

PHASE 1 HERITAGE IMPACT ASSESSMENT REPORT

PROPOSED BUCHOM FILLING STATION BLOUBERG LOCAL MUNICIPALITY CAPRICORN DISTRICT LIMPOPO PROVINCE

FOR: Envirosana Environmental Consultants (Pty) Ltd

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Executive Summary

This report addresses the proposed Buchom Filling Station and Commercial Development on the the farm Springfields 268 LR within the Blouberg Local Municipality in the Capricorn District.

Although it is know that the people of Morotsi occupied the general area of the farm Springfields during historical times, there is no evidence of any settlement in the project area. No other archaeological or historical remains or evidence for burial sites was observed in the project area. It is highly unlikely that the underlying geology will contain palaeontological fossils. The proposed development of the Bochum Filling Station and associated infrastructure will have no impact on any heritage resources. From a heritage resources management perspective there is no objection towards the proposed development on condition that the recommendations are implemented.

No specific mitigation measure are required or recommended other than should any cultural or historical chance finds be exposed during development, the archaeologist or the relevant heritage resources authority must be informed and work ceased in that specific area.

In the event of a palaeontological chance find, the attached protocol must be followed.

From a heritage resources management perspective, there is no reason why the development may not proceed.

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1. INTRODUCTION AND TERMS OF REFERENCE

1.1 Introduction

The author was contracted by Envirosana Environmental Consultants (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment of the proposed Buchom Filling Station and Commercial Development. A desktop study and field survey on 17th August 2022 was undertaken for the study.

1.2 Project description and location

The proposed development is located on south-western corner of the farm Springfields 268 LR, approximately 40 kilometers north-west of Senwabarwana (Bohum) within the Blouberg Local Municipality in the Capricorn District. The proposed project consists of a Filling Station, Commercial Centre and associated infrastructure. The proposed development is situated at coordinates S23° 9.135' E28° 47.714' along a recently constructed paved road, D1200, and between the villages of Springfield-Tiekeline (Morotsi) and Sekhung (Figures 1 – 2).

1.3 Terms of reference and scope of work

Undertake a Heritage Impact Assessment and submit a specialist report, which addresses the following:

- A desktop and field assessment to gather information on Heritage resources within the proposed development site;
- Identify possible archaeological, cultural and historic sites within the proposed development area;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance; and
- Identifying key uncertainties and risks.

1.4 Terrain description

The terrain is located west of the Blouberg Mountain in-between some smaller detached sandstone hills of the Mogalakwena Formation of the Waterberg Group. It is located adjacent to road D1200 between Senwabarwana/Bochum and Baltimore. The area is flat and the surface soil consists of pebble rich sandstone conglomerate soil. A large part of the project area had already been cleared of vegetation. Parts of the area had been ploughed in the past (Figure 3 & 6)

2. RELEVANT LEGISLATION

Two sets of legislation are relevant for this study with regard to the protection of heritage resources and graves.

2.1 The National Heritage Resources Act (25 of 1999) (NHRA)

This Act established the South African Heritage Resources Agency (SAHRA) and makes provision for the establishment of Provincial Heritage Resources Authorities (PHRA). The Act makes

provision for the undertaking of heritage resources impact assessments for various categories of development as determined by Section 38. It also provides for the grading of heritage resources (Section 7) and the implementation of a three-tier level of responsibilities and functions for heritage resources to be undertaken by the State, Provincial authorities and Local authorities, depending on the grade of the Heritage resources (Section 8).

In terms of the National Heritage Resources Act (1999) the following is of relevance in terms of the general protection of heritage resources:

Historical remains

Section 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.

Archaeological remains

Section 35(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority or to the nearest local authority or museum, which must immediately notify such heritage resources authority.

Subsection 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 with the detection or recovery of metals or archaeological material or objects, or use such equipment for the recovery of meteorites.

Subsection 35(5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedures in terms of section 38 has been followed, it may-

- (a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
- (b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
- (c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
- (d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

Subsection 35(6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or meteorite is situated; serve

a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

Burial grounds and graves

Subsection 36(3)

- (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-
- (c) 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
- (d) 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 detection or recovery of metals.

Subsection 36(6) Subject to the provision of any law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority-

- (a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
- (b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the content of such grave or, in the absence of such person or community, make any such arrangement as it deems fit.

