

**Phase 1 Heritage Impact Assessment of a proposed new
industrial development on the farm Waterval 168, Sabie,
Mpumalanga Province.**

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Summary

At the request of Greenbox Environmental Consultants a Phase 1 Heritage Impact Assessment was carried out for a proposed new 170 ha industrial park development on the farm Waterval 168, situated in Sabie, Mpumalanga Province. Sabie lies within the outcrop area of the late Archaean Black Reef Formation, located within the basal part of the Transvaal Supergroup. Superficial sediments within the study area are made up of colluvium and unconsolidated residual soils. Outcrop visibility is generally very poor given the intensive forestry development, while the site has also been severely degraded by the tree-planting activities. There are no evident signs of *in situ* Stone Age archaeological sites or scatters, prehistoric structures or historically significant structures older than 60 years. A small informal graveyard (GPS coordinates 25° 4'31.49"S, 30°48'13.15"E) with at least 10 graves and several modern-built, but dilapidated dwellings were recorded during the survey. As far as the overall palaeontological heritage is concerned, likelihood of palaeontological impact resulting from this development is considered low, given the disturbed terrain and lack of suitable fossil-bearing rock. However, it is recommended that should any fossils be uncovered within intact sedimentary rocks during the development, a suitably qualified palaeontologist must evaluate the finds or monitor the exposed areas as soon as possible. It is evident that all potential aboveground or subsurface archaeological remains will have been destroyed by the intensive forestation activities. As far as the archaeological heritage is concerned, the proposed development footprint is considered to be of low archaeological significance. Provided that the graveyard is properly maintained, permanently fenced off and protected by a 10 m no-go buffer zone during planned construction activities, the development footprint is assigned a site rating of Generally Protected C.

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Introduction

At the request of Greenbox Environmental Consultants a Phase 1 Heritage Impact Assessment was carried out for a proposed new 170 ha industrial park development on the farm Waterval 168, situated in Sabie, Mpumalanga Province (**Fig. 1**). South Africa's unique and non-renewable heritage is 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999) and may not be disturbed at all without a permit from the relevant heritage resources authority. The NHRA requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology older than 100 years, shipwrecks, battlefields, graves, and structures over 60 years of age, living heritage and the collection of oral histories, historical settlements, landscapes, geological sites, palaeontological sites and objects. The Act identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this regard, categories of development listed in Section 38 (1) of the NHR Act are:

- The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;
- Any development or other activity which will change the character of the site;
- Exceeding 5000 m² in extent;
- Involving three or more existing erven or subdivisions thereof;
- Involving three or more subdivisions thereof which have been consolidated within the past five years;
- Costs of which will exceed a sum set in terms of regulations by the South African Heritage Resources Agency (SAHRA).
- The rezoning of a site exceeding 10 000 m².
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

Methodology

The affected areas were evaluated on the basis of existing field data, database information, maps and published literature. This was followed up by a field assessment (pedestrian survey of each locality). A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Relevant heritage information, aerial photographs (Google Earth) and site records were consulted and integrated with data acquired during the site visit. A site visit was conducted over the weekend of 12 May 2018.

Terms of reference:

- Identify and map potential heritage sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

Field Rating

Site significance classification standards, as prescribed by SAHRA, were used for the purpose of this report (**Table 1**).

Description of the Affected Area

Locality data

1 : 50 000 scale topographic map 2530BB Sabie

1:250 000 scale geological map 2530 Nelspruit

General site coordinates: 25° 4'47.54"S 30°48'4.23"E

The site consist of 170 ha of undulating forestry land, located next to the R532 provincial road on the farm Waterval 168, about 2.5 km northeast of the Sabie CBD (**Fig. 2 & 3**).

Background

Palaeontology

Sabie lies within the outcrop area of the late Archaean Black Reef Formation, located within the basal part of the Transvaal Supergroup (Erikson *et al.* 2006) (**Fig. 4**) The

underlying bedrock is represented by siliciclastic sediments made up of sandstones, minor mudrocks and conglomerates, deposited during a fluvial to shallow marine transition as an epeiric sea advanced onto the Kaapvaal Craton around 2600 Ma ago (Button 1973). colluvium and unconsolidated residual soils.

The Black Reef Formation has traditionally been regarded as a time equivalent of the stromatolitic – bearing Vryburg Formation in Griqualand West (SACS, 1980), but recent radiometric age dating of the overlying Oaktree Formation, suggest that disconformities hidden above and within the Black Reef Formation may contradict such a correlation (Walraven and Marlini 1995). The Black Reef Formation is considered to be of low palaeontological sensitivity, although it is possible, albeit very small, that micro-fossils contained in stromatolitic carbonates could be associated with this rock unit. There is currently no record of Quaternary vertebrate fossils or sites in the region and the likelihood of impact on such remains resulting from the proposed development is considered to be very low.

