Act (107/1998)
- NHRA** National Heritage Resources Act (5/1999)
- PHRA-M** Provincial Heritage Resources Authority - Mpumalanga
- PIA** Palaeontological Impact Assessment
- SAHRA** South African Heritage Resources Agency
- SAHRIS** South African Heritage Resources Information System
- VIA** Visual Impact Assessment

1. INTRODUCTION

1.1. SCOPE OF WORK

To comply with environmental (National Environmental Management Act 107/1997) and heritage legislation (South African Heritage Resources Act 5/1999), Emross Consulting (Pty) Ltd. (the independent Environmental Consultant) commissioned ACT to produce a Heritage Scoping Report for the project area. It must be noted that some of the proposed activities, on their own, do not trigger current heritage legislation. They were, however, taken the collective impact of the proposed developments surveyed by ACT.

1.2. PROJECT DESCRIPTION

Singita Sabi Sands operates three upmarket tourism lodges on the Ravenscourt Ranch in the Sabi Sands Game Reserve adjacent to the Kruger National Park. The property has been owned by the Bailes family since 1926 and the first of the three lodges, Ebony Lodge, was opened in 1993. Accommodating upmarket clientele means that the facilities and their operation must meet high expectations, while still retaining the bush experience and minimising the environmental impact. The developments proposed and described in this document aim to achieve both objectives. (Zunckel, 2019)

The proposed developments include several interrelated and separate components described as follows:

1. Guest toilets at bush breakfast site (24°47'3.95"S, 31°25'3.85"E):
 - a. Two toilets with wash hand basins will be installed in a single block, located more than 32m from the edge of the water course.
 - b. Water will be provided via a pipeline from an active borehole located on the other side of a dry watercourse (24°47'1.46"S, 31°25'6.21"E). The pipeline will follow the existing road to the bush breakfast/braai site and will include a crossing of the non-perennial water course (24°47'2.17"S, 31°25'4.73"E). An electric cable will be included in with the water pipeline.
 - c. Water will be stored in tanks in the roof of the ablution facility.
 - d. Waste water will be disposed of via a French Drain and soak-away system located outside the buffer of the water course.

2. The activation of an existing borehole and its servicing with electricity and water pipes to augment supply to the lodges (24°46'38.83"S, 31°24'48.05"E):
 - a. Electricity will be provided by an existing subterranean electrical line, but which will require an additional transformer and connection (24°46'39.90"S, 31°24'46.86"E).
 - b. A trench of just more than 45m will need to be dug by hand through undisturbed natural vegetation. It will be 30cm wide and approximately 60cm deep.
 - c. A new water pipeline will be installed together with the electricity cable but extended another 30m through the natural vegetation to a point adjacent to the existing road at 24°46'40.78"S and 31°24'47.39"E. From here it will be trenched at the same dimensions

immediately adjacent to the road to tie into the existing and active borehole and pipeline near the bush breakfast/braai site (24°47'1.46"S, 31°25'6.21"E).

3. A fibre optic cable (FOC) will be installed from Castleton to Ebony Lodge over a distance of approximately 7km (start point - 24°49'55.05"S and 31°26'31.21"E, mid-point - 24°48'37.92"S and 31°25'53.55"E, end-point - 24°47'13.92"S and 31°25'34.06"E):

a. The trench required for the installation will be 30cm wide and 60cm deep, except for the three water course crossings where it will be sunk to 100cm and will be secured to gabions (24°49'38.22"S, 31°26'7.06"E; 24°48'50.78"S, 31°25'55.21"E and 24°48'38.45"S, 31°25'53.47"E).

b. The trenching will be immediately adjacent to existing roads except for approximately 3km where it will follow an existing tracer belt that runs parallel to the Ebony – Castleton road.

c. It will branch off this route to follow existing roads to the terminal building on the landing strip after which it will follow the road adjacent to the landing strip moving north. The one exception to this is a relatively short length of approximately 230m where the cable will go through natural vegetation from 24°48'11.75"S, 31°25'29.62"E to 24°48'10.53"S, 31°25'21.96"E.

d. Manholes will be installed approximately every 100m, i.e. approximately 78 manholes, along the length of the FOC.

e. At the northern end of the landing strip it will branch off adjacent to an existing road to service the boom gate, while also branching off adjacent to an existing road to the guest arrivals point at Ebony Lodge.

f. From here it will follow the route of existing cabling through a watercourse (24°47'13.91"S, 31°25'33.27"E) and into the entry point at the Lodge.

g. Together with the FOC will be an electricity cable that will run in the same trench from an existing transformer near Ebony Lodge (24°47'19.49"S, 31°25'35.57"E) and to the terminal building.

h. A new water pipeline will be installed from a pumped pan at the northern end of the airstrip (24°47'40.88"S, 31°25'18.73"E), using the same trench as the FOC and ending at the terminal building. An additional portion of trenching for approximately 90m will be required from the pan to the FOC trench.

4. The following components at Ebony Lodge (see Figure 4):

a. Four (4) additional staff ablution facilities at Ebony Lodge varying in size from 4.04m² to 12.33m² and totalling 32.65m². All are within 32m of an adjacent watercourse.

b. A new guest gym facility just to the north of the existing boutique shop and wine cellar (24°47'18.69"S, 31°25'37.88"E) covering an area of 215m². A new raised board walk will connect the new gym with both Ebony and Boulders Lodges.

c. Three new staff houses of 63m² and 2 x 48m² at 24°47'14.67"S, 31°25'25.62"E and 24°47'15.08"S, 31°25'23.02"E respectively. The latter coordinates are for an existing staff house against which the two news ones are to be built to the north and south of the existing one.

d. A new Lapa of 70m² at 24°47'16.91"S and 31°25'22.68"E.

e. An additional room of 56m² to an existing house at 24°47'15.99"S and 31°25'22.68"E.

5. A new boma of 180m² including guest ablution facilities (24°47'13.50"S, 31°25'41.75"E) at Boulders Lodge.
6. Additional facilities at the Castleton Camp including:
 - a. New evaporation pond for wastewater treatment (24°49'43.63"S, 31°26'19.56"E).
 - b. Convert existing treatment room into reception area and store. Add additional 2x new treatment rooms under existing trees totalling 40m² (24°49'54.99"S, 31°26'35.50"E).
 - c. Extend existing gym to create additional workout space totalling 40m² (24°49'55.16"S, 31°26'33.76"E).
 - d. Link new gym extension to yoga platform under trees totalling 16m² (24°49'55.35"S, 31°26'33.78"E).
 - e. A staff swimming pool and braai facility totalling approximately 60m² (24°49'56.60"S, 31°26'33.42"E).
 - f. A new gravelled road of 192m x 3m (start 24°49'56.43"S, 31°26'31.88"E; mid 24°49'58.96"S, 31°26'33.99"E; end 24°49'59.76"S, 31°26'37.03"E).

Name of farm and portions	Ravenscourt 257KU and Castleton 260KU
Magisterial District	Ehlanzeni District Municipality (DC32) and the Bushbuckridge Local Municipality (MP325)
1: 50 000 map sheet number	2431CD Newington
1:250 000 map sheet number	2430 Pilgrims Rest
Central point of development	-24.808878 32.424733
DARLE Reference No.	1/3/1/16/1E-213

TABLE 1

Table 1 provides an administrative description of the proposed development.

1.3. DESCRIPTION OF THE AFFECTED AREA

The proposed development is planned to be located on Ravenscourt within the Sabi Sands Game Reserve (coordinates provided above). The site is within the Bushbuckridge Local Municipality, the Ehlanzeni District Municipality and the Mpumalanga Province (see Figure 1). The areas to be impacted on are indicated in Figure 2.

Climate

The climatic conditions characteristic of Singita Sabi Sands may be described as semi-arid. Summer temperatures range between 18° C and 45° C while winter temperatures range between 8° C and 23° C. A south to north rainfall gradient exists in the SSW with the long-term annual averages been 620mm and 570mm respectively. With Singita Sabi Sands being

located roughly in the centre of the SSW and having a longitudinal orientation, this gradient is also applicable.

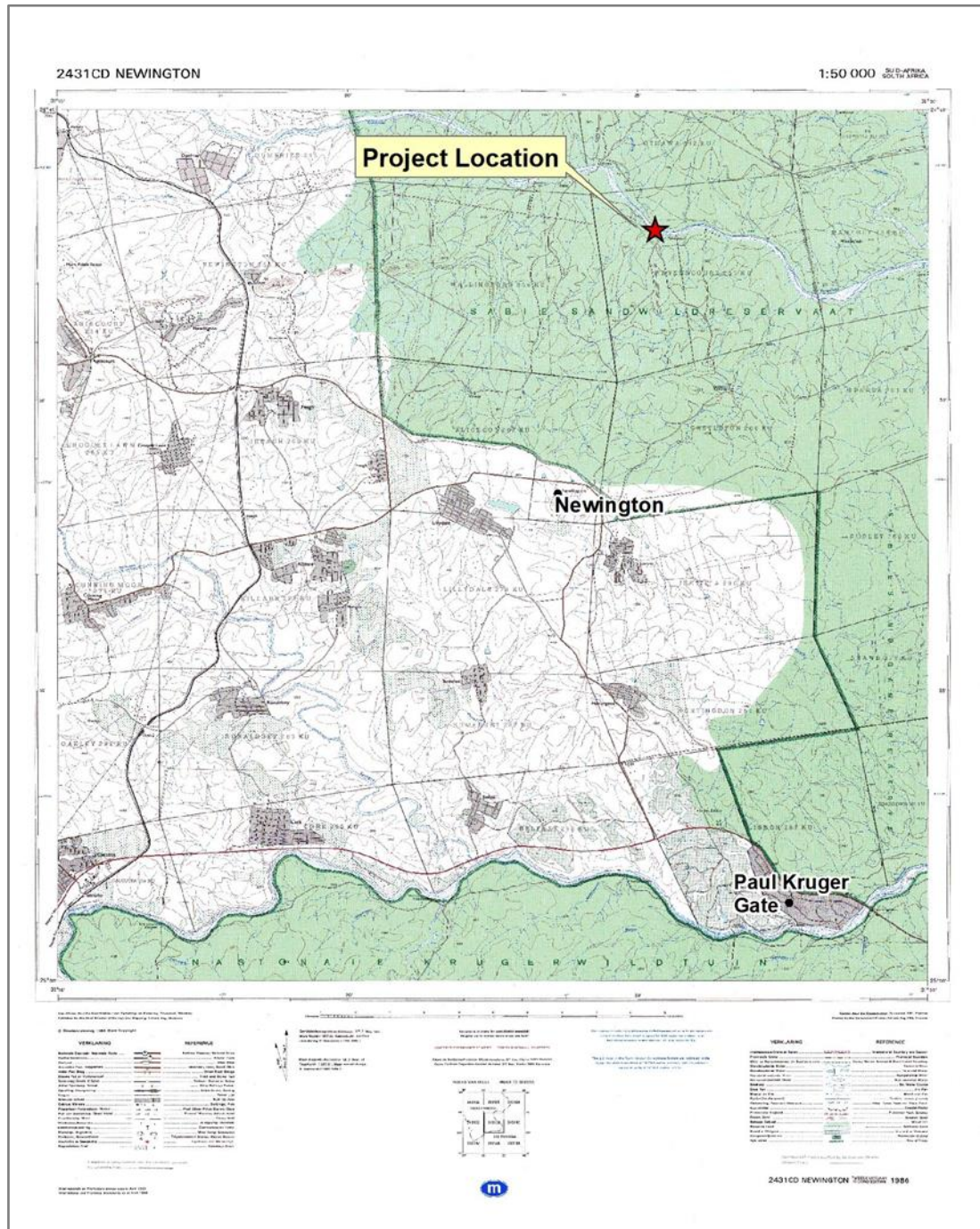


FIGURE 1 REGIONAL CONTEXT OF THE DEVELOPMENT FOOTPRINT, TO THE WEST OF THE KRUGER NATIONAL PARK ON A 1:50 000 MAP.

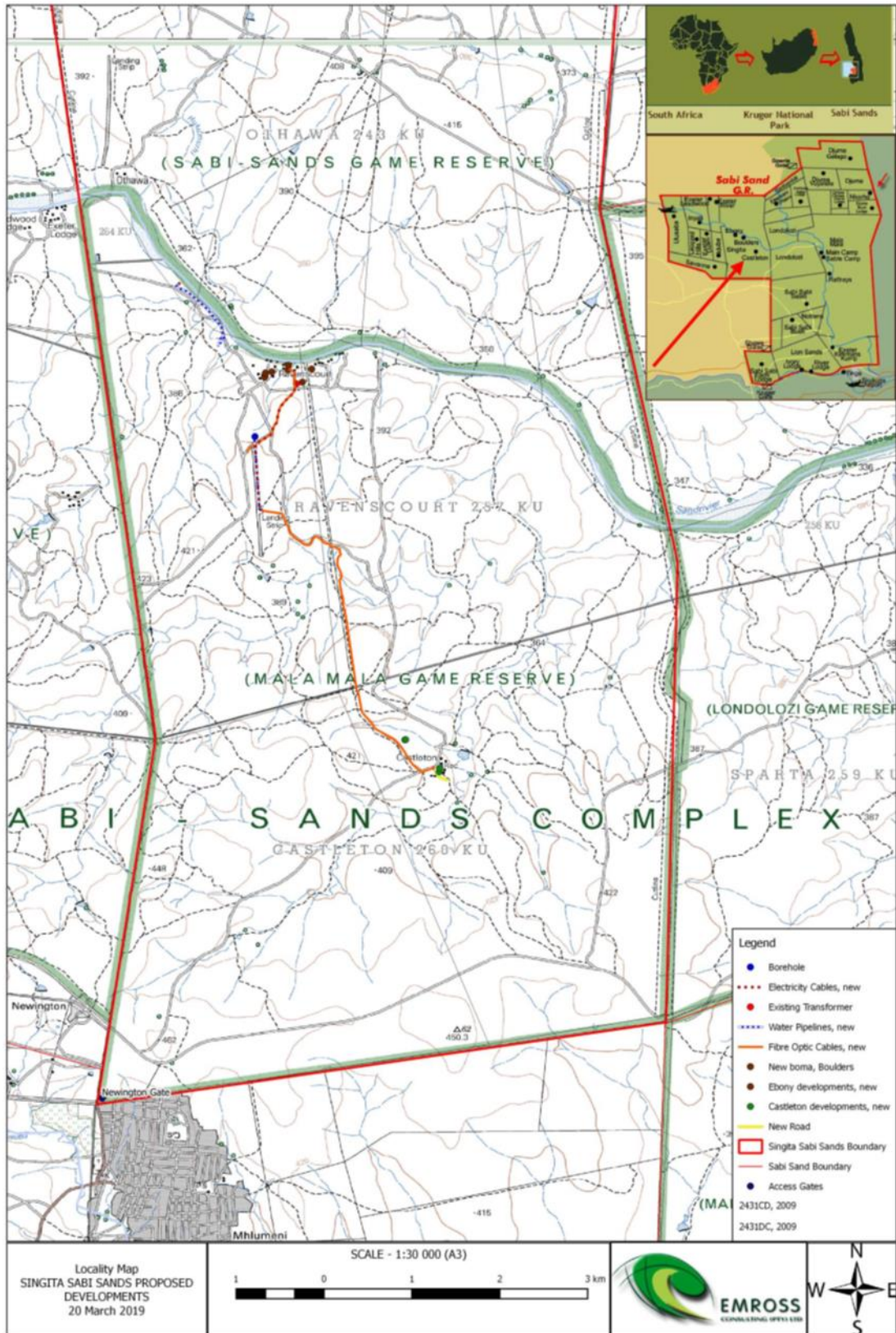


FIGURE 2 LOCAL CONTEXT OF THE SURVEY AREA WITH THE PROPOSED DEVELOPMENTS INDICATED (from Zunckel, 2019)

Typical of semi-arid environments, precipitation is erratic with oscillating period of above and below average rainfall being recorded. Variations range between 248 mm (1991/1992) during drought years to 1147mm (2000/2001) for very wet years with flooding conditions.