Culture Resource Management

Subsection 38(1) Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development* ...

must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

***‘development’** means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including-

- (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place;
- (b) carry out any works on or over or under a place*;
- (e) any change to the natural or existing condition or topography of land, and
- (f) any removal or destruction of trees, or removal of vegetation or topsoil;

***‘place’** means a site, area or region, a building or other structure* ...”

***‘structure’** means any building, works, device or other facility made by people and which is fixed to the ground ...”

2.2 The Human Tissues Act (65 of 1983)

This Act protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

3. METHODOLOGY

3.1 Sources of information

The main sources of information are a literature review, a pedestrian reconnaissance of the proposed project area and the SAHRIS database. In addition, Google earth and the topographical map 2328 BB was studied.

3.2 Limitations

No limitations were experienced with regard to the field survey. It must be noted that most archaeological material is subterranean and may have been missed. Although unlikely, chance finds may occur.

3.3 Categories of significance

The significance of heritage sites is ranked into the following categories.

No significance: sites that do not require mitigation.
Low significance: sites, which <i>may</i> require mitigation.
Medium significance: sites, which require mitigation.
High significance: sites, which must not be disturbed at all.

The significance of specifically an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

3.4 Terminology

Early Stone Age:	Predominantly the Oldowan artefacts and Acheulian hand axe industry complex dating to + 1Myr yrs – 250 000 yrs. before present.
Middle Stone Age:	Various lithic industries in SA dating from ± 250 000 yrs. - 22 000 yrs. before present.
Late Stone Age:	The period from ± 22 000-yr. to contact period with either Iron Age farmers or European colonists.
Early Iron Age:	Most of the first millennium AD
Middle Iron Age:	10 th to 13 th centuries AD
Late Iron Age:	14 th century to colonial period. <i>The entire Iron Age represents the spread of Bantu speaking peoples.</i>

Phase 1 assessments:	Scoping surveys to establish the presence of and to evaluate heritage resources in a given area
Phase 2 assessments:	In depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling could be undertaken.
Sensitive:	Often refers to graves and burial sites, as well as ideologically significant sites such as ritual / religious places. <i>Sensitive</i> may also refer to an entire landscape / area known for its significant heritage remains.
NHRA	National Heritage Resources Act (Act 25 of 1999)
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

4. BASELINE INFORMATION

Most research in the area was focused on the BaHananwa who are fairly recent arrivals in the Blouberg in the early 19th century. The baseline information is mostly generic.

4.1 The Stone Age

The Stone Age covers most of southern Africa and the earliest consist of the Oldowan and Acheul artefacts assemblages. Oldowan tools are regularly referred to as “choppers”. Oldowan artefacts are associated with Homo *habilis*, the first true humans. In South Africa definite occurrences have been found at the sites of Sterkfontein and Swartkrans. Here they are dated to between 1.7 and 2 million years old. This was followed by the Acheulian technology from about 1.4 million years ago which introduced a new level of complexity. The large tools that dominate the Acheulian artefact assemblages range in length from 100 to 200 mm or more. Collectively they are called bifaces because they are normally shaped by flaking on both faces. In plan view, they tend to be pear-shape and are broad relative to their thickness. Most bifaces are pointed and are classified as handaxes, but others have a wide cutting end and are termed cleavers. The Acheulian design persisted for more than a million years and only disappeared about 250 000 years ago.

The change from Acheulian with their characteristic bifaces, handaxes and cleavers to Middle Stone Age (MSA), which are characterized by flake industries, occurred about 250 000 years ago and ended about 30 000 – 22 000 years ago. For the most part the MSA is associated with modern humans; Homo sapiens. MSA remains are found in open spaces where they are regularly exposed by erosion as well as in caves. Characteristics of the MSA are flake blanks in the 40 – 100 mm size range struck from prepared cores, the striking platforms of the flakes reveal one or more facets, indicating the preparation of the platform before flake removal (the prepared core technique), flakes show dorsal preparation – one or more ridges or arise down the length of the flake – as a result of previous removals from the core, flakes with convergent sides (laterals) and a pointed shape, and flakes with parallel laterals and a rectangular or quadrilateral shape: these can be termed pointed and flake blades respectively. Other flakes in MSA assemblages are irregular in form.