Archaeology

The archaeological footprint of the region include a Stone Age, rock art, Iron Age as well as historical remains represented by stone tool assemblage sites Iron Age structures mines and battlefield sites (Bergh 1999) (**Fig. 5 & 6**). Sabie was originally established on the farm Grootfontein and formed part of the famous gold-rush of the 1880's. The first commercial trees were planted in 1876 which led to vast forestation schemes in the area over the last 150 years.

Field Assessment

Outcrop visibility is generally very poor given the intensive forestry development, while the site has also been severely degraded by the tree-planting activities (**Fig. 7**). There are no evident signs of *in situ* Stone Age archaeological sites or scatters, prehistoric structures or historically significant structures older than 60 years. A small informal graveyard (GPS coordinates 25° 4'31.49"S 30°48'13.15"E) with at least 10 graves and several modern-built, but dilapidated dwellings were recorded during the survey (**Fig. 8 - 10**).

Impact Statement and Recommendation

Potential impacts are summarized in **Table 2**. The proposed development is expected to primarily affect palaeontologically insignificant Quaternary overburden, made up

of severely degraded residual soil and alluvium, and siliciclastic sediments associated with Black Reef Formation of the Transvaal Supergroup. As far as the overall palaeontological heritage is concerned, likelihood of palaeontological impact resulting from this development is considered low, given the disturbed terrain and lack of suitable fossil-bearing rock. However, it is recommended that should any fossils be uncovered within intact sedimentary rocks during the development, a suitably qualified palaeontologist must evaluate the finds or monitor the exposed areas as soon as possible.

It is evident that all potential aboveground or subsurface archaeological remains will have been destroyed by the intensive forestation activities. As far as the archaeological heritage is concerned, the proposed development footprint is considered to be of low archaeological significance. Provided that the graveyard is properly maintained, permanently fenced off and protected by a 10 m no-go buffer zone during planned construction activities, the development footprint is assigned a site rating of Generally Protected C.

References

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project and have no conflicting interests in the undertaking of the activity.

A handwritten signature in black ink, appearing to read 'L. Rossouw', written in a cursive style.

18 / 05 / 2018

Tables and Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	Grade	Significance	Mitigation
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

Table 2. Summary of potential impacts.

Geological Unit	Rock types and Age	Potential Palaeontological / Archaeological heritage in region	Palaeontological significance	Archaeological significance	Development Impact	Heritage Impact after survey
Regolith	Alluvium, residual soils. Quaternary to Recent	Rare (localized) large vertebrate skeletal remains, coprolites, microfossils, in alluvial or lacustrine (pan) contexts; Intact or uncapped stone tool assemblages, Rock art, Prehistoric structures (Iron Age); Historical structures; Graves/graveyards	Low	High	High	Low
Black Reef Formation (Transvaal Supergroup)	Sandstones, minor mudrocks and conglomerates, deposited during a fluvial to shallow marine transition. Late Archaean	Rare chance of stromatolitic carbonates	Low	Low	High	Low