Topography

The topography of Singita Sabi Sands is gently undulating with moderately dissected and rounded hill country, rising above the floor of the Sand River valley. The Sand River is a dominant feature in the area. It forms the norther boundary at an altitude of just more than 366masl, flowing in a south easterly direction to exit the property after dropping 36m over approximately 9km. The highest elevation on Singita Sabi Sands is approximately 465masl in the south western corner of the property and the lowest is approximately 334masl at the point at which the Sand River crosses the north eastern boundary.

Geology

The following description of the geology and soils (fig 3) is a direct extract from the SSW Management Plan as it applies to Singita Sabi Sands:

The geomorphology of the eastern parts of Southern Africa and particularly the Lowveld regions, the Kruger National Park and the SSW Protected Area have been directly affected by the large-scale geographical processes which have taken place in South Africa. Due to this, the geological structures and differences in resistance to weathering by different rock types and formations have greatly influenced the current landscape morphology (Venter & Bristow, 1986). The Lowveld is predominantly underlain by the basement gneisses and granites. Using Walraven (Walraven, 1989) the overall area of the SSW Protected Area can be described as follows: A central band runs from close to the eastern boundary to the western boundary and is dominated by medium to coarse grained, sphene-bearing tonalite. Forming an approximate U-shape around the latter is a series classified as quartz-microcline-plagioclase-biotite migmatite and gneiss with mafic and ultra-mafic xenoliths. Local re-crystallisation occurs in the south of the reserve where the Sabie River borders the reserve. A tongue of light grey, medium grained biotite gneiss with coarse grained quartz veldspar leucosomes traverses the area from the north-eastern corner of the reserve (Exeter) through the northern sections of the reserve through to the west to areas adjoining the Kruger National Park. The north-eastern sections of the reserve are classified as grey to pale brown, medium- to coarse grained quartz-feldspar-biotite gneiss with subordinate mafic to ultramafic xenoliths.

In some areas where gabbro and dolerite intrusions strike through, the landscape features are flatter areas of relief (Venter & Bristow, 1986). Within these areas are underlying granophyric quartz gabbro (Sabi Sand Granophyre) which dominates the central and eastern sections of the southern reserve area. The origin of these rocks is unclear, but it may be that the Sabi Sand Granophyre represents some marginal interaction facies between the surrounding Nelspruit suite and gabbroic rocks which formerly overlay the granophyre, but which have been removed by erosion. In a narrow band in the eastern and central areas of the reserve, in a band through the south and west, we find what is termed Timbavati Gabbro, a medium- to coarse-grained gabbro, olivine gabbro and quartz gabbro. These are basic rocks with an irregular outcrop pattern distinguished by a clearly recognizable vegetation type. A

very prominent dyke, consisting of fine to medium grained, hybridized gabbro, with abundant inclusions of acid rocks and protrudes prominently above the flat topography formed by the granite and gneiss. In the SSW Protected Area, it stretches in a narrow band from the west and central boundary on the reserve though to the neighbouring Mala Mala adjoining the Kruger National Park (Peel & Stalmans, 2010).

Within the SSW Protected Area, there is a strong correlation between the geology and soils, the soils occur in distinctive catenary sequences on granitoid rocks. Their formation is a result of the following processes:

- a. The mobilisation and eluviation of clay particles and soluble weathering products from porous soils in upland positions by rainwater;
- b. The lateral downward transportation of these components under the influence of gravitation to foot slope positions, where they are redeposited to form impermeable clay horizons. At this point the ground water is forced to the surface, thus forming waterlogged zones (seepage lines) throughout the rainy season which follow the contours (Venter, 1986). Thus, a general catenary sequence from crest to valley bottom, determined by the sequence of soil complexes (i.e. sandy, hydromorphic, duplex and alluvial) and associated vegetation composition, is repeated regularly across the hills and valleys.

Although these catenary sequences associated with granite-gneiss is representative of the area, the presence of gabbro intrusions and dolerite dikes causes a marked change in soil patterns. These metamorphic units generally weather into clayey structured fertile soils which differ from the normal granite-gneiss pattern (Peel & Stalmans, 2010).

Hydrology

The main hydrological feature of Singita Sabi Sands is the Sand River. This river has its source in the foothills of the Drakensberg escarpment to the west and is an important tributary of the Sabie River which forms part of the southern boundary of the SSW. The property is then bisected by a 3rd order non-perennial tributary of the Sands River that drains most of it and enters the Sand River at the north eastern corner of the property.

According to the SSW Management Plan, the Sand River is “moderately modified” from the perspective of its Present Ecological State (PES). This means that a loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.

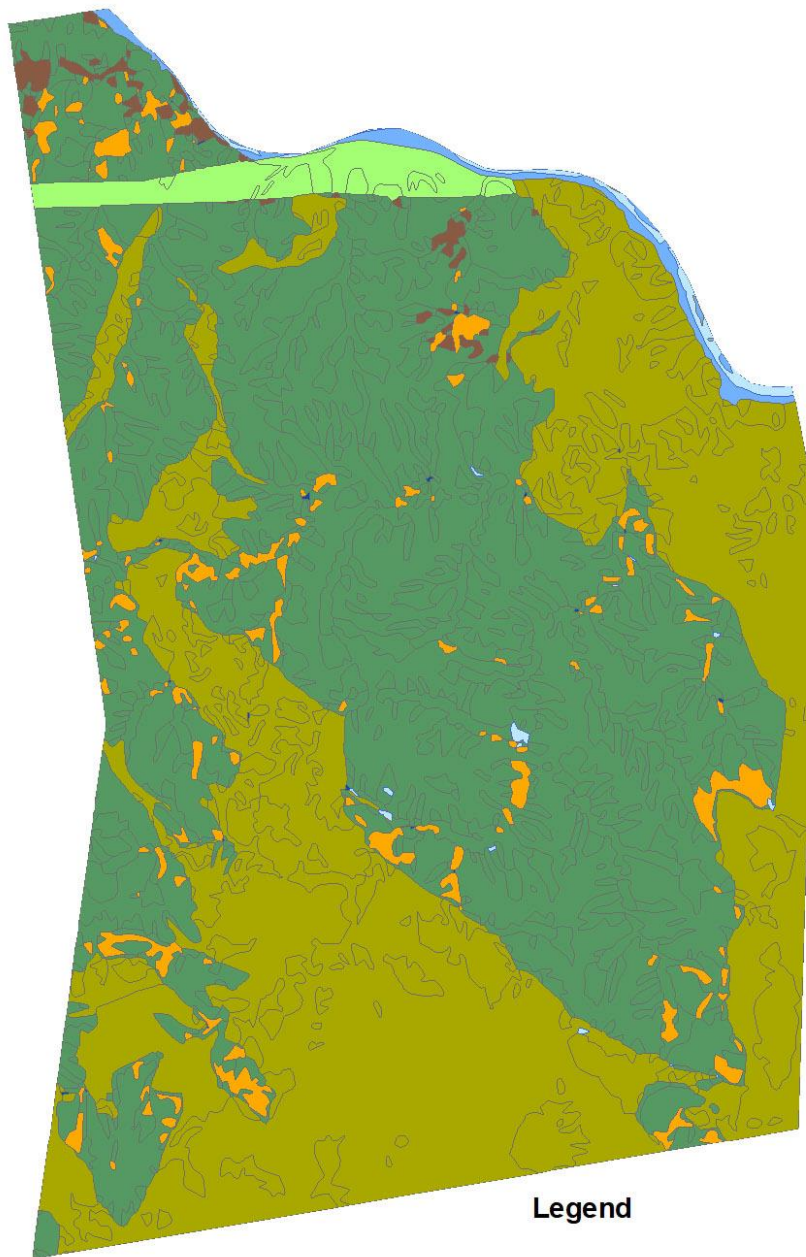
In addition to this non-perennial watercourse are ephemeral pans, i.e. natural depressions that temporarily hold water in the wet season. These occur throughout the property and represent important water sources as well as a diversification of habitat.

Vegetation Types

A broad description of the vegetation (figs 4, 5 & 6) types as per the SSW Management Plan is provided here as it is also applicable to Singita Sabi Sands:

At a very coarse level, the SSW Protected Area falls within the one biome and one bioregion: The Savanna Biome, and the Lowveld Bioregion. The SSW Protected Area falls mainly within

Site Geology Map



Legend

- Drainage lines / Riverine Forest
- Gabbro Rykoppies
- High clay content soils derived from Gabbro
- Loamy to clayey soil patches in Sandveld
- Major wetland systems and Riverine Forests
- Sodic and other soils mosaic
- Tonalite Sandveld
- Water and Dams

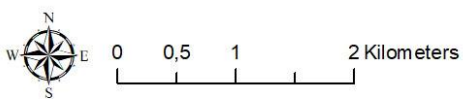


FIGURE 3 SITE GEOLOGY MAP (data: SSW Conservation Department, 2019)

the Granite Lowveld (SVI 3) vegetation type, occurring at altitudes of around 250 - 700 m and is characterised by tall shrubland with few trees to moderately dense low woodland on the deep sandy uplands with *Terminalia sericea*, *Combretum zeyheri* and *C. apiculatum*, and with a ground layer including *Pogonarthria squarrosa*, *Tricholaena monachne* and *Eragrostis rigidior* (Mucina & Rutherford, Reprint 2011). The equivalent vegetation types as described by Acocks (Acocks, 1975) are Arid Lowveld (Veld Type 11) and Lowveld (Veld Type 10). According to Low and Rebelo's classification (Low & Rebelo, 1996), the reserve comprises of Mixed Lowveld Bushveld (Type 19) and Sour Lowveld Bushveld (Type 21).

These vegetation types have provided the basis from which an accurate and easily recognised framework for the habitat delineation within the SSW has been possible. The habitat or finer scale vegetation types relevant to Singita Sabi Sands are listed below and their spatial distribution across the property was used to determine the finer scale vegetation types for each of the proposed development sites.

- *Acacia nigrescens*/ *Sclerocarya birrea*/ *Dalbergia melanoxylon*/ *Pterocarpus rotundifolius* sparse to open woodland;
- *Euclea divinorum*/ *Pappea capensis*/ *Spirostachys africana*/ *Pyrostria hystrix* sparse to dense woodland mosaic;
- *Sclerocarya birrea*/ *Combretum apiculatum*/ *Combretum zeyheri* open to closed woodland;
- *Sclerocarya birrea*/ *Terminalia sericea* open to closed woodland;
- *Sclerocarya birrea*/ *Terminalia sericea*/ *Combretum apiculatum* open to closed woodland; and
- Remaining 12 minor vegetation types.



FIGURE 4 VIEW OF THE GENERAL VEGETATION IN THE AREA OF MUCH OF THE PROPOSED DEVELOPMENTS



FIGURE 5 GRASSY PATCHES IN THE WOODLAND AREAS (Zunckel, 2019)



FIGURE 6 VEGETATION SURROUNDING A ROCKY AREA TOWARDS THE SAND RIVER (Zunckel, 2019)

Tourist accommodation and facilities, staff accommodation and related infrastructure also exists, and some will be directly impacted by the proposed development actions.

The above descriptions of the physical area have been taken from Zunckel 2019.

CURRENT ZONING	Conservation Tourism
ECONOMIC ACTIVITIES	Conservation Tourism
SOCIO-ECONOMIC ENVIRONMENT	<p>Sabi Sand Game Reserve is located adjacent to the Kruger National Park. Officially named Sabi Sand Wildtuin, the Sabi Sand Game Reserve consists of a group of private game reserves.</p> <p>The Park's name comes from the Sabie River on its southern boundary and the Sand River flowing through it. The area of the reserve is 62,308 hectares and it shares a non-fenced boundary of 50.0 km (31.1 mi) with the Kruger National Park to its east.</p> <p>The nearest large town is Hazyview. Hazyview is a sub-tropical farming town and is renowned for its large banana and macadamia nuts industries, contributing about 20% of South Africa's bananas and 30% of macadamia output.</p> <p>Most of the province of Mpumalanga's private game reserves are found just east of Hazyview.</p> <p>Hazyview is a home of the Tsonga people, who occupy the north-eastern part of the town along the banks of the Sabie River. To the south of Hazyview, the Swazi people call this their home. While to the north-western part of this town, the Mapulana people and their cultures are to be found. Sepulana, their language, is a mixture of both Xitsonga and Siswati, this is what makes the Mapulana an interesting cultural group in Hazyview.</p> <p>White Africans also reside in Hazyview.</p> <p>The Mapulana people are currently claiming the whole north-western part of the town until the town of Sabie, from Hazyview to Sabie. While the Tsonga people, the custodian of South Africa's big five game, are claiming the whole north-eastern part of Hazyview, in particular all the game reserves east of Hazyview and southern Kruger, such as Skukuza, Pretoriuskop, Satara, Protea Hotel Kruger Gate etc. While the Swazi people are claiming the whole southern part of the town. (Wikipedia)</p>
EVALUATION OF IMPACT	An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits NHRA (Act No. 25 of 1999, Section 38(3d)): Positive

TABLE 2

2. TERMS OF REFERENCE

The Terms of Reference for the study were to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
5. Review applicable legislative requirements,

3. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural heritage resources are dealt with mainly in two pieces of legislation. These are the Environmental Management Act (107/1998) and the National Heritage Resources Act (5/1999).

3.1. THE NATIONAL HERITAGE RESOURCES ACT

According to this Act, the following are protected as cultural heritage resources:

- a. Archaeological artefacts, structures and sites older than 100 years
- b. Ethnographic art objects
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Graves older than 60 years
- h. Meteorites and palaeontological material
- i. Objects, structures and sites of technological or scientific value.