The change from Middle Stone Age to Later Stone Age (LSA) took place in most parts of southern Africa little more than about 20 000 years ago. It is marked by a series of technological innovations or new tools that, initially at least, were used to do much the same jobs as had been done before, but in a different way. Their introduction was associated with changes in the nature of hunter-gatherer material culture. The innovations associated with the Later Stone Age “package” of tools include rock art – both paintings and engravings, smaller stone tools, so small that the formal tools less than 25mm long are called microliths (sometimes found in the final MSA) and Bows and arrows. Rock art is an important feature of the LSA and is abundant in the nearby Makgabeng.

4.2 The Iron Age (Early Farming Communities)

The Iron Age represents a period when “new” people moved into southern Africa from about 1800 years ago. As opposed to nomadic hunter-gatherer Stone Age people, Iron Age people lived in permanent settlements and were agro-pastoralists. They used iron for tool making and made pottery for cooking and storing food and liquids. They also represent the spread of the Eastern Bantu language into southern Africa.

The Iron Age can be divided into three periods:

The **Early Iron Age** (AD 200 – 1000) consisting of:

- The Urewe Tradition, originating in the Great Lakes area of Central Africa, was a secondary dispersal centre for eastern Bantu speakers. It represents the eastern stream of migration into Southern Africa. The Uruwe Tradition consists of various Branches and ceramic units or facies.
- The Kalundu Tradition, originating in the far North of Angola, was another secondary dispersal centre for eastern Bantu speakers and represents the western stream of migration into Southern Africa. It is only Shona speakers and the mixed Shona-Venda speakers who descend from this Tradition :

The **Middle Iron Age** (AD 900 – 1300):

The Middle Iron Age represents Mapungubwe and the origins of Great Zimbabwe. They are descendants of the Early Iron Age Kalundu Tradition. The Shona of Zimbabwe and the royal families of the Venda descend from the Zimbabwe culture.

The **Late Iron Age** (AD 1300 – 1840) consisting of:

- The Blackburn Branch:

The Blackburn Branch is part of the Uruwe Tradition and originated in the Great Lakes area of central Africa. From here they migrated southward and reach northern Kwa-Zulu Natal anytime by about AD 1050 - 1500. The Blackburn Branch represents the Nguni Speakers of southern Africa.

- The Moloko Branch:

The Moloko Branch is also part of the Uruwe Tradition and originated in southern Tanzania from where they migrated southward to reach the Limpopo by AD 1300. The Moloko Branch represents the Sotho-Tswana speakers of southern Africa.

According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Uruwe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). The facies that may be present are:

Uruwe Tradition:	Moloko branch	Icon facies AD 1300 - 1500 (Late Iron Age) Letsibogo AD 1500 – 1700 (Late Iron Age)
Kalundu Tradition:	Benfica Sub-branch Happy Rest sub-branch	Bambata facies AD 150 – 650 (Early Iron Age) Happy Rest facies AD 500 - 750 (Early Iron Age) Diamant facies AD 750 – 1000. Eilandfacies AD 1000 – 1300 (Middle Iron Age)

Today the dominant group in the area is the Hananwa of Maleboch who settled at the Blouberg during the period 1750 – 1830 (van Schalkwyk 1995).

In 1879, the reverend Stech, of the Berlyn Mission Society wrote a letter to the ZAR government stating that the settlement of chief Morotsi, which totalled about 400 people, occupied the area west of Blouberg (van Schalkwyk 1995). This is the area where the farm Springfields was surveyed after the Maleboch War. In 1935, van Warmelo's map indicates that this area was inhabited by the Hananwa (van Warmelo 1935).

To the north-east of the study area, the Mapungubwe Cultural Landscape (MCL) is located within the Shashi-Limpopo Confluence area on the connecting borders of South Africa, Botswana and Zimbabwe. The main residential sites are K2, Mapungubwe and Leokwe. The study area would probably have been affected by this period from the 10th to 13th centuries, although no settlements of this period have been recorded here.