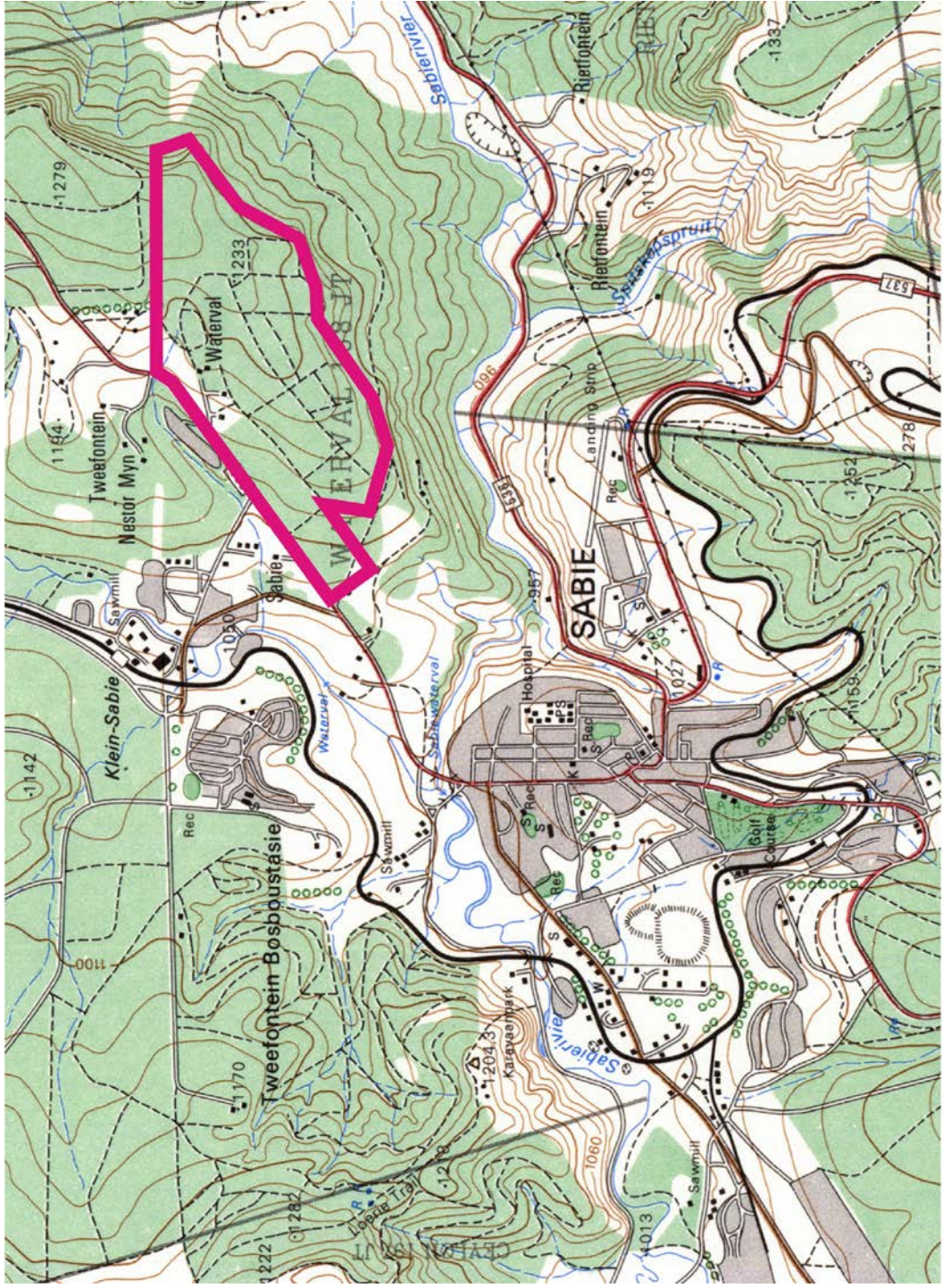


Figure 1. Map of the proposed development footprint (portion of 1:50 000 scale topographic map 2530 BB Sabie).



Figure 2. Aerial view of the site.



Figure 3. General view of the site, looking east (top left) and north center below).