The National Estate includes the following:

- (a) places, buildings, structures and equipment of cultural significance
- (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 of cultural significance
- (e) geological sites of scientific or cultural importance
- (f) archaeological and palaeontological sites
- (g) graves and burial grounds, including—
 - (i) ancestral graves
 - (ii) royal graves and graves of traditional leaders
 - (iii) graves of victims of conflict
 - (iv) graves of individuals designated by the Minister by notice in the Gazette
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)
- (h) sites of significance relating to the history of slavery in South Africa
- (i) movable objects, including—
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens
 - (ii) objects to which oral traditions are attached or which are associated with living heritage
 - (iii) ethnographic art and objects
 - (iv) military objects
 - (v) objects of decorative or fine art
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Section 38(4) of NHRA requires a process of assessment to be followed in order to determine whether any cultural heritage resources are located within an area to be developed, as well as the possible impact of the proposed development thereon. This process must be followed under the following circumstances:

- (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 50 m in length
- (c) any development or other activity which will change the character of a site—
 - (i) exceeding 5 000 m² 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 38(8) is, however, applicable to this proposed project:

(8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority about such development have been considered prior to the granting of the consent.

Notice must also be taken of the following Sections:

- 34. (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.
A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.
Alter means any action affecting the structure, appearance or physical properties of a place or object whether by way or structural or other works, by painting, plastering or the decoration or by any other means.
- 35(4) 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.

Permits from the applicable heritage resources are required for the actions mentioned above.

3.2. THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT

This Act states that a survey and assessment of cultural resources must be done in areas where development projects will change the face of the environment. The impact of the development on these resources should be determined and proposals for the mitigation thereof made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitutes the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

4. PUBLIC PARTICIPATION

Public involvement in this impact assessment process was facilitated through the actions listed below. Site notices in A3 format were posted at the Newington and Shaw's entrance gates to the SSW on 14 December 2018 and remained there for approximately three months.

- Notice of intention to apply for environmental authorisation was placed in and published by the Mpumalanga News on Thursday 13 December 2018 and the Lowvelder on Friday 14 December 2018.
- Notification was sent to all immediate neighbours via email with a Background Information Document (BID) attached, on 22 December 2018.
- All registered Interested and Affected Parties and immediate neighbours were notified of an amendment to the application on 1 March 2019.

5. METHODOLOGY

5.1. Survey of literature

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography.

The South African Heritage Resources Information System (SAHRIS) was consulted to find out if any known sites occur within the footprint of the proposed development or its proximity.

5.2. Field survey

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects was determined by means of a Global Positioning System (GPS) where possible, while detailed photographs were also taken where needed.

Limiting factors include the dense nature of the grass and bush in a few places, which limited the visibility of potential archaeological and heritage sites and features.

The survey took two persons 9.5 hours to complete. Figure 7 shows the tracks of the areas surveyed.

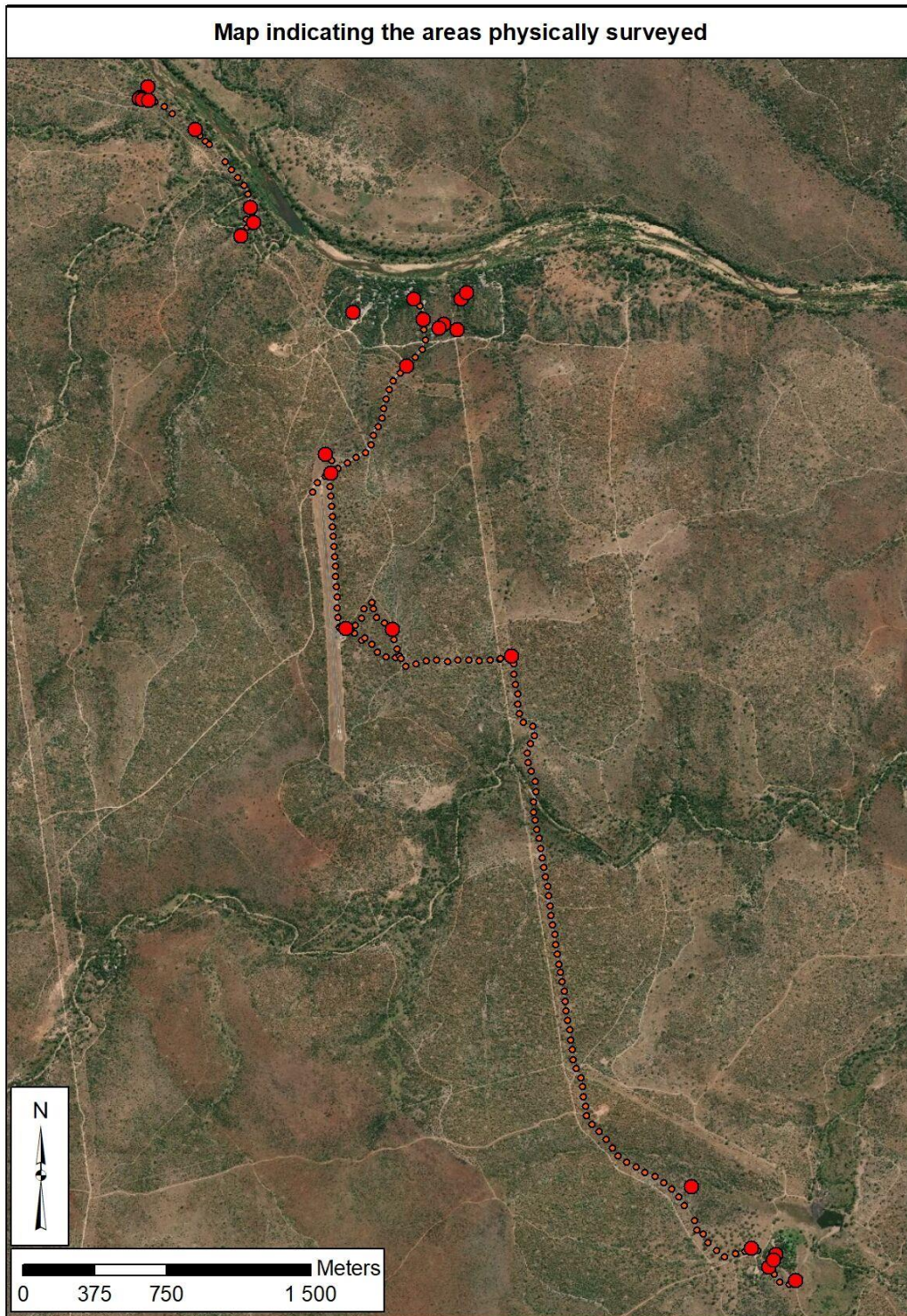


FIGURE 7 MAP INDICATING THE GPS TRACKS OF THE PHYSICAL SURVEY.

5.3. Oral histories

People from local communities and others familiar with the area in which the proposed development is to be located are sometimes interviewed in order to obtain information relating to the surveyed area. Two formal interviews were conducted with older residents of the area and an on-site interview was conducted with a staff member familiar with the area during the field survey. The information is included in the text and referred to in the bibliography.

5.4. Documentation

All sites, objects, features and structures identified were documented according to a general set of minimum standards. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality.

6. BACKGROUND/LITERATURE REVIEW

Several Heritage Impact Assessments have been undertaken in the larger geographical area. No Grade I or II sites (National or Provincial Heritage Sites) have been identified near to the proposed development area yet.

The literature review indicated the following:

6.1. LITERATURE REVIEW

The possible impact of the proposed development on palaeontological resources is gauged by consulting the palaeosensitivity map available on the SAHRIS and the nature of the proposed development. The fossil sensitivity map indicates that the area is deemed as insignificant as far as its palaeontological potential (Fig 8 & tab. 2)

Several Heritage Impact Assessments have been undertaken in the area, none of them on this specific property.

Figure 8 is a screen shot of the SAHRIS map of HIA Cases in the area.

1. The proposal to build a 22Kv SWER Power line in farm Arathusa 241 KU, Sabie Sand Game Reserve was approved by SAHRA without the need to do a HIA as the power line will be erected near disturbed land (i.e.: the road nearby).
2. A phase 1 Archaeological Survey on the farm Toulon 383 KU located in Sabie Sand Nature Reserve, Mpumalanga Province was done by Celliers in 2016. Eight heritage sites were recorded.



FIGURE 8 THE PALAEOSENSITIVITY MAP, EXTRACTED FROM SAHRI, INDICATES THAT THE AREA OF THE PROPOSED DEVELOPMENT DOES NOT REQUIRE A PIA.

BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

TABLE 3 THE PALAEOSENSITIVITY TABLE, EXTRACTED FROM SAHRIS.

3. The reconstruction and modification of West St Bridge- MalaMala Game Reserve did not require a HIA.
4. The proposed construction of an overhead 22 kV power line, from the Lisbon 22kV rural feeder. The power line will be located on the farm Huntington 281 KU, in the Bushbuckridge Local Municipality of Mpumalanga Province. SAHRA requested an HIA to be done.
5. A report on a Cultural Heritage Impact Assessment for the proposed development of upmarket tourism accommodation on the Selati Railway Bridge, Skukuza, Kruger National Park, Mpumalanga Province, was produced by A. van Vollenhoven in 2018. During the survey three sites/ features of cultural heritage significance were identified.
6. SAHRA requested an HIA for the intention to build power lines with various voltages, from the Seville Pegging Project. Just outside the area of Seville in Kwa-Tsakani, Farm Seville 224 KU, Thulamahashe Administrative District, Bushbuckridge Local Municipality, Mpumalanga Province. (2014)
7. SAHRA requested an HIA for the Safari Lodge and associated infrastructure in Skukuza, Kruger National Park.

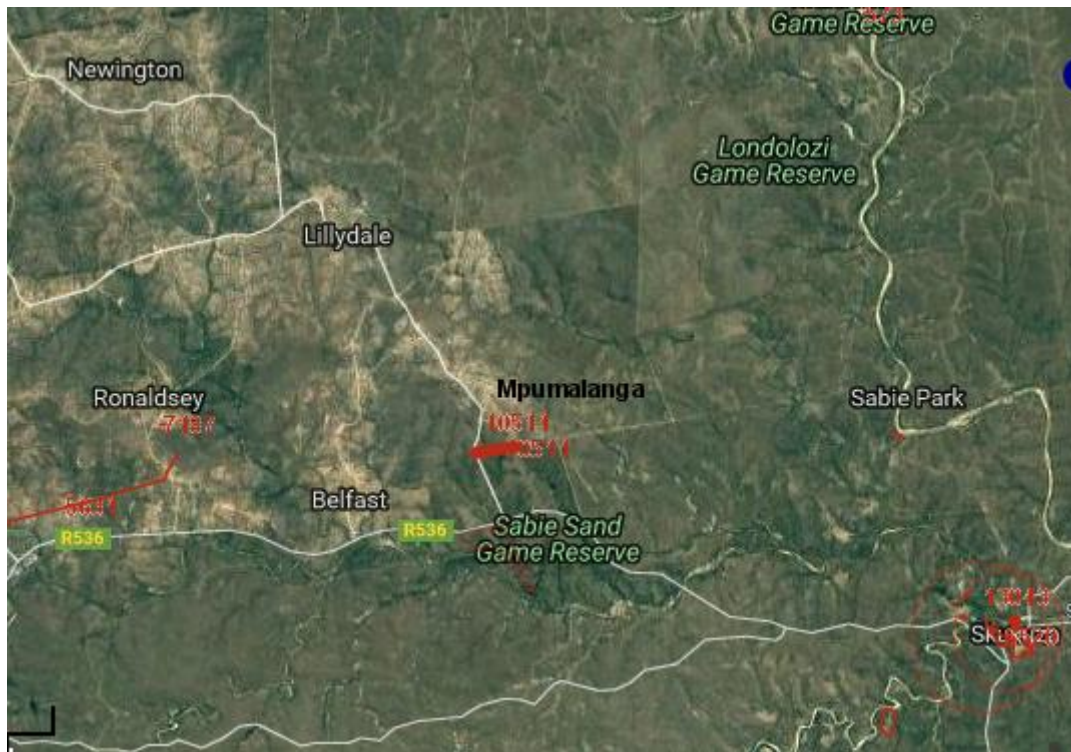


FIGURE 8 SAHRIS CASES

RESEARCH PROJECTS

A limited amount of research projects have been conducted in the wider area surrounding the proposed development. They include:

1. Van Vollenhoven and Pelsier investigated various sites associated with the Anglo Boer War in the Kruger National Park since 2005. Van Vollenhoven is continuing with this research.
2. Birkholtz (1997) investigated the archaeology of the Pretorius Kop area in the Kruger National Park.
3. Meskell (2005) researched the Archaeological Ethnography around the Kruger National Park.
4. Meyer (1970s & 1980s) conducted research on the Iron Age in the Kruger National Park.
5. Ina Plug studied the archaeology of various Stone Age and Iron Age sites in the Kruger National Park during the 1980s and 1990s.
6. Unpublished reports include the rock art surveys in the Kruger National Park and surrounding areas by English and de Roshner, the current work being undertaken by Anton Pelsier at Mahula and reports by this author on fieldwork conducted in 2017 in the Kruger National Park.

In order to be able to get a better understanding of the heritage of this area, it is necessary to give a background regarding the different phases of human history.

6.2. BACKGROUND

The Stone Age is the period in human history when lithics (stone) were used to make tools. In Southern Africa the Stone Age is divided into three periods. The sequence for the Southern African Stone Age (Lombard et.al 2012) is as follows:

Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago

Middle Stone Age (MSA) less than 300 000 – 20 000 years ago

Later Stone Age (LSA) 40 000 years ago – 2000 years ago

The Drakensberg divides the Province into an interior plateau, the Highveld, and the low-lying subtropical Lowveld. Several rivers merge into two main river systems, the Olifants River and the Komati River. This landscape has provided resources for humans and their predecessors for more than 1,7million years (Esterhuizen & Smith in Delius, 2007)

The Early Stone Age (ESA)

In Southern Africa the ESA dates from ~2 million to 250 000 thousand years ago. The hominids who were present during this time was developing physically, mentally and socially, bone and stone tools were developed. One of the most influential advances was their control of fire and diversifying their diet by exploitation of the natural environment (Esterhuizen & Smith in Delius, 2007).

The first tools date to ~ 2, 5 million years ago from the site of Gona in Ethiopia. Stone tools from this site shows that early hominids had the cognitive ability to select raw material and shape it for a specific application.

Mary Leaky discovered tools like these in the Olduvai Gorge in Tanzania during the 1960s. The stone tools are named after this gorge and known as the Oldowan industry. These tools, only found in Africa, are mainly simple flakes which were struck from cobbles. This method of manufacture remained for about 1,5 million years. Two species of hominid, an early form of *Homo* and *Parathropus robustus*, may have been responsible for making these tools.