4.3 The historical period

During the 1990's a number of researchers focused on the historic BaHananwa, for example, T.J. Makhura – Hananwa resistance and missionary influence; N.C. Weidemann – the Malabocho war; A.E. Kotze – linguistics; A.P. van der Merwe - Hananwa praise poems; L. Kriel - missionaries and J.A. van Schalkwyk – anthropology and archaeology. It is not in the scope of this study to address the research, but rather to summarise some of the data.

During the latter half of the 19th century, two events had a significant impact on the Hananwa. The first was the arrival of the missionaries in 1868 and the second event was the Malabocho war of 1884.

The first missionary to receive permission to start a mission station at Blouberg was the reverend S. Hofmeyer of the Dutch Reformed Church in the Cape. He, however, soon realised that it would not be possible and relinquished his "right" in favour of the Berlin Missionary Society to establish a mission station at Blouberg. In 1868, the reverend E.B. Beyer of the Berlin Missionary Society established the first mission station on the farm Leipzig, located at the south-western foot of the Blouberg (originally called Blaumberg). In 1874 Beyer was succeeded by the reverend C.R.C. Stech, and later by A.G.E.G. Herbst and C. Sonntag. In 1962, with the consolidation of the Evangelical-Lutheran Church in South Africa, the Berlin Missionary Society ceased their activities at Blouberg (van Schalkwyk 1995).

During 1894 the government of the South African Republic (ZAR) declared war against Chief Leboho of the Hananwa, living at Blouberg, commonly known as the Malaboch War. The ZAR force was supplemented by approximately 700 men of various tribes living in the vicinity (mostly those of Chiefs Kibi, Masebe, Matlala and Mapene) who also fought on the side of the ZAR. Most of these chiefs supported the ZAR due to long standing feuds between them and the Hananwa, notably in this case Chief Kibi who broke away from Chief Leboho. From the beginning of May until the end of July 1894, the burghers and allies, under the command of General Piet Joubert, laid siege to the Hananwa in an effort to force them to surrender. For this purpose several forts encircling the tribal capital were built, cutting it off from all water and food supplies.

The tribal capital was eventually surrounded by a series of forts, from where the capital was besieged. Lack of water and food forced the Hananwa to surrender. Fort Erasmus is the first fort to be found on the western side of Blouberg in proximity to the project area (Figure 2). In all probability it was named after Cmdt D. J. Erasmus who was in charge of the Pretoria commando and responsible for its erection.

The reverend Sonntag, who was present during the War, noted in his diary that in June 1894, the settlement of chief Morotsi, which was located on the farm Springfields, was attacked by the ZAR forces during the Malaboch War of 1894 and the people driven away. Apparently the settlement was rebuilt after the war, but the people were resettled about 5km away in the late 1940's and early 1950's as a result of the governments "betterment" plan to rezone rural areas into spaces for occupation, cultivation and grazing.

5. RESULTS OF THE SURVEY

5.1 Palaeontology

The area falls within the green colour code of the SAHRIS Palaeontological Sensitivity Map. A palaeontological desktop study is thus required.

However, the geological unit underlying the project area is the Mogalakwena Formation of the Waterberg Group (Mm) with the lithology consisting of coarse-grained purplish brown sandstone; conglomerate and boulder conglomerate (1:250000 geological series 2328 Pietersburg/Polokwane; see Figure 4). According to Durand (2019), "No fossils have been reported from the Mogalakwena Formation of the Waterberg Group yet, but some of the oldest evidence for bacterial mats were discovered in the Makgabeng Formation of the Waterberg Group on the Makgabeng Plateau in the Waterberg. Delicate structures such as bacterial mats would probably not be preserved in the coarse sandstone of the Mogalakwena Formation even though it is younger than the Makgabeng Formation". This is echoed by Milstead (2014) stating that "The combination of Achaean age as well as the coarse-grained, fluvatile of the rocks of the Mogalakwena formation confirms the unfossiliferous nature of this rock unit. Within the Achaean strata in South Africa the only know fossiliferous sequences consist of stromatolitic sequences formed within marine carbonate lithologies. The Achaean rocks of the Mogalakwena formation are considered to be unfossiliferous. As such, the palaeontological heritage significance of any development on these rocks would be nil".

The probability of finding fossils in the project area is unlikely. Nevertheless, a protocol for fossil finds is attached herewith.

5.2 Stone Age remains

No Stone Age material was observed in the project area. The site is not suitable for Rock Art as there are no suitable large loose-standing boulders or rock overhangs which would facilitate rock art.

