

**Phase 1 Archaeological Impact Assessment
for a proposed new lifestyle centre on Erf 1C,
Postmasburg, NC Province.**

CaseID: 14754



Report prepared by
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10 / 07 / 2020

Summary

A Phase 1 Archaeological Impact Assessment was carried out for a proposed new multi-purpose Lifestyle Complex Development (Multi-Purpose Lifestyle Complex Development) , on behalf of Kumba Iron Ore, on an 8 ha site in Postmasburg, to be established on Erf 1C. This study is a follow-up Phase 1 evaluation based on preceding recommendations (see Appendix 1). The site has been severely degraded by human and animal trampling as well as littering and dumping of waste. The foot survey revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no aboveground indications of prehistoric structures, graves or historically significant buildings older than 60 years within the boundaries of the proposed footprint. The field assessment showed that the proposed development footprint has been degraded by previous and ongoing human activities resulting in no aboveground evidence of archaeological impact. Given the underlying geology of the site with its relatively thin veneer of unconsolidated overburden, it is considered unlikely that the proposed development will impact on potentially capped archaeological remains. The footprint is assigned a site rating of Generally Protected C (GP.C) and is advised that the proposed development may proceed, provided that all construction activities are restricted to within the boundaries of the footprint. In the unlikely event that archaeological remains are exposed within the sand overburden during the construction phase of the project, it is advised that a professional archaeologist be called in to record and remove the material before further development takes place.

Introduction

A Phase 1 Archaeological Impact Assessment was carried out for a proposed new multi-purpose Lifestyle Complex Development (Multi-Purpose Lifestyle Complex Development) , on behalf of Kumba Iron Ore, on an 8 ha-site in Postmasburg, to be established on Erf 1C (**Fig. 1**). This study is a follow-up Phase 1 evaluation based on preceding recommendations (see **Appendix 1**).

The field assessment was conducted by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Maps and aerial photographs (incl. Google Earth) were consulted and integrated with data acquired during the on-site inspection. the proposed development may proceed, provided that all development activities are restricted to within the boundaries of the footprint. Site significance classification standards, as prescribed by SAHRA, were used for the purpose of this report (**Table 1**).

Site Information

1:50 000 scale topographic map: 2823AC Postmasburg

1:250 000 scale geological map 2822 Postmasburg

General Site coordinates: **28°18'50.12"S 23° 4'13.33"E**

The study area (Erf 1C) is located on low topography terrain immediately north of the R385 / R325 junction, situated on the northeastern outskirts of Postmasburg (**Fig. 2**). A hard surface area as well as a soft surface area has been idemarkated for the construction of buildings and trails / outdoor gyms respectively (**Fig. 3**).

Field Assessment and Impact Statement

The site has been severely degraded by human and animal trampling as well as littering and dumping of waste (**Fig 4**). Dolomite outcrop are exposed at the site, but it is primarily covered by trampled residual soils made up of red-brown aeolian sand, where no archaeological remains were observed (**Fig. 5**). The foot survey revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no aboveground indications of prehistoric structures, graves or historically significant buildings older than 60 years within the boundaries of the proposed footprint.

Recommendation

The Desktop HIA has identified a wealth of archaeological heritage attributed to the area (Appendix 1). However results of the field assessment showed that the proposed

development footprint has been degraded by previous and ongoing human activities resulting in no aboveground evidence of archaeological impact. Given the underlying geology of the site with its relatively thin veneer of unconsolidated overburden, it is considered unlikely that the proposed development will impact on potentially capped archaeological remains. The footprint is assigned a site rating of Generally Protected C (GP.C) (**Table 1**) and is advised that the proposed development may proceed, provided that all construction activities are restricted to within the boundaries of the footprint.

References

Desktop Heritage Assessment for a proposed new lifestyle centre on Erf 1C, Postmasburg, NC Province. Report prepared on behalf of Kumba Iron Ore (Pty) Ltd by Paleo Field Services, April 2020.

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.

Tables & Figures

Table 1. Field rating categories for archaeology 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