Around 1, 7 million years ago more specialised tools known as Acheulean tools, appeared. They are named after a site in France with the name of Saint Acheul, where they were first discovered in the 1800s. *Homo ergaster* was probably responsible for the manufacture of Acheulean tools in South Africa. This physical type was arguably physically similar to modern humans, a larger brain and modern face, body height and proportion are all features which are very similar to us. *Homo ergaster* was able to flourish in a variety of environments in part because they were dependent on tools. They adapted to drier, more open grassland settings. ESA sites with *in situ* deposits are very rare. Most tools of these people have been washed into caves, eroded out of riverbanks and washed downriver. Deluis (2007) states that Early Stone Age tools (Oldowan & Acheulean) are widely distributed across Southern Africa, especially near watercourses such as rivers and streams, but many sites are not found in

primary context. An example from Mpumalanga is Maleoskop on the farm Rietkloof, where ESA tools have been discovered. This is one of only a few such sites in Mpumalanga.

Middle Stone Age (MSA)

A greater variety of tools, with diverse sizes and shapes appeared by 250 000 BP. These replaced the large hand axes and cleavers of the ESA. This technological change introduces the Middle Stone Age (MSA). This period is characterised by tools that are reduced in size but different in manufacturing technique (Esterhuizen & Smith in Delius, 2007).

In contrast to the ESA technology of removing flakes from a core, MSA tools were flakes to start with. They were of a predetermined size and shape and were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape which the toolmaker desired. Elongated, parallel-sided blades, as well as triangular flakes are common finds in these assemblages. The mounting of stone tools onto wood or bone to produce spears, knives and axes became popular during the MSA. These early humans not only settled close to water sources but also occupied caves and shelters. It was during the MSA archaic physical type of Homo evolved to anatomically modern humans, Homo sapiens.

The MSA has not been widely studied in Mpumalanga but evidence of this period has been excavated at Bushman Rock Shelter, a well-known site on the farm Klipfonteinhoek in the Ohrigstad District. This cave was excavated twice in the 1960s by Louw and later by Eloff. The MSA layers indicates that the cave was repeatedly visited over a long period. Lower layers have been dated to in excess of 40 000 BP while the top layers date to approximately 27 000 BP (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Later Stone Age (LSA)

Early hunter gatherer societies were responsible for several technological innovations and social transformations during the LSA that started at around 20 000 years BP. Hunting of animals proved more successful with the innovation of the bow and link-shaft arrow. These arrows were constructed of a bone tip which was poisoned and loosely linked to the main shaft of the arrow. Upon impact, the tip and shaft separated leaving the poisoned arrow-tip imbedded in the prey animal. Other innovations include bored stones used as digging stick weights to uproot tubers and roots; small stone tools, mostly less than 25mm long, used for cutting of meat and scraping of hides; polished bone tools such as needles; twine made from plant fibres and leather, tortoiseshell bowls, ostrich eggshell beads and other ornaments and artwork (Esterhuizen & Smith in Delius, 2007).

At Bushman Rock Shelter the MSA is also represented and starts at around 12 000 BP but only lasted for some 3 000 years. The LSA marks the transition from the Pleistocene to the Holocene and was accompanied by a gradual shift from cooler to warmer temperatures. This change had a larger impact on higher lying parts of South Africa. Both Bushman Rock Shelter and a site close by, Heuningneskrans, have shown a greater use of plant foods and fruit during this period (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Ostrich eggshell beads were found in most of the levels at these two sites. It appears that there is a gap of approximately 4 000 years in the Mpumalanga LSA record between 9 000 BP and 5 000 BP. It must be noted that the Stone Age has been under-researched in the province. It is, however, also a period known for rapid warming and major climate fluctuation, which may have led people to seek out protected environments in this area. The Mpumalanga Stone Age sequence is visible again during the mid-Holocene at the farm Honingklip near Badplaas in the Carolina District (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Two LSA sites in the Kruger National Park, close to Skukuza, called SK4 (Bergh 1999: 4), date to the last 2500 years and are associated with pottery and microlithic stone tools (Bergh, 1998: 95). They are characteristic of a hunter-gatherer lifestyle and may also have been sites frequented by San, who were the first inhabitants of the eastern Lowveld. They were a nomadic people who lived together in small family bands and relied on hunting and gathering of food for survival. Rock art sites have been recorded where evidence of their existence is found in numerous rock shelters throughout the Lowveld where some of their rock paintings are still visible. Many rock art sites are found in the Kruger National Park, especially in the southern section (Eloff 2007: 12). A number of these shelters have also been documented in the Nelspruit area (Bornman, 1995; Schoonraad in Barnard, 1975). It has been argued that the red ochre source for these paintings is to be found at Dumaneni, near Malelane (Bornman, 1995).

The close vicinity of water sources and ample grazing in the area of the proposed development would have made it a prime spot for hunting and obtaining water during the past. Therefore, one may assume that Stone Age people probably would have moved through the area.

Two possible Stone Age sites were identified and recorded during this survey. The results will be discussed in the next section.

During the period following, the Stone Age Bantu-speaking people moved into this area from the northern parts of Southern Africa and settled here. This period is referred to as the Iron Age. The Iron Age is the name given to the period of human history when metal was mainly used to produce artefacts. In South Africa it can be divided in two separate phases (Bergh 1999: 96-98), namely:

Early Iron Age (EIA) 200 – 1000 A.D.

Late Iron Age (LIA) 1000 – 1850 A.D.

Early Iron Age (EIA)

The Early Iron Age (~200-1 000 A.D.) began when pastoralist groupings moved into the north eastern parts of South Africa. Among these were the makers of the Lydenburg Heads, ceramic masks dating to about A.D. (Celliers 2017)

Ceramics comparable to those from the Lydenburg Heads site were also found at the Gustav Klingbiel Nature Reserve and archaeologists believe that they are related to the ceramic wares (pottery) of the Lydenburg Heads site in form, function and decorative motive.

The earliest research in Iron Age archaeology was conducted by Trevor and Hall in 1912. This revealed prehistoric copper-, gold- and iron mines. Schwelinus (1937) reported smelting furnaces, a salt factory and terraces near Phalaborwa. In the same year, D.S. van der Merwe excavated stone walling, graves, furnaces, terraces and soapstone objects in the Letaba area.

Mason (1964, 1965, 1967, 1968) conducted the first scientific excavation in the Lowveld, followed by N.J. van der Merwe and Scully. M. Klapwijk (1973, 1974) excavated an EIA site at Silverleaves and excavated at Harmony and Eiland, both EIA sites.

Some archaeological research was done during the 1970's at sites belonging to the EIA (Early Iron Age), location Plaston, a settlement close to White River (Evers, 1977). This site is located on a spur between the White River and a small tributary. It is situated on holding 119 at Plaston.

Early Iron Age ceramic collections from elsewhere in Mpumalanga and Limpopo can be compared to the Plaston sample. They include Silver Leaves, Eiland, Matola, Klingbiel and the Lydenburg Heads site. The Plaston sample is distinguished from samples of these sites in terms of rim morphology, most rims from Plaston are rounded and very few bevelled. Rims from the other sites display more bevelled rims (Evers, 1977:176).

During the early 1970's Evers also conducted fieldwork and excavations in the Eastern Transvaal. Two areas were studied, the Letaba area south of the Groot Letaba River, west of the Lebombo Mountains, east of the great escarpment and north of the Olifants River. The second area was the Eastern Transvaal escarpment area between Lydenburg and Machadodorp.

Early Iron Age pottery was also excavated by archaeologist, Prof. Tom Huffman during 1997 on location where the Riverside Government Complex is situated (Huffman, 1998). This site known as the Riverside site is situated a few kilometres north of Nelspruit next to the confluence of the Nelspruit and Crocodile River. The site was exposed during an environmental impact assessment for the new Mpumalanga Government complex/ offices. A bulldozer cutting exposed storage pits, cattle byres, a burial and a midden. Salvage excavations conducted during December 1997 and March 1998 recovered the burial and contents of several pits.

One of the pits excluded among other items, pottery dating to the eleventh century (AD 1070 ± 40 BP) this relates the pottery to the Mzonjani and Broederstroom phases. The early assemblage belongs to the Kwale branch of the Urewe tradition.

An Early Iron Age site in Sekhukuneland, known as Mototolong (Van Schalkwyk, 2007) was the National Cultural History Museum. The site is characterized by four large cattle kraals containing ceramics which may be attributed to the Mzonjani and Doornkop occupational phases.

EIA sites are often found in specific locations: < 100m from water (riverbank or the confluence of streams). This meant that they were located on alluvial fans, which soils were nutrient rich and suitable for agriculture. Environmental reconstruction indicates that this time (900-1100AD) was drier and these wetter soils and flood plains played an important role in EIA settlement. A drier period again followed after 1450AD (Delius 2007).

Late Iron Age (LIA)

Historians and ethnographers describe the Lowveld was frequented by Swazi and Sotho-Tswana factions during the LIA (1500-1800 A.D.) (Barnard, 1975; Bergh, 1998; Bornman, 2002; Herbst, 1985; Myburgh, 1949).

Smaller groups, such as the Pai and Pulana were attacked by and forced to escape from the aggressive Swazi under Mswati, especially during the Mfecane (Difaqane). They (Swazi) were particularly active in the Lowveld during the Difaqane period (1820's) and it is well-known that they frequently attacked and ousted smaller herder groups like the Pai and Pulana, especially in the Low's Creek area. They were however prevented from settling in the low-lying areas due to the presence of the tsetse fly and malaria. Consequently, there is little evidence of large-scale settlement in the Crocodile River Valley until the time of colonial settlement (1890's) and later. Small, isolated dry-packed stone-walled enclosures found near Nelspruit and surrounding areas may be attributed to these smaller groups who hid away from the Swazi onslaught. The sites were only short-term places of refuge, as these refugees had to frequently move as a result of the onslaught and therefore small, indistinct and with little associated cultural material.

Mswati systematically occupied this area with members of his own family and trusted commoners after they killed Tsibeni and evicted the remnants of his people who fled to an area near Legogote, where they are still living today (Bornman, 1995).

Trade routes were already established before the period of colonial expansion when they were used for the movement of iron, tin, copper and some gold (Bergh, 1998:103). The earliest evidence of iron mining and working in the old Transvaal dates to approximately 300 AD and copper mining and working in Southern Africa may have been practiced as early as 620 A.D. (Bergh, 1998:103).

These people were responsible for the establishment of large settlements like Monomtapa the Zimbabwe Complex and the famed Mapungubwe in the Limpopo valley. At around 900 AD Arab merchants established a trade post at Sofala (Beira). Since the start of the 11th century, these Arabs had trade relations with the people of Zimbabwe. Textiles, porcelain and glass beads were traded for gold, ivory and other minerals.

Ancient trade routes (according to de Waal) passed close-by the current Nelspruit and started from Delagoa Bay in a westward direction, cutting through the Lebombo Mountains at the Sabie (Matala) Poort through the Lowveld towards the gold fields of Lydenburg, or by passing through Malalapoort, the Nkhomati and Crocodile Rivers to Skipberg in the current Kruger National Park near where Pretoriuskop Rest Camp is situated. From here onwards there were two possible routes up the mountains to reach the goldfields. The first one passed by Spitskop (Sabie) and from there on to Lydenburg. The second passed south of the Devils Knuckles to Lydenburg. There were also routes connecting to existing main routes, one of which started from Sabie or Lydenburg to the route which linked Delagoa Bay to the Soutpansberg via Pilgrim's Rest. It is also believed that a footpath existed at the foothills of the (Transvaal) Drakensberg which led around the mountain to link again with a major route alongside the Olifants River (Bergh, 1998:104). Delius (2007) states that "By the 1700s, economically driven centres of control had begun to emerge and, following the establishment of Portuguese trade posts, the eastern Transvaal became an important thoroughfare for both local and foreign traders." Long distance trade involved copper, tin, ivory, animal hides and rhino horns that were bartered for cloths, glass beads and other European items such as firearms. The Voortrekkers used one of these routes in 1845 when making the wagon route between Ohrigstad and Delagoa Bay (Berg, 1998: 104).

Dutch sailors reached Delagoa Bay in 1721 and settled there for nine years, during this time they began several expeditions inland. During August 1723 lieutenant Jan Steffler and 17 men launched the first of these expeditions but they were ambushed by natives shortly after crossing the Lebombo Mountains. Exactly where they crossed the mountains is uncertain, but it is possible that they were in northern Swaziland when they were attacked. Steffler succumbed as a result of this ambush and his followers returned to Delagoa Bay (Bergh, 1998:116).

Another attempt to initiate an interior route two years later, in June 1725, was unsuccessful after Francois de Cuiper and 34 men departed from Delagoa Bay and travelled in a north-western direction. They reached Gomondwano in the current Kruger National Park where they were also attacked by a local tribe. This resulted in them also having to return to Delagoa Bay. Although this attempt was also not successful, it is seen as the first European intrusion into this northern area (Bergh, 1998:116).

Iron Age sites were identified in the south of the Kruger National Park (Eloff et.al. 2007: 35-39). Jordaan is currently working on two Early Iron Age sites close to Skukuza, namely SK17 and TSH1 (SAHRIS Database). Bergh (1999: 7) indicates that as many as 48 Late Iron Age sites have been identified here. This work was mainly done by Meyer (1986). Again, it can be stated that the good grazing and access water in the area would have provided a good environment for Iron Age people.

Delius (2007) mentions that there is a difference in the distribution of Iron Age sites between the northern and southern parts of Mpumalanga, with the north having less of an agricultural

focus, but “... with poor soils, but situated near ore resources, with mining by-products found...”

One possible site was discovered during the assessment as well.

Historical Period

The Historical Period began with the first recorded oral histories in the area. It includes the arrival of people that were literate, but more recently also refers to the latter five hundred years of South African history.

- The Voortrekkers

The Groot Trek of the Voortrekkers started with the Tregardt- van Rensburg trek in 1835. The two men met where Tregardt and his followers crossed the Orange River at Buffelsvlei (Aliwal North). Here van Rensburg joined the trek northwards. On August 23, 1837 the Tregardt trek left for Delagoa Bay from the Soutpansberg. They travelled eastwards alongside the Olifants River to the eastern foothills of the Drakensberg. From here they travelled through the Lowveld and the current Kruger National Park where they eventually crossed the Lebombo Mountains in March 1838. They reached the Fortification at Lourenço Marques on 13 April 1838 (Bergh, 1998:124125).