5.3 Late Iron Age (Early Farming Communities)

No Iron Age material or sites were observed in the project area.

5.4 Graves and burials sites

No graves or burial sites were observed in the project area.

5.5 The built environment

No historical structures were observed in the project area.

6. DISCUSSION

Although it is known that the people of Morotsi occupied the general area of the farm Springfields during historical times, there is no evidence of any settlement in the project area. No other archaeological or historical remains or evidence for burial sites was observed in the project area. It is highly unlikely that the underlying geology will contain palaeontological fossils. The proposed development of the Bochum Filling Station and associated infrastructure will have no impact on any heritage resources.

7. EVALUATION AND STATEMENT OF SIGNIFICANCE

7.1 Significance criteria in terms of Section 3(3) of the National Heritage Resources Act.

Table 1: Significance criteria and rating

	Significance	Rating
1.	The importance of the cultural heritage in the community or pattern of South Africa's history (Historic and political significance)	None
2.	Possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage (Scientific significance).	None
3.	Potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage (Research/scientific significance)	Low
4.	Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects (Scientific significance)	None
5.	Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group (Aesthetic significance)	None
6.	Importance in demonstrating a high degree of creative or technical achievement at a particular period (Scientific significance)	None

7.	Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons (Social significance)	Low
8.	Strong or special association with the life and work of a person, group or organization of importance in the history of South Africa (Historic significance)	None
9.	The significance of the site relating to the history of slavery in South Africa.	None

7.2 Section 38(3) (c) An assessment of the impact of the development on such heritage resources.

The development will have no negative impact on heritage resources.

7.3 Section 38(3) (d) An evaluation of the impact of the development on heritage resources relative to the sustainable economic benefits to be derived from the development.

The development will have no impact on heritage resources. The sustainable economic benefits most outweigh the significance of the heritage resources.

7.4 Section 38(3) (e) The results of consultation with the communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources.

The development will have no direct impact on local communities.

7.5 Section 38(3)(f) If heritage resources will be adversely affected by the proposed development the consideration of alternatives.

No heritage resources will directly be impacted.

7.6 Section 38(3)(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

No mitigation measures are recommended other than other than observing a chance finds protocol.

8. RECOMMENDATIONS

No specific mitigation measure are required or recommended other than should any cultural or historical chance finds be exposed during development, the archaeologist or the relevant heritage resources authority must be informed and work ceased in that specific area.

In the event of a palaeontological chance find, the attached protocol must be followed.

From a heritage resources management perspective, there is no reason why the development may not proceed.