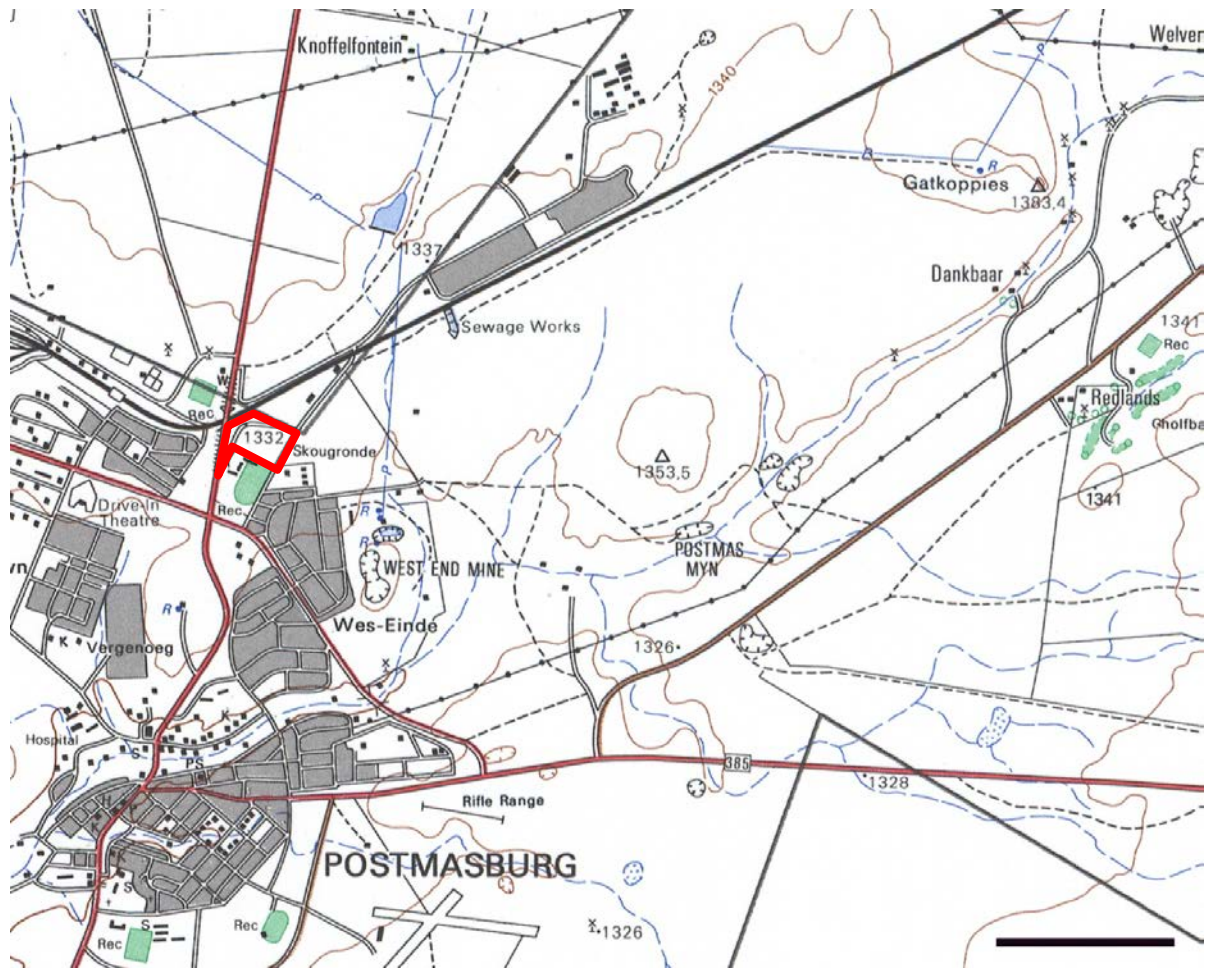


Figure 1. Map of Erf 1C marked on portion of 1:50 000 scale topographic map 2823AC Postmasburg (red polygon).



Figure 2. Aerial view of Erf 1C.

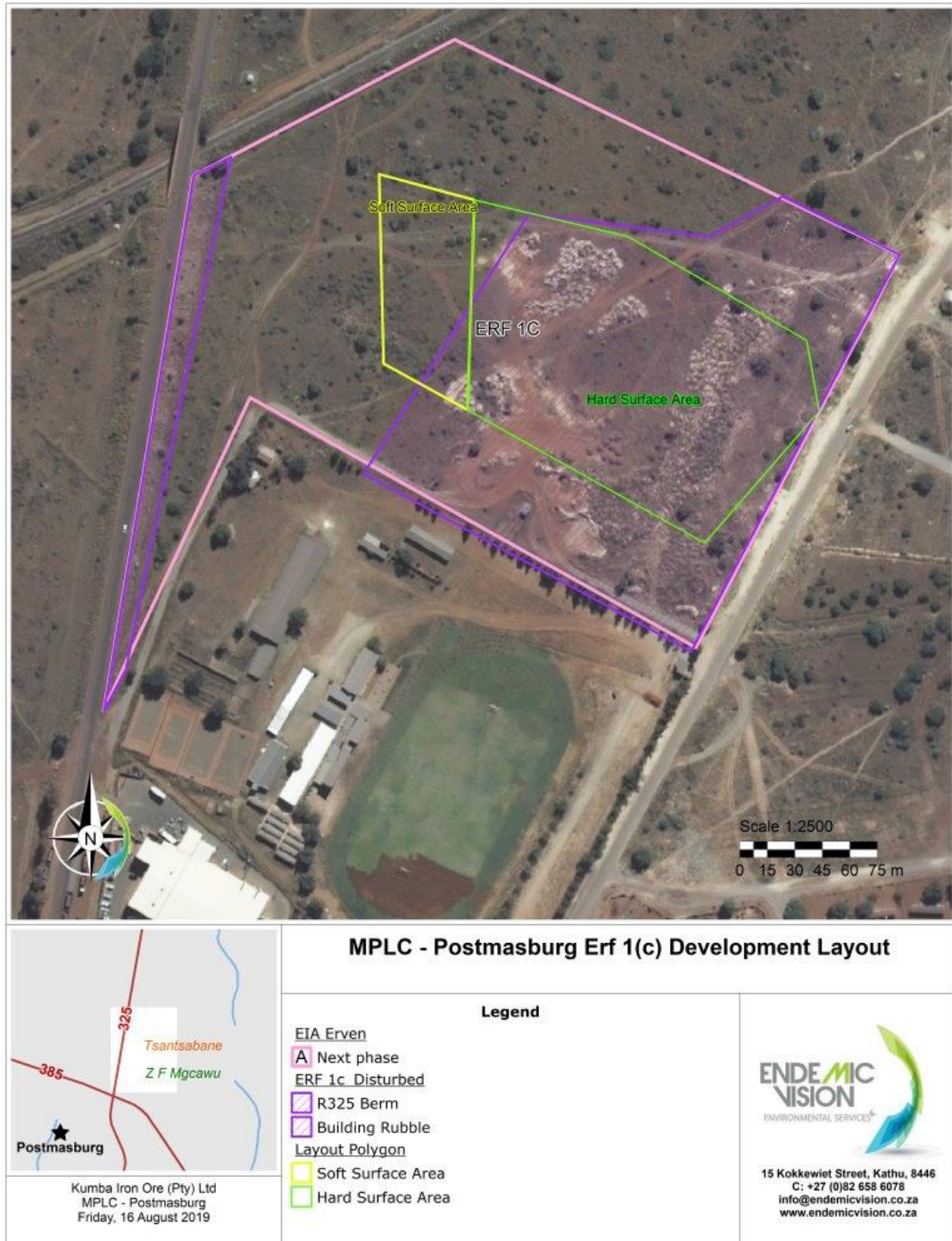


Figure 3. Layout of the proposed development footprint.