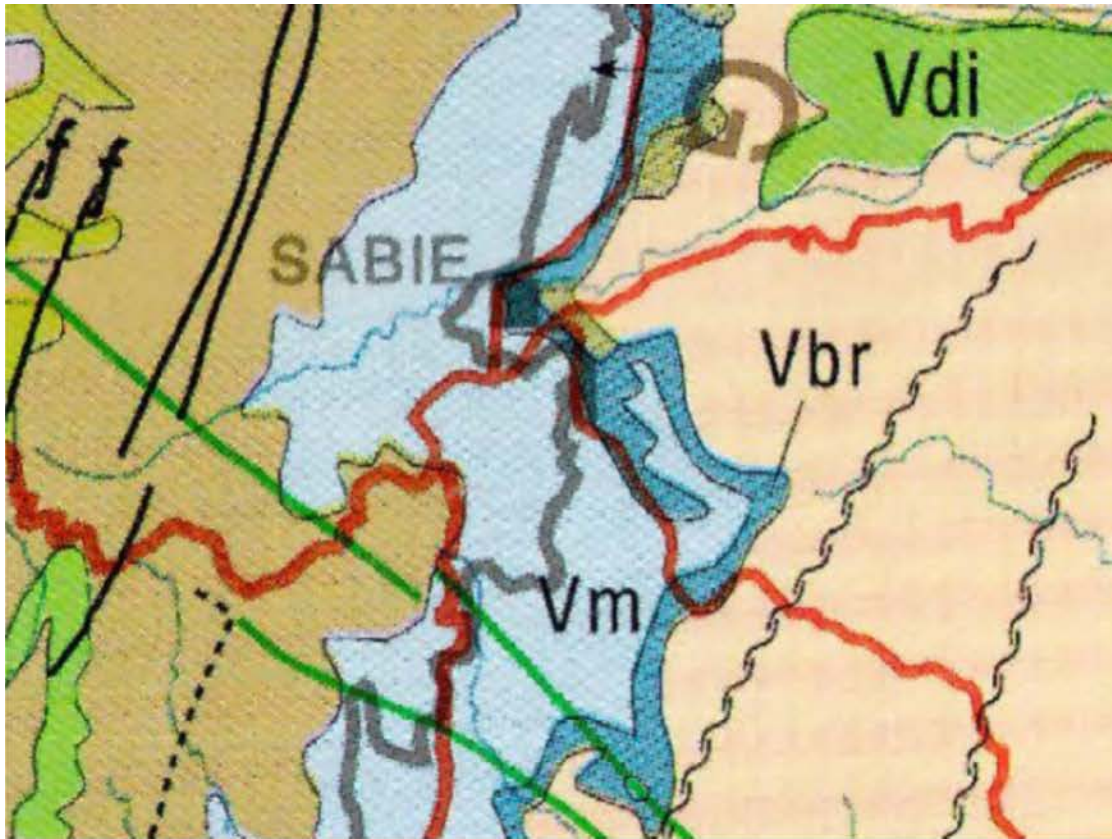


Figure 4. Geological map of the region (portion of 1: 1 000 000 scale geological map of South Africa) showing Sabie located on Transvaal Supergroup, Black Reef Formation outcrop (*Vbr*). Weathered sandstone and conglomerate exposed south of the study area.
Scale 1 = 10 cm.



Figure 5. Portion of maps showing recorded Stone Age (nos. 16-19, above) and rock art sites (circles = paintings / squares = engravings, below) in the region. (map after Bergh 1999)

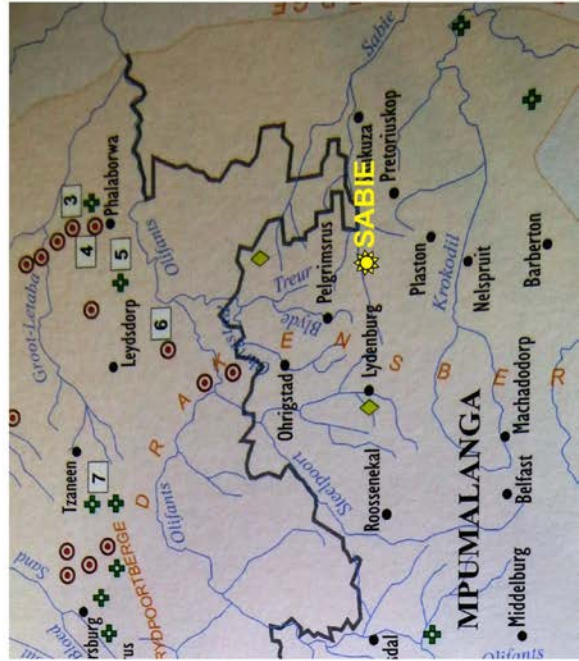
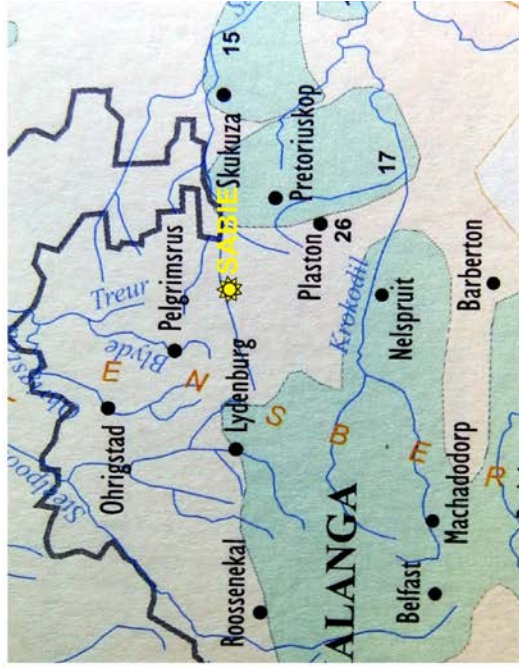


Figure 6. Portion of maps showing recorded Early Iron Age (nos. 11, 12 & 14, above left), Late Iron Age (nos. 15, 17 & 27, above right) and archaeo-metallurgy sites (circles = copper / crosses = iron / diamond = gold) in the region. (map after Bergh 1999).



Figure 7. Outcrop visibility is generally very poor given the intensive forestry development, while the site has also been severely degraded by the tree-planting activities.



Figure 8. Remains of modern-built, but dilapidated dwellings recorded during the survey.



Figure 9. A small informal graveyard (GPS coordinates 25° 4'31.49"S 30°48'13.15"E) containing at least 10 graves.



Figure 10. Dated grave headstones.