9. REFERENCES

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Principal Investigator

10. MAPS AND IMAGES (Figures 1 – 8)

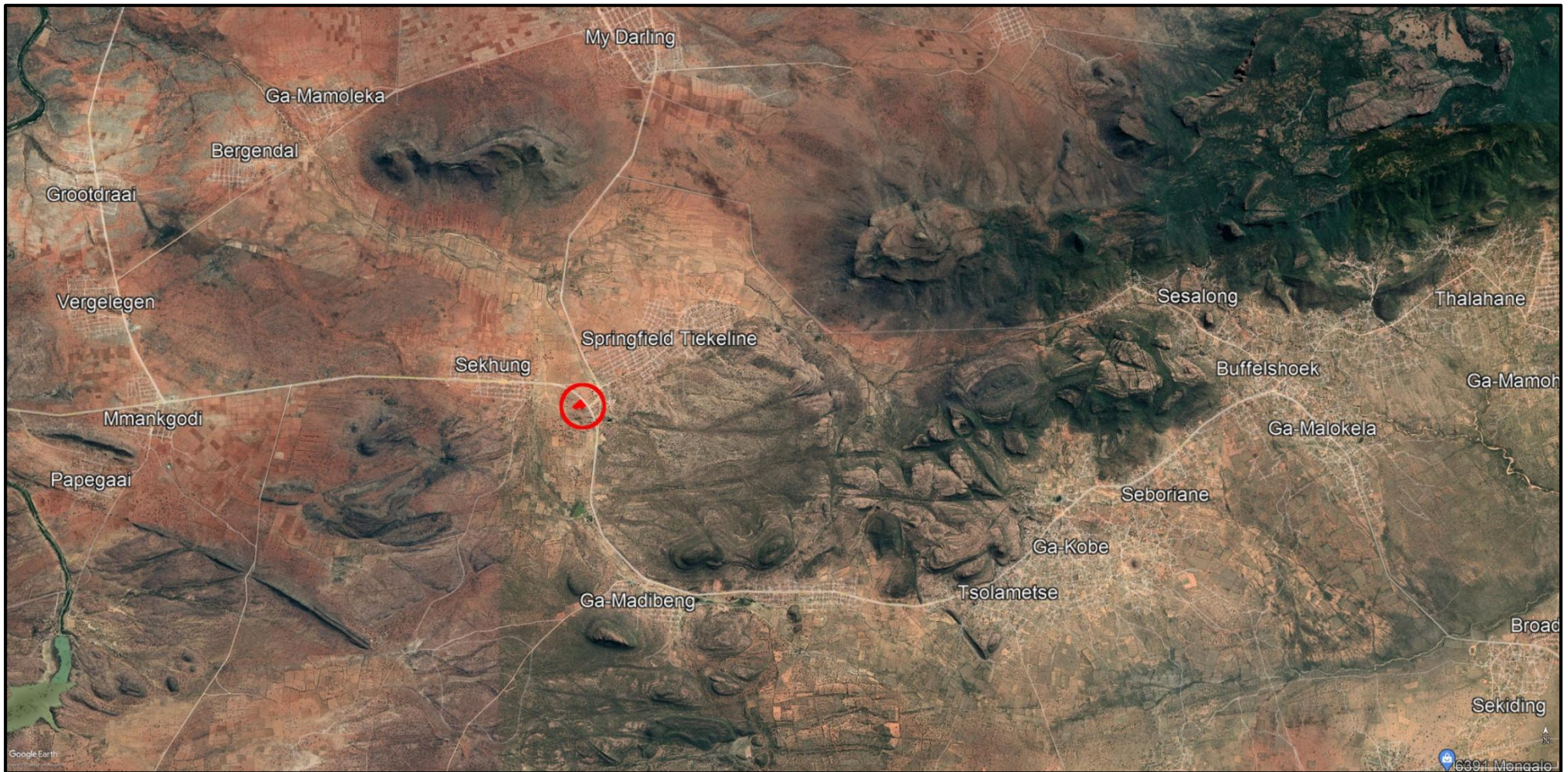


Figure 1. Google earth image of the project location west of the Blouberg.



Figure 2. Google earth image of the project location with GPS track.