Figure 4. Evidence of severe land degradation.



Figure 5. The site is capped by wind-blown residual soils that are for the most part trampled by informal husbandry activities.

APPENDIX 1

Desktop Heritage Assessment for a proposed new lifestyle centre on Erf 1C, Postmasburg, NC Province.

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Summary

A Desktop Heritage Assessment for a proposed new Multi-purpose Lifestyle Complex Development, on behalf of Kumba Iron Ore, on an 8 ha site in Postmasburg, NC Province, indicates that the development footprint is underlain by palaeontologically significant Transvaal Supergroup carbonate rocks. The Postmasburg area is generally known for its horizontally exposed dolomite protrusions and banded ironstone outcrop, but earlier excavations located about 4 km to the southwest of Erf 1C have yielded closely-packed small domical stromatolites within thinly interbedded ferruginous limestone. Stromatolites and organic-walled microfossils preserved within the Ghaap Group dolomites provide a record of early microbial dominated life in shallow seas and lakes during the Early / Mid Precambrian (c. 2.7-2.5 Ga). They are considered to be highly significant and should be recorded where exposed and avoided or otherwise removed or sampled where possible in the case of direct impact or potential damage. As far as potential palaeontological and archaeological heritage of the site is concerned, it is advised that proposed development at the site is preceded by a site visit / field assessment (Phase 1 Heritage Impact Assessment).

Introduction

A Phase 1 Heritage Impact Assessment was carried out for a proposed new multi-purpose Lifestyle Complex Development, on behalf of Kumba Iron Ore, on an 8 ha site in Postmasburg, to be established on Erf 1C, which covers open terrain covering about 8 ha in Postmasburg, Northern Cape Province (**Fig. 1**).

Legislation

The primary legal trigger for identifying when heritage specialist involvement is required in the Environmental Impact Assessment process is the National Heritage Resources (NHR) Act (Act No 25 of 1999). The NHR Act 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, 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 NHRA 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 relevant to the proposed development are listed in Section 34 (1), Section 35 (4), Section 36 (3) and Section 38 (1) of the NHR Act and are as follows:

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.

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

- 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;

36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

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

- The construction of a road, wall, power line, 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
 - a) exceeding 5000 m² in extent; or
 - b) involving three or more existing erven or subdivisions thereof; or
 - c) involving three or more subdivisions thereof which have been consolidated within the past five years;
- The rezoning of a site exceeding 10 000 m²; or
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

The significance or sensitivity of heritage resources within a particular area or region can inform the EIA process on potential impacts and whether or not the expertise of a heritage specialist is required. A range of contexts can be identified which typically have high or potential cultural significance and which would require some form of heritage specialist involvement. This may include formally protected heritage sites or unprotected, but potentially significant sites or landscapes. In many cases, the nature and degree of heritage significance is largely unknown pending further investigation (e.g. capped sites, assemblages or subsurface fossil remains). On the other hand, it is also possible that a site may contain heritage resources (e.g. structures older than 60 years), with little or no conservation value. In most cases it will be necessary to engage the professional opinion of a heritage specialist in determining whether or not further heritage specialist input in an EIA process is required.

Methodology

The heritage significance of the affected area was evaluated through a desktop study and carried out on the basis of existing field data, database information, maps and published literature.

Terms of reference:

- Identify and map possible heritage sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;

Locality data

1:50 000 scale topographic map: 2823AC Postmasburg

1:250 000 scale geological map 2822 Postmasburg

General Site coordinates: **28°18'50.12"S 23° 4'13.33"E**

The study area is located on Erf 1C, on low topography terrain immediately north of the R385 / R325 junction on the northeastern outskirts of Postmasburg (**Fig. 2 & 3**). According to the 1:250 000 scale geological map 2822 Postmasburg, the proposed development footprint is underlain by palaeontologically significant carbonate rocks of the ~2.5 Ga old Cambellrand Subgroup (*Vgl.* Ghaap Group, Transvaal Supergroup) (Beukes 1980, 1983; Erikson *et al.* 2006) (**Fig. 4 & 5**).

Background

Palaeontology

The carbonate rocks of the Cambellrand Subgroup consist of stromatolite- and microfossil-bearing dolomite, dolomitic limestone and chert members that were formed by the precipitation of carbonate rocks when colonies of stromatolites thrived in shallow, tropical marine environments towards the end of the Archaean Eon, 2.6 billion years ago (Truswell & Eriksson 1973; Altermann & Schopf 1995). The shallow marine and lacustrine stromatolites and organic-walled microfossils preserved within the dolomites provide a record of early microbial dominated life in shallow seas and lakes during the Early / Mid Precambrian (c. 2.7-2.5 Ga). Stromatolites are layered mounds, columns, and sheet-like sedimentary rocks. They were originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe that lives today in a wide range of environments ranging from the shallow shelf to lakes, rivers, and even soils. Bacteria, including the photosynthetic cyanobacteria, were the only form of life on Earth for the first 2 billion years that life existed on Earth.