Permanent European (Voortrekker) settlement of the eastern areas of Mpumalanga started when a commission under the leadership of A.H. (Hendrik) Potgieter who negotiated with the Portuguese Governor at Delagoa Bay in 1844 for land. It was agreed that these settlers could settle in an area that was four days journey from the east coast of Africa between 10° and 26° South. Voortrekkers started migrating into the region in 1845. Andries-Ohrigstad was the first town established in this area in July 1845 after the Voortrekkers effectively negotiated for land with the Pedi Chief Sekwati. Farms were given out as far west as the Olifants River. The western boundary was not formalised but at a Volksraad meeting in 1849 it was decided that the Elands River would be the boundary between the districts of Potchefstroom and Lydenburg as this eastern portion of the Transvaal was then known (Bergh, 1998).

Due to internal strife and differences between the various Voortrekker groups that settled in the broader Transvaal region, the settlers in the Ohrigstad area now governed from the town of Lydenburg decided to secede from the Transvaal Republic in 1856. The Republic of Lydenburg consisted of land that included not only the land originally obtained from the Pedi Chief Sekwati in 1849, plus other areas of land negotiated for from the Swazis. The Republic of Lydenburg was a vast area and stretched from the northern Strydpoort Mountains to Wakkerstroom in the south and Bronkhortsspruit in the west to the Swazi border and the Lebombo mountains east.

As can be expected, the migration of Europeans into the north would have a significant effect on the indigenous people who populated the land (Celliers 2017). In 1839 Mswati succeeded Sobhuza (also known as Somhlomo) as king of the Swazi. Threatened by the ambitions of his

half-brothers, with Malambule, who had backing from the Zulu King Mpande, he turned to the Ohrigstad Boers for protection. He claimed that the land that the Boers had settled on was Swazi property. The Commandant General of the Ohrigstad community, Andries Hendrik Potgieter, responded that the land was ceded to him by the Pedi leader Sekwati, in return for protection of the Pedi from Swazi attacks (Giliomee, 2003).

However, in reaction to the increasingly authoritarian way in which Potgieter conducted affairs at Ohrigstad, the Volksraad of Ohrigstad saw Mswati's offer to obtain more respectable title deeds for the property (Bonner, 1978). According to a sales contract set up between the Afrikaners and the Swazi people on 25 July 1846, the former were the rightful owners of the land that had its southern border at the Crocodile River, which stretched out in a westerly direction up to Elandspruit; of which the eastern border was where the Crocodile and Komati rivers joined and then extended up to Delagoa bay in the north (Van Rooyen, 1951). The Europeans bought the land for a 100 heads of cattle (Huysen).

- History of the Anglo Boer War (1899-1902) in the area

General Louis Botha, with his Boer forces, marched through Nelspruit on 11 September 1900. On 18 September 1900, the British battalion of Lieutenant General F. Roberts reached Nelspruit. No major skirmishes in the war took place near Nelspruit, but a concentration camp for Africans was established a small distance to the north of the town. The reason for this is possibly that there was a railway station at Nelspruit. (Celliers 2017)

Van Vollenhoven listed the Steinaecker's Horses' Sabi Bridge post as a heritage site in his 2018 HIA Report.

Steinaecker's Horse was a volunteer military unit that fought on the side of the British. It functioned mainly in the Lowveld and Swaziland (Pienaar 1990: 343). Apart from its part during the War, it laid the foundations for the establishment of the Kruger National Park. It therefore is an important part of the history of the Park.

This unit was formed by Francis Christiaan Ludwig von Steinaecker (Van Vollenhoven et.al.1998: 6).

The Sabi Bridge post is one of several outposts established by the unit. He also erected military outposts along the Swaziland border up to the north of Letaba where he stationed an officer and a few troops at each post (Pienaar, 1990).

Fort Mpisane at Bushbuckridge (Pienaar 1990: 345) was placed under command of Captain HF (Farmer) Francis. The garrison consisted of 30 men, but the local followers of Chief Mpisane were also armed (Pienaar 1990: 348). During the battle, Captain Francis was killed and he was buried next to the fort. Some of the black troops that were killed were buried in a trench to the southeast of the fort (Pelser 1999: 57).

- The Eastern and Selati Railway Lines

The building of the railway line between Pretoria and Delagoa Bay commenced after the Kruger Government gave the concession for the building of the line to the Nederlandsche Zuid Afrikaansche Spoorweg-Maatschappij (NZASM). The railway line was completed in 1895 (de Jong et al. 1988).

Prior to the completion of the Eastern (Delagoa Bay) Railway line in 1895, gold was found in the Lowveld regions of Gravelotte, Leydsdorp, Rubbervale, Trichardtsdal and the Selati Goldfields. This necessitated that a railway line to connect the North-eastern Transvaal with the central markets of the ZAR be constructed (Pienaar, 1990).

President Paul Kruger supported this idea and in July 1890 he managed to convince the "Volksraad" that a proposed railway line connecting the Soutpansberg and Selati Goldfields with the main line to Lourenço Marques (Delagoa Bay) be approved.

The Selati Railway Line would be 307 km long and the undertaking took three years to complete at an estimated cost of £6 000 per km.

Westwood & Winby was appointed and completed surveying of the line in early 1893 and by July of that year some 40 km of the line was completed (Pienaar, 1990). Unfortunately, Oppenheim acted unlawfully in his dealings with the ZAR and after an enquiry initiated by Smit, all work on the railway halted after approximately 120 km between Komatipoort and Newington was completed. After numerous legal battles both in ZAR and abroad, all contracts awarded to Oppenheim was nullified and at that stage the Selati Railway line was left incomplete. Materials and tools used for the construction of the line were left abandoned in the wilderness, along with many unmarked graves of British workers who succumbed to malaria (Pienaar, 1990). The graveyard in Komatipoort is testament to this and several individuals lie buried here. Although no evidence could be found, it is probable that the grave of C.C. Moloney who died 22 July 1894, located very near the Selati line in the Sabi Sand Reserve and near Kirkmans Kamp is further testimony to the hardships endured by the railway labourers.

In 2018 van Vollenhoven recorded the historical railway bridge on the Sabi River at Skukuza as part of the HIA for the proposed tourist development at the bridge. It was built in 1912. He also recorded the associated steam engine. This locomotive operated in the last trip through the Kruger Park before the railway line was decommissioned in 1972. This locomotive, no. 3638, was donated to the Park in October 1978. It therefore commemorates an historical event and as such has heritage significance.

In his 2016 HIA for the Kirkman's Camp on the nearby Toulon Farm Celliers recorded a single grave. The grave is well-marked and fenced. It is orientated in an east-west direction with the headstone, in the form of a cross, reads: "*In Loving Memory of C.C. Moloney who died 22 July 1894*". Research is required to confirm that the grave may have been associated with the construction of the first leg of the Selati Railway Line during the years 1893-1894.

He also recorded the location of the remains of the historic Selati Railway Line in two locations. At both locations, the rails and sleepers were stripped off, but the ballast and some

parts of the sub-grade are visible. It is a historically significant feature as it played a key role in the development of the Kruger National Park and Sabi Sand Reserve.

The Selati Line proved problematic, with veld fires caused by sparks from the train, collisions with game and train collisions all occurring. The increase in traffic on the line due to, especially, the mining in the Phalaborwa area led to the electrification of the line. The S.A.S decided to divert the line to the west of the Kruger National Park border. In 1968 a new line from Kaapmuiden was built West of the Nsikazi River and at Metsi, a few kilometres North of Newington, it joined the Selati Line. Upon completion of this new line traffic diminished drastically and from April 1971 a single daily service between Komatipoort and Skukuza was used for the transport of supplies (Pienaar, 1990).

- The Sabie Game Reserve and Kruger National Park

In the later part of the 19th century at presidential level it was decided that a Nature reserve in the Eastern Transvaal Lowveld is necessary to preserve game for future generations. On 26 March 1898 President Paul Kruger signed the proclamation of the “Goevernements wildduin” (Sabie Game Reserve) (van Vollenhoven 2018). The outbreak of the Anglo-Boer War (1899-1902) changed this. As a result of new British administration and after the War in 1902, the reserve was re-proclaimed albeit now a larger area was included, being between the Olifants and Sabie Rivers (Pienaar, 1990). Shortly afterwards Major James Stevenson-Hamilton was appointed as Warden of the reserve. His vision and commitment played a major role in the advent of nature conservation in the Lowveld and culminated in the establishment of the Kruger National Park in the early 20th century (van Vollenhoven 2018). Pioneer and visionary of the later Kruger National Park, Col. James Stevenson-Hamilton appointed the first field ranger and stationed Mr E.G. (Gaza) Grey at Gomondwane. In 1902 Stevenson-Hamilton made von Steinaecker’s blockhouse at Sabie Bridge his first home. This outpost later developed into the Skukuza Rest Camp (Pienaar, 1990). The regiment was stationed at this site from 1900 and between 1901 and 1902 operated the train between Komatipoort and Kilo 104. The railway bridge was not yet completed, but a temporary wooden bridge on a diversion line was used (Woolmore 2006: 18).

After September 1902 the blockhouse at the site, built by the Steinaecker’s Horse Regiment (south of the temporary bridge), was used by Major J Stevenson-Hamilton as his office upon his employment as the first warden of the Park (Stevenson-Hamilton 1952: 55-56). In April 1903, a Game Reserve in the Soutpansberg area was proclaimed and named the Shingwedzi Game Reserve. The Shingwedzi and Sabie Game Reserves were amalgamated through the proclamation of a conservation area between these two reserves in December 1914. In 1916 these two reserves were consolidated, and named the “Transvaal Game Reserves”.

- The Sabi Sand Reserve

In 1922 the Transvaal Consolidated Land Company tasked Major Percy Greathead to investigate the possibility of establishing a cattle farm near the Sabie Bridge (Skukuza). By the end of that year some 800 mixed race cattle were introduced on the farm Toulon located approximately six kilometres from Sabie Bridge (Pienaar, 1990).

The newly appointed Manager of the Toulon Estate, Mr Crosby, quickly became friends with the conservator of the Shingwedzi and Sabie Game Reserve, Mr James Stevenson-Hamilton and even arranged tennis matches between staff of both establishments (Celliers 2017).

In 1926 the Kruger National Park was proclaimed as South Africa's first national conservation area and it ensured a new era of nature conservation in the country. After the proclamation of the Kruger National Park and its new western boundary, neighbouring landowners founded the Sabie Private Game Reserves in 1934. This was followed in 1948 by the formation of the Sabi Sand Reserve. During 1961, as a result of the threat of foot and mouth disease and the continued hunting of game on private land next to the National Park, a fence was erected between the Sabi Sands Reserve and the Kruger National Park. The Sabi Sand Reserve erected fences on the Western boundary to prevent the movement of game from the area. In 1993 the fence between the Kruger National Park and the Sabi Sands Reserve was dropped again and game could roam between the reserves freely. The above have been taken from Celliers (2017).

Celliers (2017) recorded the location of the current Kirkman's Kamp tourist accommodation and facilities. A key feature is the original Toulon Estate farmstead which is utilised as reception, office and shop area, dining and relaxation. The building is in a remarkable condition and a good example of 1920's colonial architecture.

Interviews with informants

Two formal interviews were held with two older gentlemen familiar with the area, Mr Fanwel Majazana Masinga and Mr Coleman Mabukele Mnisi, before the physical survey commenced. During one of the interviews, Mr Masinga, who has worked all his working life in the SSW and is familiar with the local history of the area, and Mr Mnisi stated that they knew of old homesteads on the farm, near Shangwa Pan. The position of Shangwa Pan is indicated in pink on the map (fig 9) below. The nearest proposed development is to the right of the pan on the 2nd River Loop (~ 200m away). Care was taken during the survey to look out for possible features associated with this settlement, but none were observed.

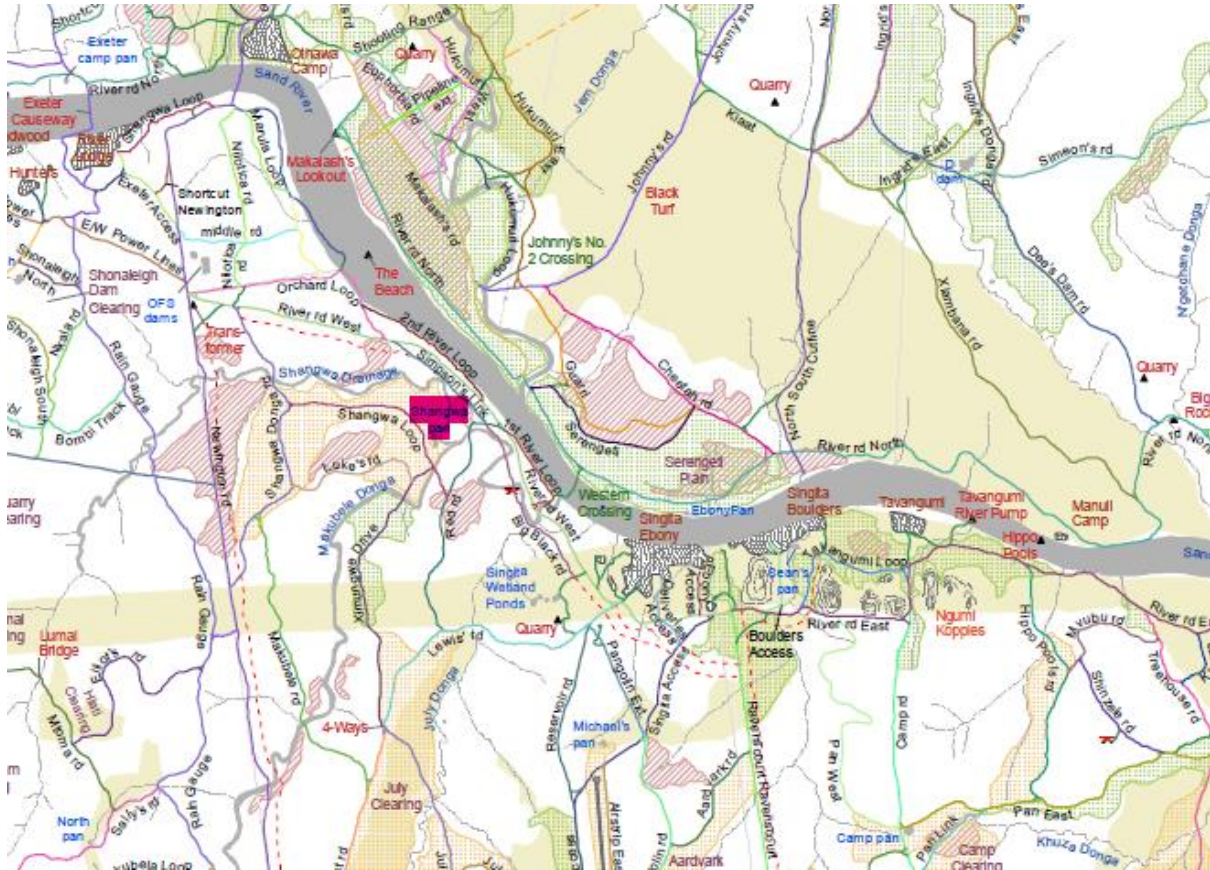


FIGURE 9 MAP INDICATING THE POSITION OF SHANGWA PAN.