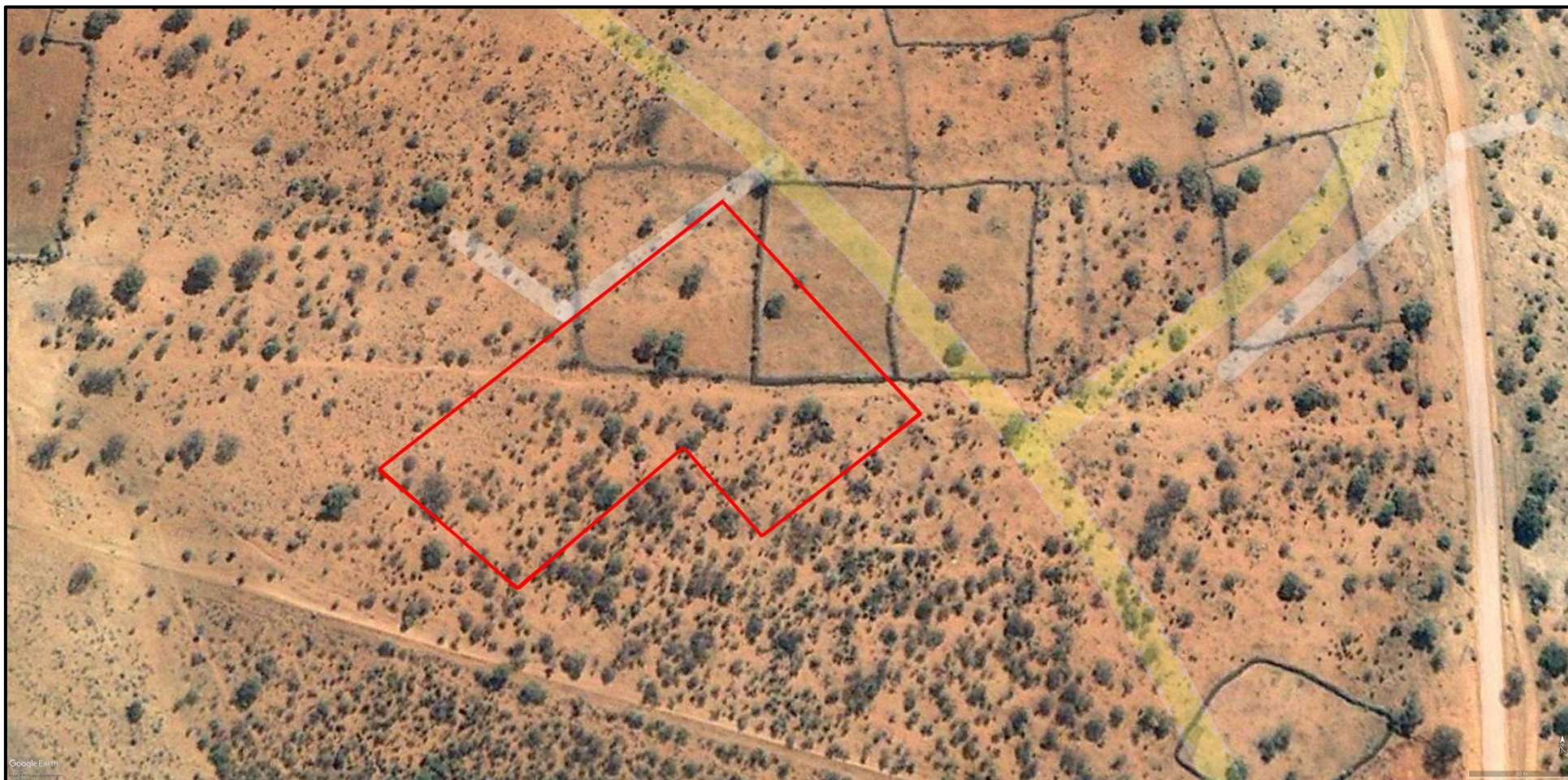


Figure 3. Google earth image (Historical 2003) of the project area showing some areas that were ploughed. The yellow line indicates the position of road D1200.