Archaeology

Multiple sites with abundant Early and Middle Stone Age (ESA & MSA) artefacts are known from the town of Kathu, located 70 km north of Postmasburg while Wonderwerk Cave, situated halfway between Kuruman and Danielskuil, is also known as an important archaeological repository (**Fig. 6**). Various archaeological investigations at the site demonstrated that Wonderwerk Cave contains *in situ*, ESA, Fauresmith, Middle Stone Age (MSA) and Later Stone Age (LSA) deposits. It is unique since few sites have yielded such a long sequence of *in situ* ESA horizons which also cover the ESA/MSA transition, while none of the other ESA sites in Southern Africa have yielded such abundant and well preserved *in situ* micro and macro-faunal and botanical remains. Several MSA and LSA sites were documented around Witsand. The LSA sites have yielded Wilton assemblages with formal lithics dominated by backed pieces including segments and scrapers. At Dikbosch between Kimberley and Griekwastad, a rock shelter located in travertine deposits of the Ghaap Plateau, has yielded LSA artefacts associated with faunal remains.

Several prehistoric specularite and haematite mines are found around Postmasburg, including underground workings on the farms Paling M87, open mining pits at Gloucester 13 and Mount Huxley, as well as open mining pits next to the town reservoir. An ancient specularite mine at Doornfontein (Doornfontein 1) north of Postmasburg has a maximum length of over 100 m and consists of four interlinked chambers (Beaumont & Boshier 1974). Excavations yielded mining tools including stone artefacts, various types of pottery, bone arrow heads, and hundreds of ostrich eggshell beads (**Fig. 7**). The most famous mining site is Blinkklipkop (Gatkoppies), situated about 2.5 km east-northeast of the eastern boundary of the study area (**Fig. 8**). The first description of this site was given P.B. Borchards, a member of the 1801 Truter and Somerville expedition to the Bechuana. Lichtenstein, in his *Travels in Southern Africa*, recounts a visit to the site in 1805, and William Burchell visited Blinkklipkop on June 18 1812 as noted in his *Travels in the Interior of Southern Africa*. The Blinkklipkop and Doornfontein sites near provide evidence of LSA mining practices and the introduction in the region of domesticated ovicaprids and possibly cattle as well as pottery by 1200 BP. Rock art sites in the region, including rock engraving as well as paintings, are known from Wonderwerk Cave (paintings) and the Danielskuil Townlands (engravings). Non-representational rock art sites near Postmasburg include engravings from the farms Beeshoek and Klapin and paintings from Andriesfontein and Toto.

Archaeological and historical evidence suggest that the most southerly distribution of Late Iron Age Tswana settlements in the region during the 18th century AD ranged between the Langeberge and what is known today as Witsand (**Fig. 9**). The farm Nokanna, situated about

35 km north of Witsand, equates with the former BaTlaping capital of Nokaneng, where Chief Mothibi was born in about 1775.

Recommendations

Palaeontology

It will be difficult to determine the potentially adverse effect of excavations into potentially fossil-bearing Cambellrand Subgroup bedrock underlying the area other than to emphasize that such impacts on fossil heritage are generally irreversible. Conversely, the recovery of new fossils as a result of industrial excavation activities can also be considered a positive impact, but only if the process is accompanied by appropriate scientific recording and retrieval methods.

The Postmasburg area is generally known for its small, isolated and horizontally exposed dolomite protrusions and banded ironstone outcrop, but earlier excavations located about 4 km to the southwest of Erf 1C have yielded closely-packed small domical stromatolites within thinly interbedded ferruginous limestone (**Fig. 10**). Stromatolites and organic-walled microfossils preserved within the Ghaap Group dolomites provide a record of early microbial dominated life in shallow seas and lakes during the Early / Mid Precambrian (c. 2.7-2.5 Ga). They are considered to be highly significant and should be recorded where exposed and avoided or otherwise removed or sampled where possible in the case of direct impact or potential damage.

As far as potential palaeontological heritage is concerned, it is advised that this study should be followed up by a site investigation (Phase 1 Palaeontological Impact Assessment).

Archaeology

Existing records indicate a wealth of archaeological heritage attributed to the region, and in particular the presence of prehistoric specularite mines in the vicinity of Postmasburg. It is advised that proposed development at the site is preceded by a site investigation (Phase 1 Archaeological Impact Assessment).

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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.