Mr Mnisi further stated that there were people living in the area, but very scattered (according to his grandparents).

7. POTENTIAL IMPACTS AND RISKS TO HERITAGE RESOURCES

The adverse impacts on heritage resources is likely to be direct, once-off events occurring during the initial construction period. In the longer term, the proximity of operations in a given area could result in secondary indirect impacts resulting from the movement of people or vehicles in the immediate or surrounding vicinity.

8. RESULTS OF THE MAY 2019 ASSESSMENT

A total of 3 possible heritage sites were recorded (table 4).

SITE NO	FIELD RATING	DIRECT IMPACT	PROPOSED MITIGATION
SSS-01	Low	Yes	Destruction
SSS-02	Low	Yes	Destruction
SSS-03	Low	Yes	Watching brief

TABLE 4 TABLE SHOWING RECORDED SITES

Field Rating	Grade	Significance	Recommended Mitigation
National Significance (NS)	Grade 1		Conservation, nomination as national site
Provincial Significance (PS)	Grade 2		Conservation; Provincial site nomination
Local significance (LS 3A)	Grade 3A	High Significance	Conservation, No mitigation advised
Local Significance (LS 3B)	Grade 3B	High Significance	Mitigation but at least part of site should be retained
Generally Protected A (GPA)		High/ Medium Significance	Mitigation before destruction
Generally Protected B (GPB)		Medium Significance	Recording before destruction
Generally Protected C (GPC)		Low Significance	Destruction

TABLE 5 SIGNIFICANCE RATING GUIDELINES FOR SITES

PROPOSED DEVELOPMENT NODE 1

1. Guest toilets at bush breakfast site (24°47'3.95"S, 31°25'3.85"E) (see figure 10):
 - a. Two toilets with hand wash basins will be installed in a single block, located more than 32m from the edge of the water course.
 - No sites recorded.
 - b. Water will be provided via a pipeline from an active borehole (fig 11) located on the other side of a dry watercourse (24°47'1.46"S, 31°25'6.21"E). The pipeline will follow the existing road (fig 12) to the bush breakfast/braai site and will include a crossing of the non-perennial water course (24°47'2.17"S, 31°25'4.73"E). An electric cable will be included in with the water pipeline.
 - No sites recorded.
 - c. Water will be stored in tanks in the roof of the ablution facility.
 - d. Wastewater will be disposed of via a French Drain and soak-away system located outside the buffer of the water course.
 - No sites recorded

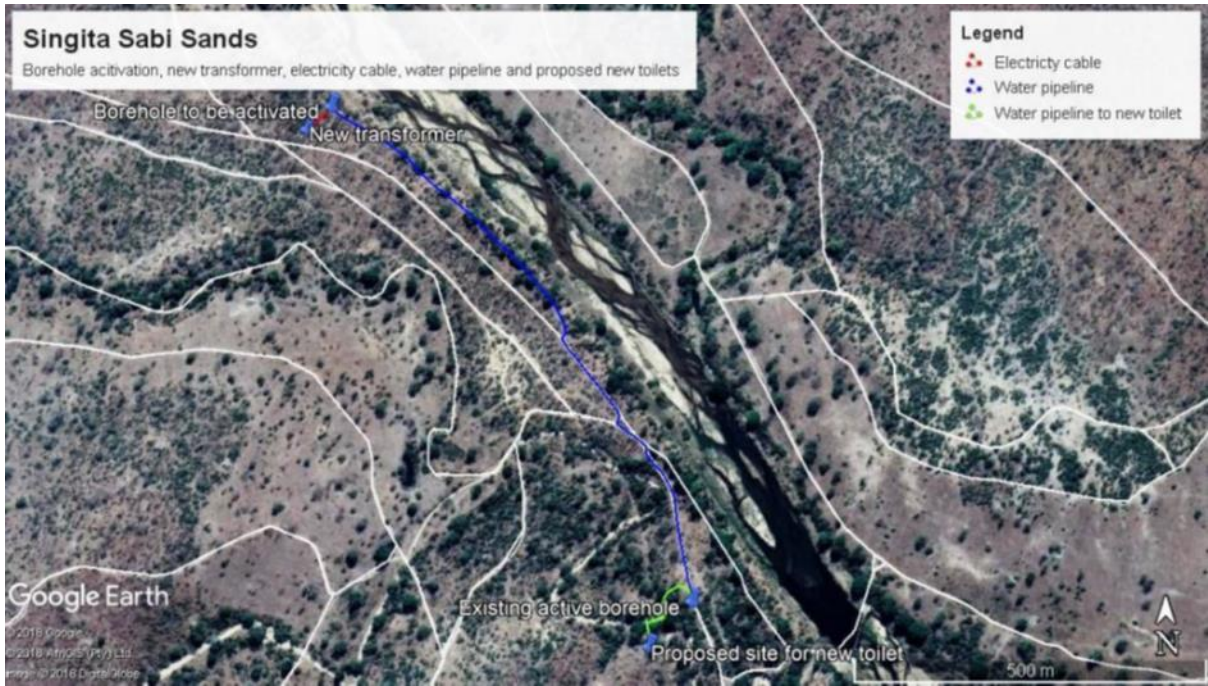


FIGURE 10 THE LOCALITY OF THE BOREHOLE TO BE ACTIVATED, THE ASSOCIATED NEW TRANSFORMER AND ELECTRICAL CABLE (RED), NEW WATER PIPELINE (BLUE), PROPOSED NEW TIOLET AND WATER PIPELINE (GREEN). (Taken from Zunckel, 2019)



FIGURE 11 THE EXISTING BOREHOLE



FIGURE 12 THE PIPELINE WILL FOLLOW THE EXISTING ROAD TO THE BUSH BREAKFAST/BRAAI SITE.

PROPOSED DEVELOPMENT NODE 2

2. The activation of an existing borehole (fig 21) and its servicing with electricity and water pipes to augment supply to the lodges (24°46'38.83"S, 31°24'48.05"E) (see figure 10):
 - a. Electricity will be provided by an existing subterranean electrical line (figs 13, 14 & 22), but which will require an additional transformer and connection (24°46'39.90"S, 31°24'46.86"E).

SITE SSS-01

Point 13:

-24.778011, 31.413124

24°46'40.84"S, 31°24'47.25"E

(figures 16 & 17)

Site type: Archaeological

Site period: Middle Stone Age

Physical description: The site consists of a small amount of stone tools visible on the surface of the road cutting.

Integrity: Low

Site extend: Limited to an area of <1m

Field rating: Generally Protected C [Low significance, no further action]

General statement of significance: Low

Statement of impact: Destruction

	<i>Without mitigation</i>	<i>With mitigation</i>
Construction phase		
Probability	Very probable (1)	Very probable (1)
Duration	Very short term (1)	Very short term (1)
Extent	Limited to site (1)	Limited to site (1)
Magnitude	Moderate (6)	Moderate (6)
Significance of impact	7 (Low)	7 (Low)

Recommended mitigation: None

A small amount (3) Middle Stone Age tools (fig 15) are visible on the surface of the road cutting. It must be noted that the tools are neither in an *in situ* deposit or of a good quality (they resemble incompletely manufactured tools).



FIGURE 13 A STAFF MEMBER INDICATING THE POSITION OF THE EXISTING SUBTERRANEAN ELECTRICAL LINE

SITE SSS-02

Point 14:

-24.778069, 31.413420

24°46'41.05"S,31°24'48.31"E

(figures 16 & 17)

Site type: Archaeological

Site period: Early & Middle Stone Age

Physical description: The site consists of a single chopper visible on the surface of the road cutting.

Integrity: Low

Site extend: Limited to ESA and one MSA tool

Field rating: Generally Protected C [Low significance, no further action]

General statement of significance: Low

Statement of impact: Destruction

	<i>Without mitigation</i>	<i>With mitigation</i>
Construction phase		
Probability	Very probable (1)	Very probable (1)
Duration	Very short term (1)	Very short term (1)
Extent	Limited to site (1)	Limited to site (1)
Magnitude	Moderate (6)	Moderate (6)
Significance of impact	7 (Low)	7 (Low)

Recommended mitigation: None

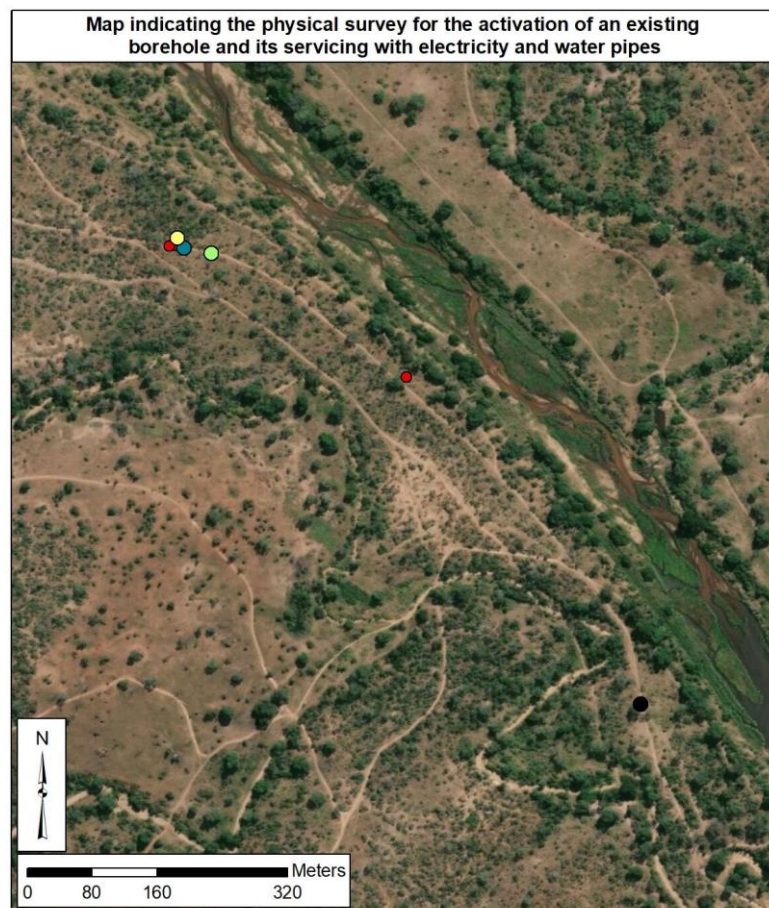
One ESA Oldowan chopper (fig 18) and one MSA tool (fig 19) were visible on the surface of the road cutting (fig 17). It must be noted that the tools were not found in an *in situ* deposit.



FIGURE 14 THE ROUTE OF THE PIPELINE INDICATED IN BLUE.



FIGURE 15 THREE INCOMPLETELY MANUFACTURED MSA TOOLS.



Legend

- Surveyed Points
- Existing transformer- Start of proposed development
- ESA lithics visible in existing road cutting
- Stone Age lithics
- End of proposed development

FIGURE 16 MAP INDICATING THE POSITION OF THE TWO STONE TOOLS.

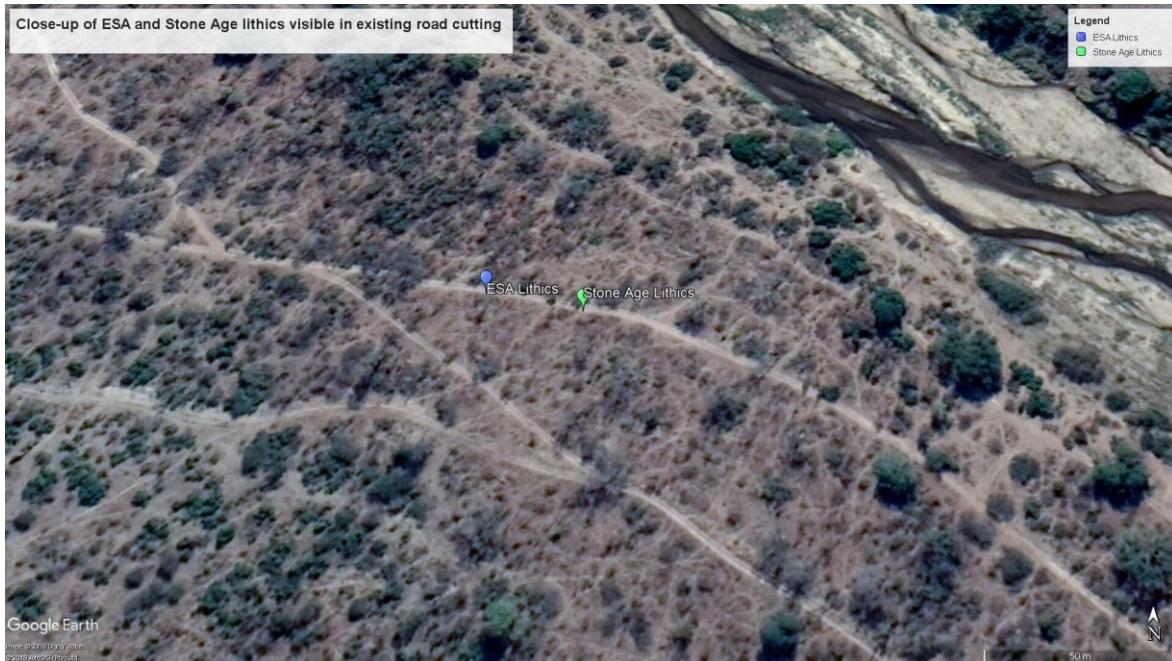


FIGURE 17 CLOSE-UP OF THE AREAS WHERE THE ESA AND OTHER LITHICS WERE FOUND.

Both SSS-01 and SSS-02 lie within a drainage system (fig 20) and it is plausible that these tools have moved via hydro action down the system towards the river (as discussed under the literature and background studies elsewhere in this report). Therefore, neither of these sites are deemed of any site integrity.



FIGURE 18 ESA OLDAWAN LITHIC TOOL.



FIGURE 19 A MSA TOOL FOUND AT SITE SSS-02

It is recommended that both SSS-01 and SSS-02 can be destroyed and that the developer applies for a Destruction Permit.

b. A trench of just more than 45m will need to be dug by hand through undisturbed natural vegetation (fig 22). It will be 30cm wide and approximately 60cm deep.

- No sites recorded.

Site Drainage Map

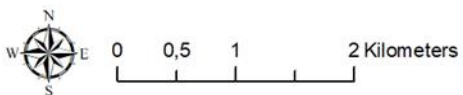


FIGURE 20 MAP OF THE DRAINAGE SYSTEM AT SINGITA SABI SANDS INDICATING THE POSITION OF SSS-01 & SSS-02 (data: SSW Conservation Department, 2019)



FIGURE 21 EXISTING BOREHOLE TO BE ACTIVATED.