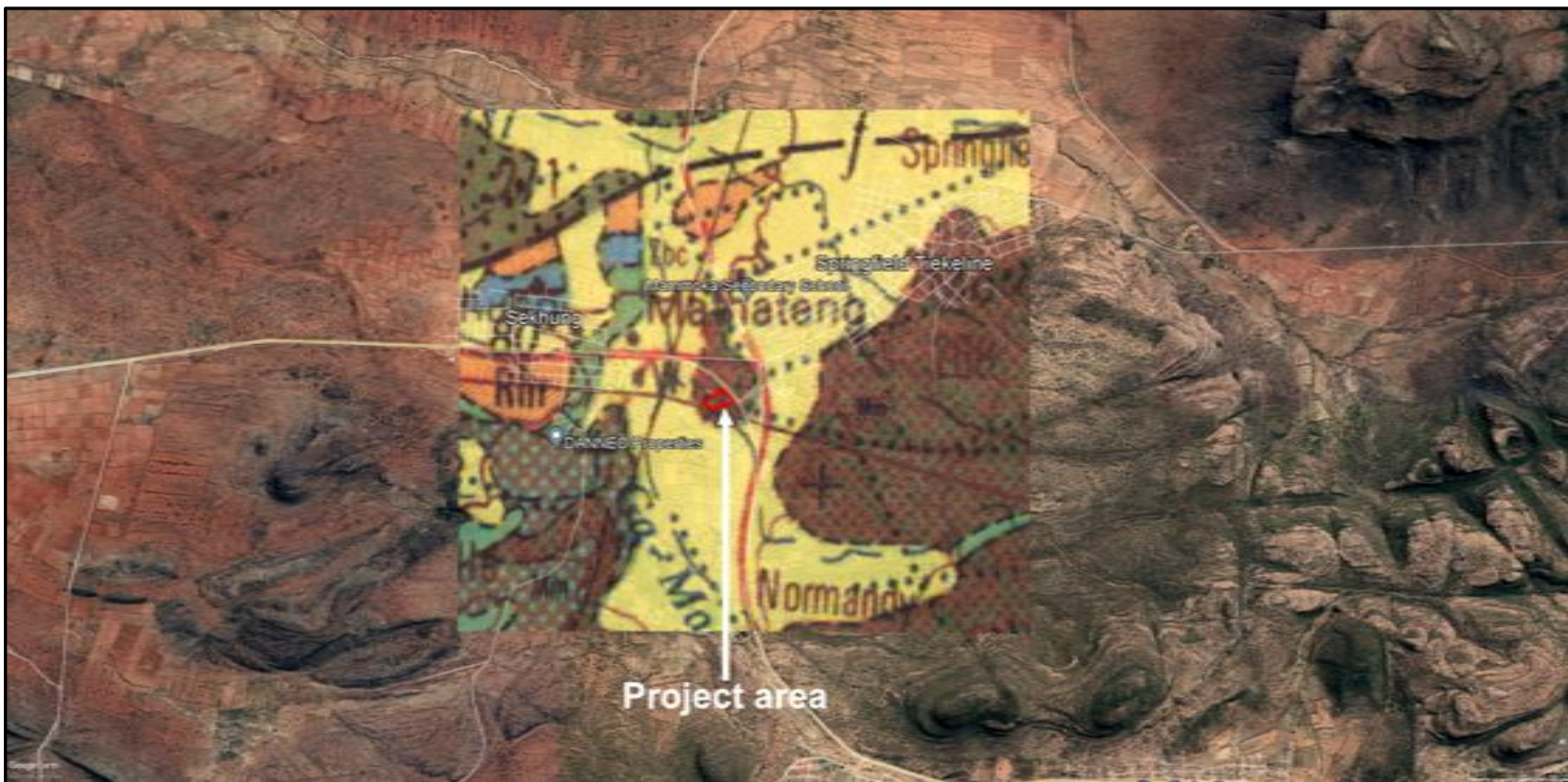


Figure 4. Google earth image with overlay of the 1:250 000 geological map showing the project area located on the Mogalakwena Formation.



Figure 5. View of the project area with the EAP's poster against the tree.



Figure 6. View of the pebble rich conglomerate soil.



Figure 7. General view of terrain towards the south-west.



Figure 8. View of the road servitude (D1200) also showing the pebble rich conglomerate soil.

ANNEXURE A

CHANCE FOSSIL FINDS PROTOCOL: Proposed Buchom Filling Station and Commercial Development.	
Province & region:	Blouberg Local Municipality of Capricorn District, Limpopo Province Farm: Springfields 268.
Responsible Heritage Management Authority	SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web : www.sahra.org.za
Rock unit(s)	The area is underlain by the Mogalakwena Formation of the Waterberg Group (Mm).
Potential fossils	No fossils have been reported from the Mogalakwena Formation of the Waterberg Group yet, but some of the oldest evidence for bacterial mats were discovered in the Makgabeng Formation of the Waterberg Group on the Makgabeng Plateau in the Waterberg. Delicate structures such as bacterial mats would probably not be preserved in the coarse sandstone of the Mogalakwena Formation even though it is younger than the Makgabeng Formation.
Environmental officer	<p>1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately, safeguard site with security tape / fence / sand bags for support if necessary.</p> <p>2. Record key data while fossil remains are still in situ:</p> <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo / GPS • Context – describe position of fossils within stratigraphy (rock layering) and depth below surface • Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)
	<p>3. If feasible to leave fossils in situ:</p> <ul style="list-style-type: none"> • Alert Heritage Management Authority and project palaeontologist who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance is given by the Heritage Management Authority for work to resume
	<p>3. If not feasible to leave fossils in situ (emergency procedure only):</p> <ul style="list-style-type: none"> • Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist • Alert Heritage Management Authority and project palaeontologist who will advise on any necessary mitigation
	<p>4. If required by Heritage Management Authority, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</p>
	<p>5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Management Authority</p>

Specialist palaeontologist	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Authority. Adhere to best international practice for palaeontological fieldwork and Heritage Management Authority minimum standards.
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