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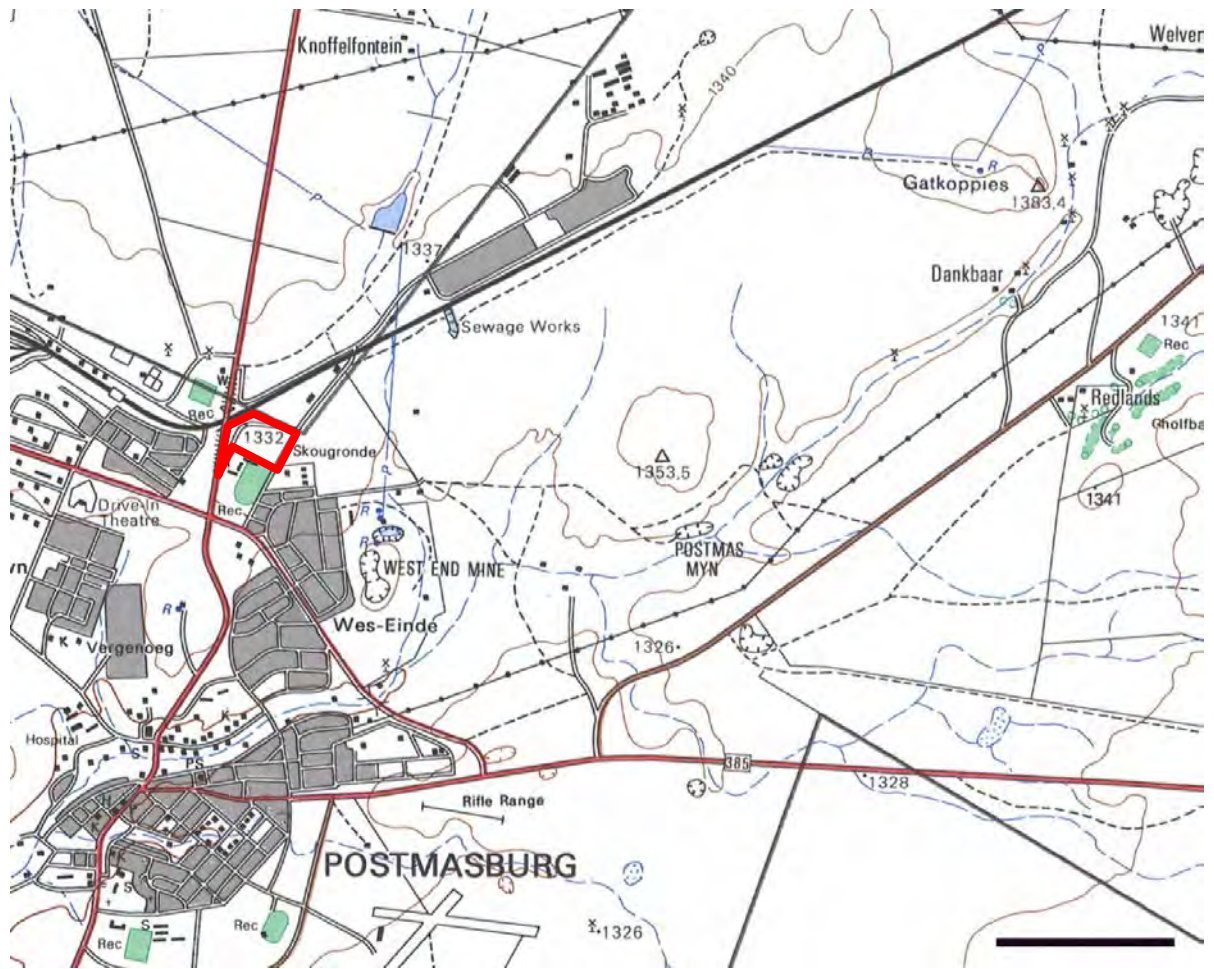


Figure 1. Map of Erf 1C marked on portion of 1:50 000 scale topographic map 2823AC Postmasburg (red polygon).



Figure 2. Aerial view of the site.



Figure 3. Layout of the proposed development footprint.



Figure 4. General view of the site looking west.