FIGURE 22 THE ROUTE THE TRENCH WILL FOLLOW, THROUGH NATURAL VEGETATION.

PROPOSED DEVELOPMENT NODE 3

3. A fibre optic cable (FOC) will be installed from Castleton to Ebony Lodge over a distance of approximately 7km (start point - 24°49'55.05"S and 31°26'31.21"E, mid-point - 24°48'37.92"S and 31°25'53.55"E, end-point - 24°47'13.92"S and 31°25'34.06"E) (see Figures 23 & 24):



FIGURE 23 THE ROUTE OF THE FIBRE OPTIC CABLE FROM CASTLETON TO EBONY LODGE VIA THE TERMINAL BUILDING (Taken from Zunckel 2019).



FIGURE 24: ZOOM INTO THE FOC ROUTE TO EBONY LODGE SHOWING THE ELECTRICITY CABLE FROM AN EXISTING TRANSFORMER TO THE TERMINAL BUILDING (RED) AND THE WATER PIPELINE FROM THE PUMPED PAN TO THE TERNIMAL BUILDING (BLUE) (Taken from Zunckel 2019).

a. The trench required for the installation will be 30cm wide and 60cm deep, except for the three water course crossings where it will be sunk to 100cm and will be secured to gabions (fig 27)(24°49'38.22"S, 31°26'7.06"E; 24°48'50.78"S, 31°25'55.21"E and 24°48'38.45"S, 31°25'53.47"E).

b. The trenching will be immediately adjacent to existing roads except for approximately 3km where it will follow an existing tracer belt that runs parallel to the Ebony – Castleton road.
- No sites were recorded.

c. It will branch off this route to follow existing roads to the terminal building on the landing strip after which it will follow the road adjacent to the landing strip (fig 26) moving north. The one exception to this is a relatively short length of approximately 230m where the cable will go through natural vegetation (fig 25) from 24°48'11.75"S, 31°25'29.62"E to 24°48'10.53"S, 31°25'21.96"E.

- No sites were recorded

d. Manholes will be installed approximately every 100m, i.e. approximately 78 manholes, along the length of the FOC.

- No sites were recorded.

e. At the northern end of the landing strip it will branch off adjacent to an existing road to service the boom gate, while also branching off adjacent to an existing road to the guest arrivals point at Ebony Lodge.

- No sites were recorded.



FIGURE 25 THE AREA OF NATURAL VEGETATION THROUGH WHICH THE FOC WILL PASS.



FIGURE 26 THE FOC WILL FOLLOW THE EXISTING ROAD FROM THE AIRSTRIP TO EBONY LODGE. THE AIRSTRIP IS TO THE RIGHT OF THE ROAD.

f. From here, it will follow the route of existing cabling through a watercourse ($24^{\circ}47'13.91''S$, $31^{\circ}25'33.27''E$) and into the entry point at the Lodge.

- No sites were recorded.



FIGURE 27 EXISTING GABBIONS THAT COVER THE EXISTING CABLING.

g. Together with the FOC will be an electricity cable that will run in the same trench from an existing transformer near Ebony Lodge (24°47'19.49"S, 31°25'35.57"E) and to the terminal building.

h. A new water pipeline will be installed from a pumped pan at the northern end of the airstrip (24°47'40.88"S, 31°25'18.73"E), using the same trench as the FOC and ending at the terminal building. An addition portion of trenching for approximately 90m will be required from the pan to the FOC trench.

- No sites were recorded.

PROPOSED DEVELOPMENT NODE 4

4. The following components at Ebony Lodge (see Figure 28):



FIGURE 28 THE LOCALITY OF THE PROPOSED NEW STAFF ABLUTIONS AND HOUSES AT EBONY LODGE, THE NEW GYM AND RAISED BOARDWALK (IN LIGHT YELLOW) AND THE PROPOSED NEW BOMA AT BOULDERS LODGE (taken from Zunckel 2019).

a. Four (4) additional staff ablution facilities at Ebony Lodge varying in size from 4.04m² to 12.33m² and totalling 32.65m². All are within 32m of an adjacent watercourse.

- Does not trigger NHRA, as it was built in the 1970s.

b. A new guest gym facility just to the north of the existing boutique shop and wine cellar (24°47'18.69"S, 31°25'37.88"E) covering an area of 215m². A new raised boardwalk will connect the new gym with both Ebony and Boulders Lodges (see Figure 28).

- Visibility was poor due to tall grass cover. An additional visit after vegetation clearance is recommended.

c. Three new staff houses of 63m² and 2 x 48m² at 24°47'14.67"S, 31°25'25.62"E and 24°47'15.08"S, 31°25'23.02"E respectively. The latter coordinates are for an existing staff house against which the two news ones are to be built to the north and south of the existing one.

- Does not trigger NHRA, as it was built in the 1970s.

d. A new Lapa of 70m² at 24°47'16.91"S and 31°25'22.68"E.

- No sites recorded. The site is heavily disturbed and currently already used as a lapa.

e. An additional room of 56m² to an existing house at 24°47'15.99"S and 31°25'22.68"E.

- Does not trigger NHRA, as it was built in the 1970s.

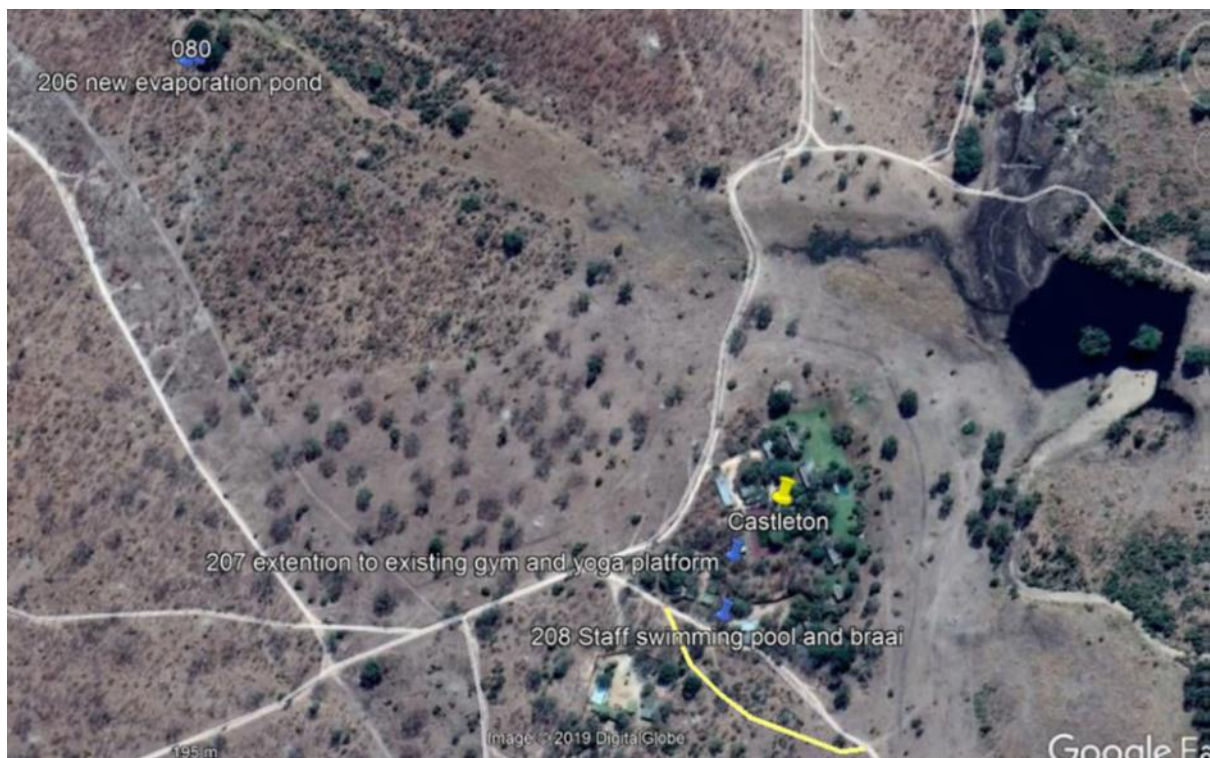
PROPOSED DEVELOPMENT NODE 5

5. A new boma of 180m² including guest ablution facilities (24°47'13.50"S, 31°25'41.75"E) at Boulders Lodge (see figure 28).

- No sites recorded.

PROPOSED DEVELOPMENT NODE 6

6. Additional facilities at the Castleton Camp including (see figure 29):



**FIGURE 29: PROPOSED ADDITIONS TO CASTLETON WITH THE NEW ROAD IN LIGHT YELLOW.
(taken from Zunckel 2019)**

- a. New evaporation pond for wastewater treatment (24°49'43.63"S, 31°26'19.56"E).
- No sites recorded.
- b. Convert existing treatment room into reception area and store. Add additional 2x new treatment rooms under existing trees totalling 40m² (24°49'54.99"S, 31°26'35.50"E).
- Does not trigger NHRA.
- c. Extend existing gym to create additional workout space totalling 40m² (24°49'55.16"S, 31°26'33.76"E).
- d. Link new gym extension to yoga platform under trees totalling 16m² (24°49'55.35"S, 31°26'33.78"E).

SITE SSS-03

-24.832042, 31.442717

24°49'55.35"S 31°26'33.78"E

(Figure 30)

Site type: Archaeological

Site period: possibly Early Iron Age

Physical description: The site consists of various discarded historical objects such as glass bottle pieces, metal items, etc. Two possible decorated Mzonjani Facies pot shards were also visible on the surface and falling down a slope towards the tennis courts.

Integrity: Low/Medium

Site extend: 5m x 5m

Field rating: Generally Protected A [High/Medium significance, mitigation]

General statement of significance: Medium

Statement of impact: Destruction

	<i>Without mitigation</i>	<i>With mitigation</i>
<i>Construction phase</i>		
<i>Probability</i>	<i>Very probable (1)</i>	<i>Very probable (1)</i>
<i>Duration</i>	<i>Very short term (1)</i>	<i>Very short term (1)</i>
<i>Extent</i>	<i>Limited to site (1)</i>	<i>Limited to site (1)</i>
<i>Magnitude</i>	<i>Moderate (8)</i>	<i>Moderate (8)</i>
<i>Significance of impact</i>	<i>10 (Low)</i>	<i>10 (Low)</i>

Recommended mitigation: Watching brief and/or augering



FIGURE 30 THE YELLOW MARKER INDICATES THE POSITION WHERE THE POTTERY WAS FOUND.

This site has complex issues. On one side of the site, several historical objects (figs 31 & 33) were visible, on the opposite side a few pieces of ceramics (fig 34, 35 & 36) with decorations resembling those of the Mzonjani Facies (fig 37) were found in scattered areas (fig 39), along with several undecorated pieces (fig 38). This site is well within the distribution range of this type of pottery. Other sites in the broader region associated with the Mzonjani Facies include Eiland Salt Works (390-435 A.D.), Lydenburg (605-660 A.D.), Plaston (675 A.D.), Burgersfort (675 A.D.), Riverside (535 A.D.) (Huffman, 2007).

The site of this proposed development is immediately adjacent to the current building (fig 32) housing the gym. It is suspected that some Iron Age material was disturbed during the construction of this building. There is, however, no other signs of an archaeological site nor were there any artefacts visible *in situ* in the embankment leading down to the swimming pool (fig 40). Two undecorated pieces were, however, found on the surface of the embankment. As such, the precise location of the origin of the pottery pieces could not be confirmed. As seen below the area has a complex recent history with a series of negative impacts.

While on site, the archaeologist enquired if there was any staff member or any other person familiar with the area and a long serving staff member, Mrs Rebecca Mayane, was called for a brief interview. She indicated that this was the area where a boiler for heating water was situated in the 1970s until 1998. A pipe took the heated water from here to the guest accommodation. She further informed us that the area was also used as a general rubbish dump during those times.

Mrs Mayane further stated that there was, to her knowledge, no homesteads in the area of Castleton Lodge before the Lodge was built.

When she was shown the pieces of ceramics, she quickly stated that it was pieces of decorative pots that use to be displayed in the Lodge lounge that were dumped on the rubbish heap once they got broken. This adds an extra layer of complexity to this site.



FIGURE 31 METAL NAIL FOUND AT SSS-03



FIGURE 32 THE AREAS WHERE CERAMICS WERE FOUND ON THE SURFACE.



FIGURE 33 GLASS BOTTLE PIECE FOUND AT SSS-03



FIGURE 34 TWO POTTERY PIECES FOUND TOGETHER AT SSS-03



FIGURE 35 CLOSE-UP OF A DECORATED SHARD



FIGURE 36 SECOND DECORATED PIECE OF CERAMIC FOUND AT SSS-03.



FIGURE 37 IMAGES OF MZONJANI FACIES CERAMICS, TAKE FROM HUFFMAN (2007) TO INDICATE THE SIMILARITY TO THOSE FOUND AT SSS-03.



FIGURE 38 MORE POTTERY PIECES FOUND ON THE SURFACE OF THE TENNIS COURT EMBANKMENT AT SSS-03



FIGURE 39 INDICATES THE AREAS WHERE THE POTTERY AND HISTORICAL ARTEFACTS WERE FOUND. THE BLUE ARROW SHOWS WHERE THE SLOPE WAS CUT VERTICALLY IN ORDER TO BUILD TENNIS COURTS.



FIGURE 40 THE VERTICLE EMBANKMENT CUT INTO THE GROUND DURING THE CONSTRUCTION OF THE TENNIS COURT.

It is recommended that an archaeologist familiar with the Iron Age attend to a watching brief during any ground breaking activities. A series of augering tests can also be conducted before the watching brief. If any subsurface deposits are found, activities will need to be stopped and a permit from SAHRA be applied for, for further mitigation in the form of test pit excavations.

e. A staff swimming pool and braai facility totalling approximately 60m² (24°49'56.60"S, 31°26'33.42"E).

- No sites were found.

f. A new gravelled road of 192m x 3m (start 24°49'56.43"S, 31°26'31.88"E; mid 24°49'58.96"S, 31°26'33.99"E; end 24°49'59.76"S, 31°26'37.03"E) (fig 41).

- No sites were found.

It is necessary to mention that though all efforts were made to cover the total area and therefore to identify all possible sites or features of cultural (archaeological and/or historical) heritage origin and significance, that there is always the possibility of something being missed.