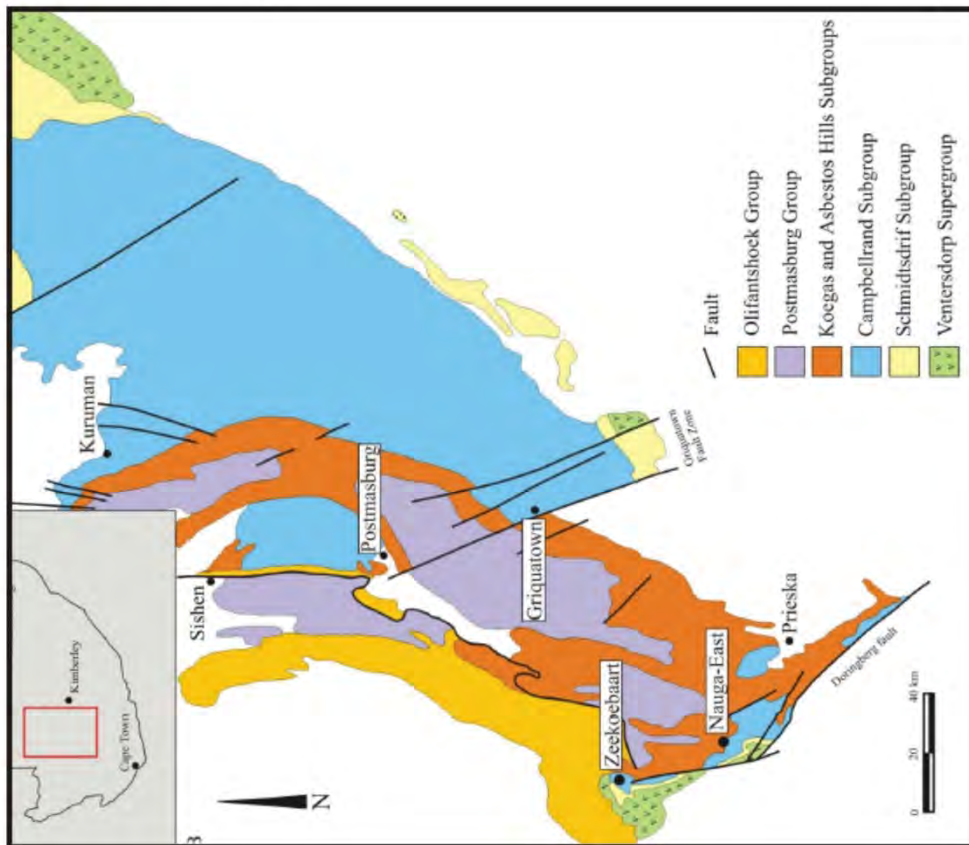
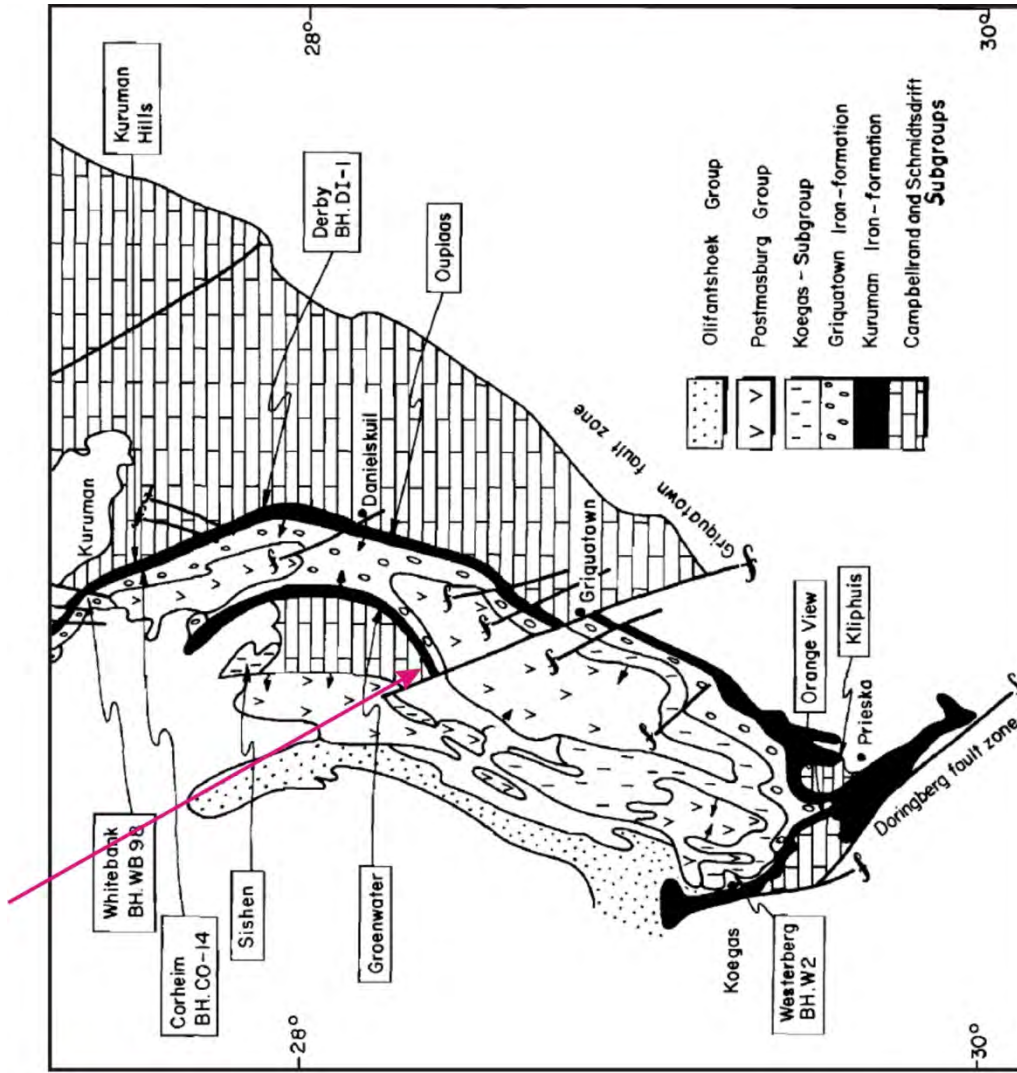


Figure 5. Regional geology according to Harding 2004 (left) and Beukes 1980 (right).

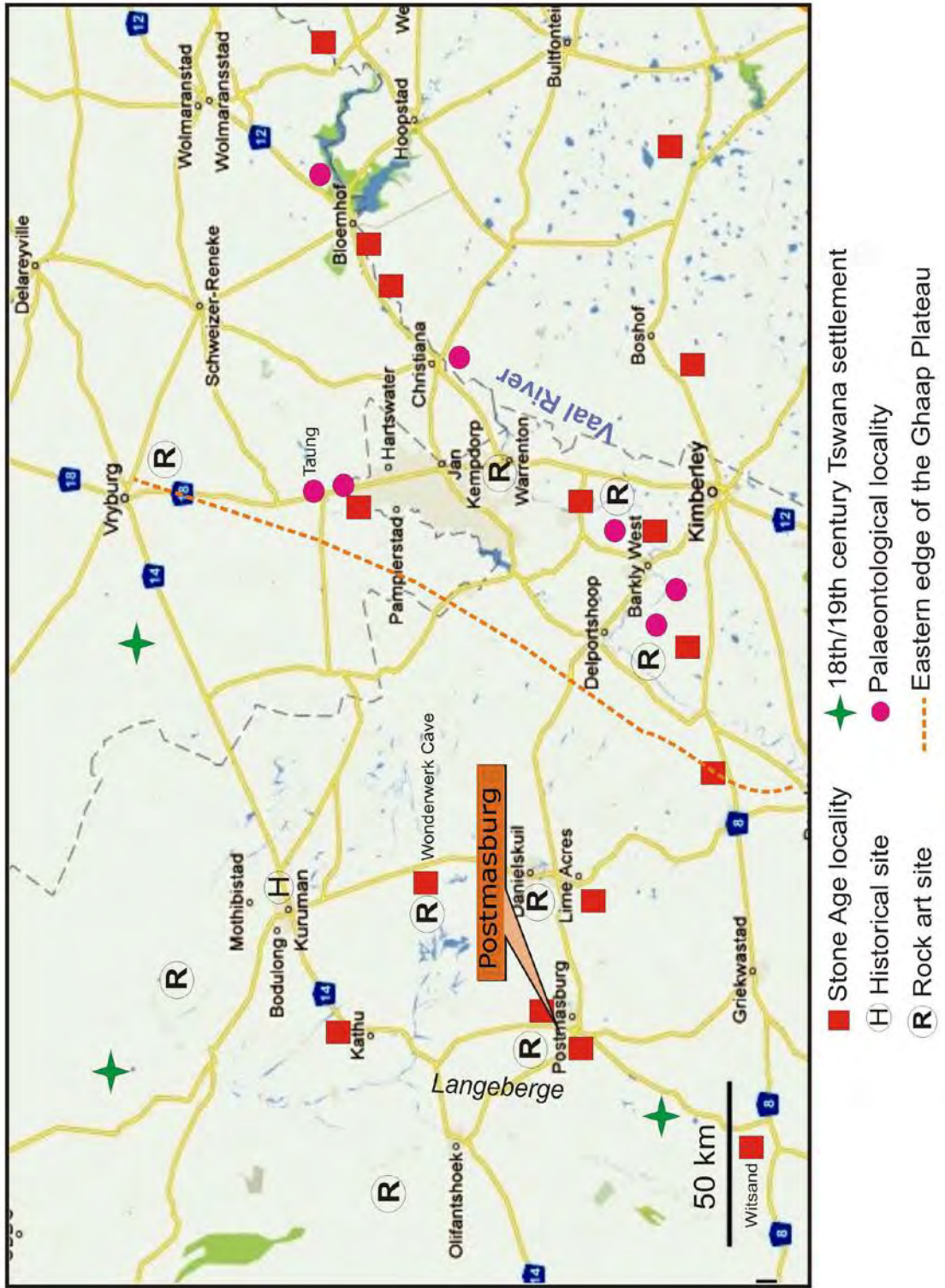
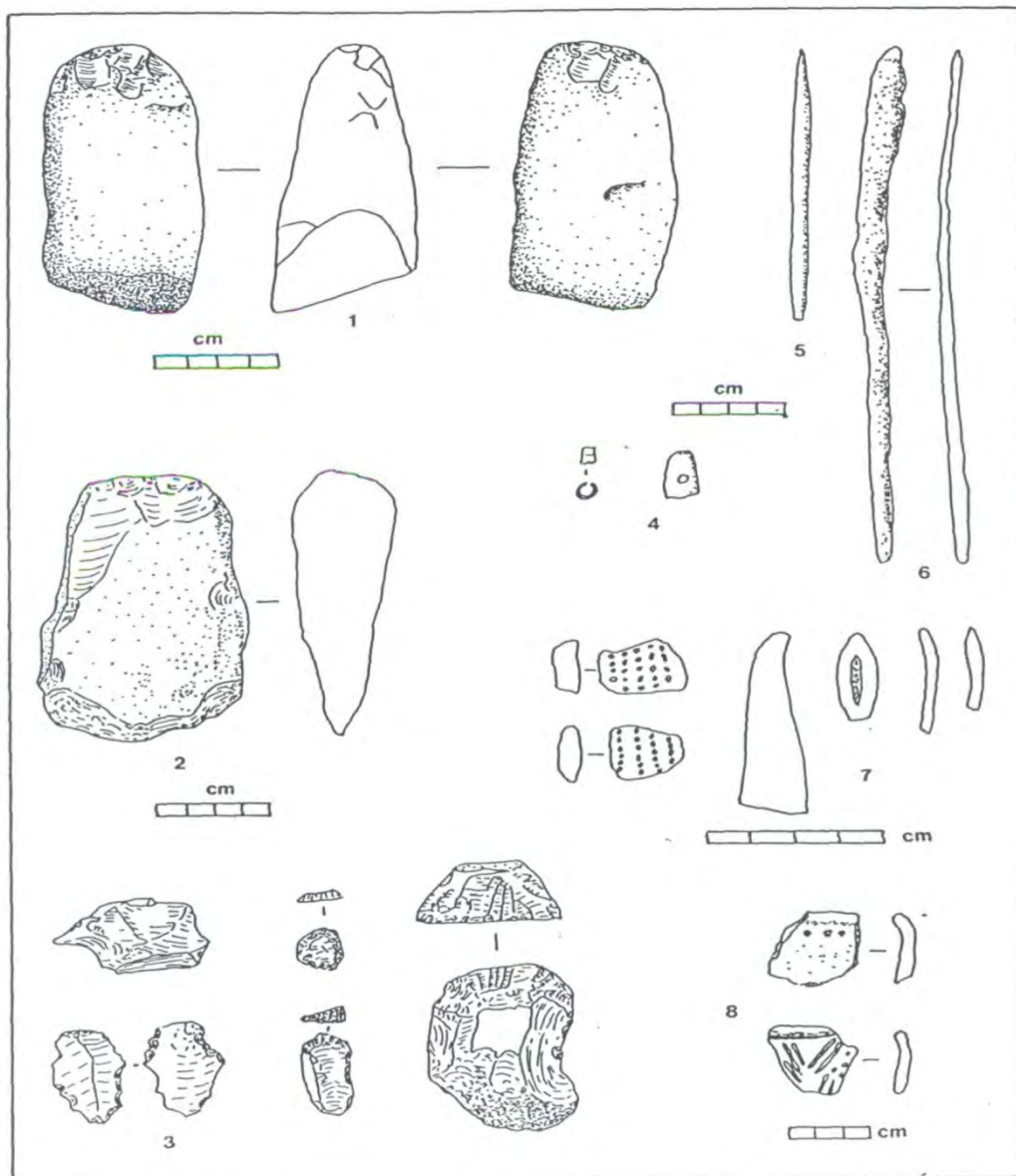