FIGURE 41 THE AREA WHERE THE NEW GRAVEL ROAD IS PROPOSED TO BE BUILT

This should be kept in mind when development work commences and if any sites (incl. unmarked or unknown low stone-packed graves) are identified the following 'Chance find Procedure' should be followed:

- Upon finding any archaeological or historical material all work at the affected area must cease.
- The area should be demarcated in order to prevent any further work there until an investigation has been completed.
- An archaeologist should be contacted immediately to provide advice on the matter.
- Should it be a minor issue, the archaeologist will decide on future action, which could include adapting the HIA or not. Depending on the nature of the find, it may include a site visit.
- SAHRA's APM Unit may also be notified.
- If needed, the necessary permit will be applied for with SAHRA. This will be done in conjunction with the appointed archaeologist.
- The removal of such archaeological material will be done by the archaeologist in lieu of the approval given by SAHRA, including any conditions stipulated by the latter.
- Work on site will only continue after removal of the archaeological/ historical material was done.

The above protocol has been taken from van Vollenhoven (2018).

9. CONCLUSIONS AND RECOMMENDATIONS

ACT was appointed by Emross Consulting (Pty) Ltd to undertake a Phase 1 HIA for the proposed installation of a Fibre Optic Cable, development of ablution facilities, the activation of a borehole with associated electrical and water reticulation, construction of an evaporation pond and various renovations and additions to be established on portions of the Ravenscourt Ranch, Sabi Sands Game Reserve.

Three sites of archaeological potential were identified during the physical survey phase of the project, two Stone Age sites and one potential EIA site. Due to the nature of the Stone Age site, it is recommended that these sites might be impacted on once the developer has applied for a Destruction Permit from SAHRA. Due to the uncertain nature of the EIA site, it is recommended that an archaeologist with Iron Age experience attend to a watching brief during any ground breaking activities when the gym is extended, and the yoga platform is erected. A series of augering tests is also suggested before ground breaking commences. This will assist in establishing if there are any sub surface archaeological deposits.

It is recommended that the series of developments for which this HIA was undertaken can proceed once the recommendations have been implemented.

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ANNEXURE 1

ADDITIONAL PHOTOS OF THE DEVELOPMENT AREA



Position for the new transformer and where the electricity cable will be trenched through untransformed indigenous vegetation (© K Zunckel).



Looking north from the junction point to the pumped pan (© K Zunckel).



Looking south along the eastern service road adjacent to the airstrip. (© K Zunckel).



View to the south west from the junction point to the boom gate (© K Zunckel).



The view looking west from the Pangolin North Road towards the terminal building (© K Zunckel).



Looking north up the tracer belt from the point at which the FOC route emerges just before Castleton (© K Zunckel)



View of the site for the proposed gym at Ebony Lodge looking to the north west of the existing road (© K. Zunckel).



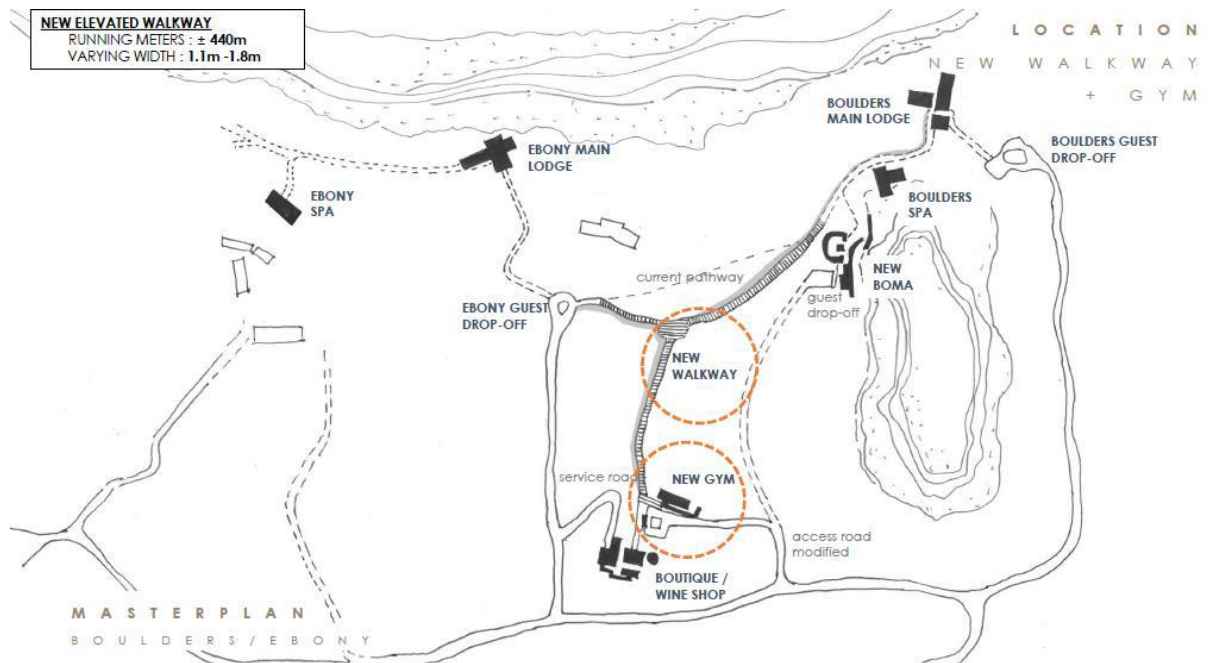
View of the site for the proposed gym at Ebony Lodge looking to the south east of the existing road (© K. Zunckel).



Looking across the existing evaporation pond up slope towards the locality of the proposed new pond (© K. Zunckel).

ANNEXURE 2

PROPOSED LAYOUTS/DESIGNS OF THE PROJECTS



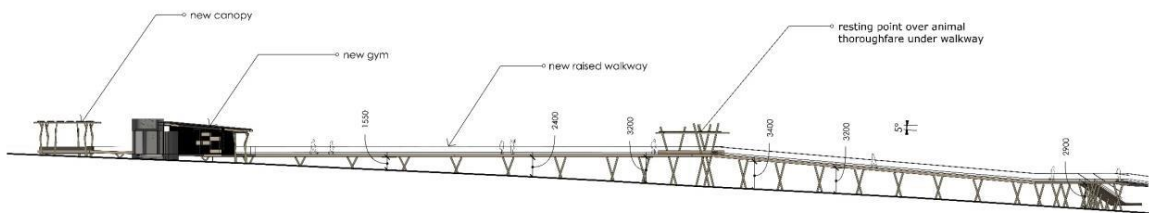
The locality for the proposed new gym and raised walkway at Ebony Lodge



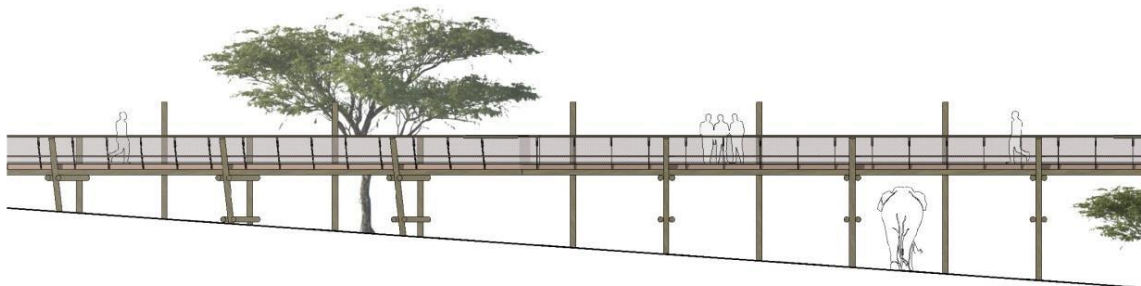
The proposed layout for the new gym at Ebony Lodge, in relation to the existing boutique and wine shop.



Artist's impression of the proposed new gym viewed from the north.

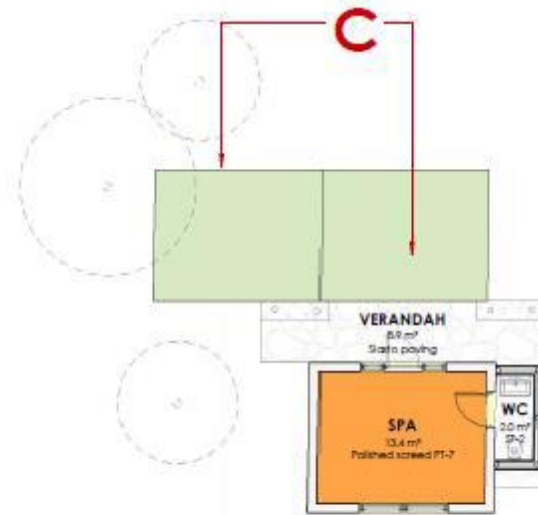


PARTIAL ELEVATION: EAST
SCALE 1:350



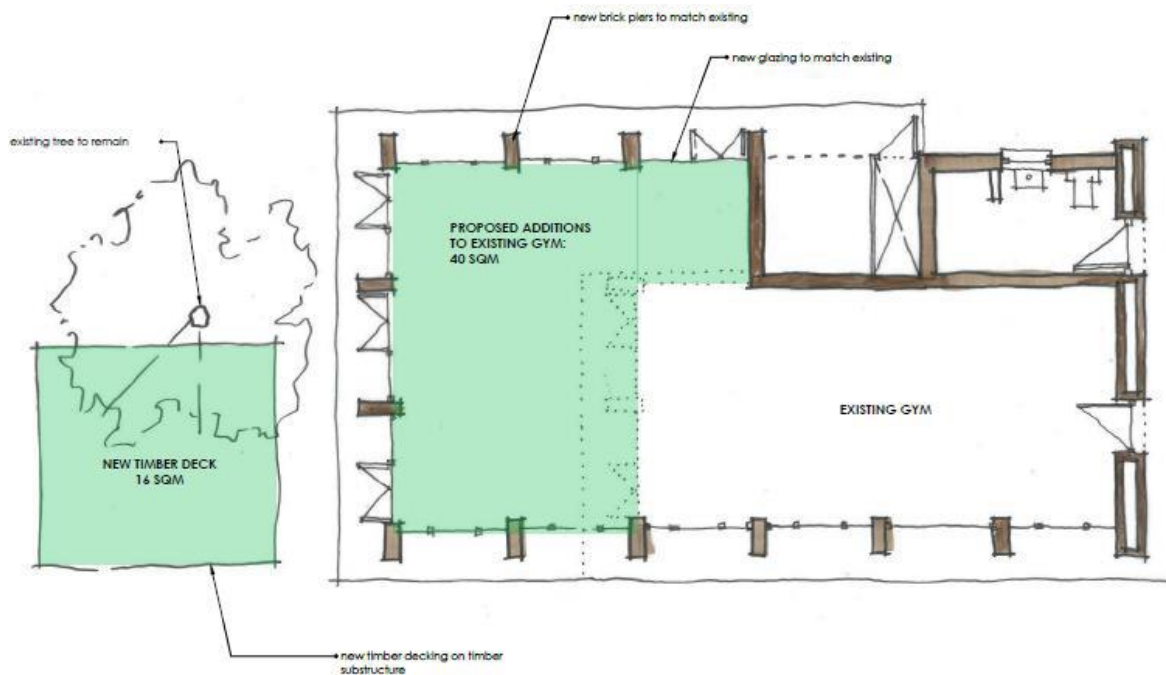
PARTIAL ELEVATION: DESIGN INTENT
SCALE 1:100

Artist's impression of the proposed new raised wooden boardwalk linking Ebony and Boulders Lodges via the new boma (© GAPP).



SPA - FLOOR PLAN
SCOPE OF WORKS
1:100

The floor plan showing the proposed two new treatments rooms in front of the existing spa at Castleton Lodge



GYM: PROPOSED ALTERATIONS & ADDITIONS (NTS)

AREA: PROPOSED ADDITIONS
40 SQM (gym)
16 SQM (deck)



Plan view of proposed extension to existing gym and new yoga platform.

ANNEXURE 3

METHODOLOGY OF ASSESSMENT OF POTENTIAL IMPACTS

All impacts identified during the EIA stage of the study will be classified in terms of their significance. Issues were assessed in terms of the following criteria:

- The nature, a description of what causes the effect, what will be affected and how it will be affected;
- The physical extent, wherein it is indicated whether:
 - 1 - the impact will be limited to the site;
 - 2 - the impact will be limited to the local area;
 - 3 - the impact will be limited to the region;
 - 4 - the impact will be national; or
 - 5 - the impact will be international.
- The duration, wherein it is indicated whether the lifetime of the impact will be:
 - 1 - of a very short duration (0–1 years);
 - 2 - of a short duration (2-5 years);
 - 3 - of a medium-term (5–15 years);
 - 4 - of a long term (> 15 years); or
 - 5 - permanent.
- The magnitude of impact, quantified on a scale from 0-10, where a score is assigned:
 - 0 - small and will have no effect;
 - 2 - minor and will not result in an impact;
 - 4 - low and will cause a slight impact;
 - 6 - moderate and will result in processes continuing but in a modified way;
 - 8 - high, (processes are altered to the extent that they temporarily cease); or
 - 10 - very high and results in complete destruction of patterns and permanent cessation of processes;
- The probability of occurrence, which describes the likelihood of the impact actually occurring and is estimated on a scale where:
 - 1 - very improbable (probably will not happen);
 - 2 - improbable (some possibility, but low likelihood);
 - 3 - probable (distinct possibility);
 - 4 - highly probable (most likely); or
 - 5 - definite (impact will occur regardless of any prevention measures);
- The significance, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The status, which is described as either positive, negative or neutral;
 - The degree to which the impact can be reversed;
 - The degree to which the impact may cause irreplaceable loss of resources; and
 - The degree to which the impact can be mitigated.

The significance is determined by combining the criteria in the following formula:

$S = (E+D+M) \times P$; where:

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

Points	Significance Weighting	Discussion
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.
31-60 point	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.

Taken from Coetzee (2018).

ANNEXURE 4**ARCHAEOLOGICAL SEQUENCE**

PERIOD	APPROXIMATE DATES
Earlier Stone Age	more than 2 million years ago to >200 000 years ago
Middle Stone Age	<300 000 years ago to >20 000 years ago
Later Stone Age (Includes hunter-gatherer rock art)	<40 000 years ago up to historical times in certain areas
Early Iron Age	c. AD 200 - c. AD 900
Middle Iron Age	c. AD 900 – c. AD 1300
Late Iron Age (Stonewalled sites)	c. AD 1300 - c. AD 1840 (c. AD 1640 - c. AD 1840)

ANNEXURE 5

Evaluation of Heritage sites

The evaluation of heritage sites is done by giving a field rating of each using the following criteria:

- The unique nature of a site
- The integrity of the archaeological deposit
- The wider historic, archaeological and geographic context of the site
- The location of the site in relation to other similar sites or features
- The depth of the archaeological deposit (when it can be determined or is known)
- The preservation condition of the site
- Uniqueness of the site and
- Potential to answer present research questions

Taken from van Vollenhoven (2018).