Figure 6. Major palaeontological and archaeological localities in the region



Artefacts from Blinkklipkop and Doornfontein (after Beaumont & Boshier 1974; Thackeray *et al* 1983). 1. Mining tool, Blinkklipkop; 2. Mining tool, Doornfontein 1/1; 3. Flake and scrapers from Doornfontein excavations and surface collection, and core scraper from Blinkklipkop surface collection; 4. Copper strip bead and possible broken bone pendant, Doornfontein 1/2; 5. Bone arrow-point, Doornfontein 1/2; 6. Iron spearhead, Doornfontein 2/1; 7. Pottery, including decorated sherds, Blikklipkop; 8. Pottery with line decorations, Doornfontein 1/2 & 1/1.

Figure 7. Artefacts recorded from Blinkklipkop and Doornfontein. Extract from Morris (1990).



Figure 8. Erf 1C locality in relation to position of Blinkklipkop.

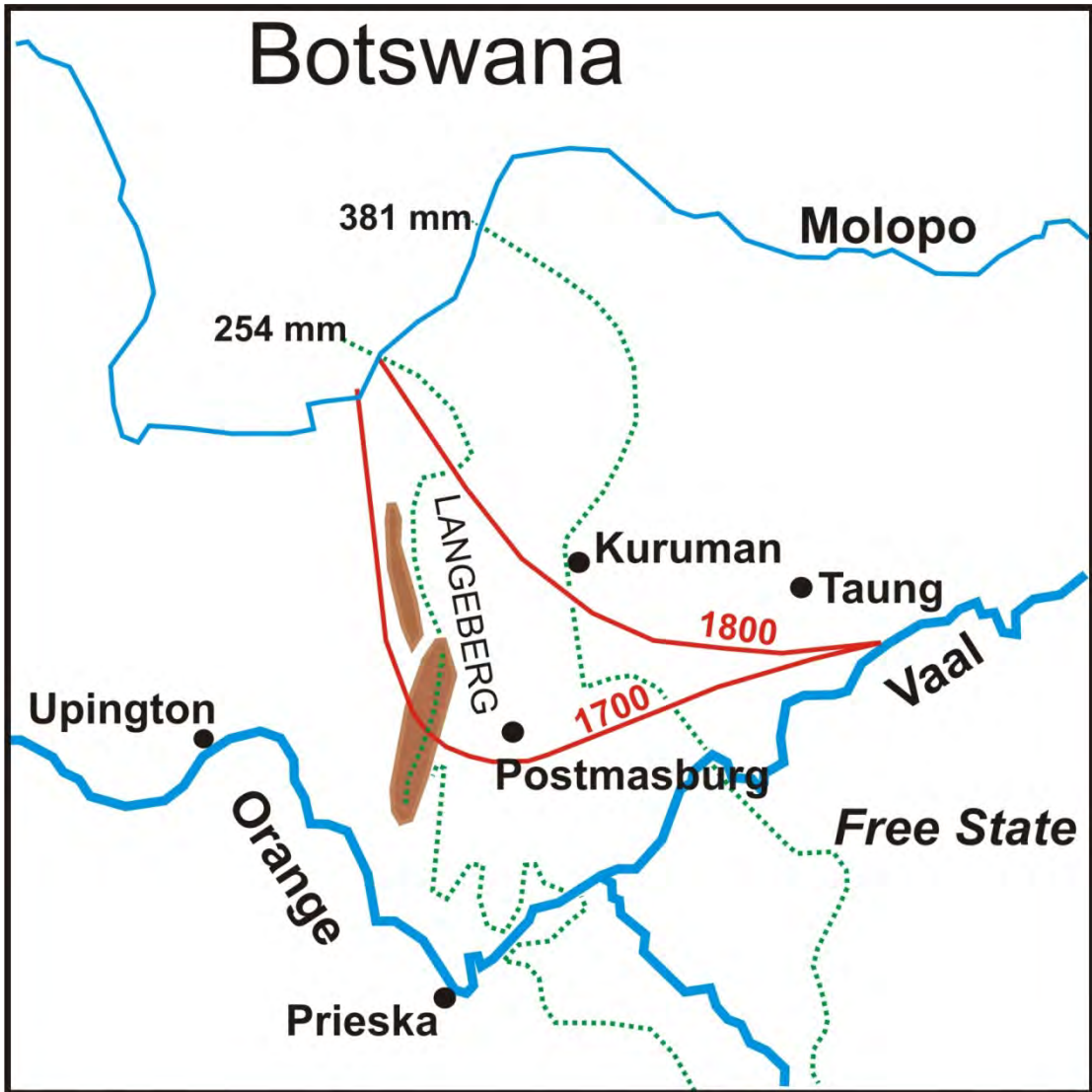


Figure 9 . Southern limits of Tswana settlement during the 18th and 19th centuries (after Humphreys 1976).



Figure 10. Position of Erf 1C in relation to stromatolite locality.