

**Phase 1 Heritage Impact Assessment of Application for a
Prospecting Right on the Remaining Extent of Farm
Sandham 171; Remaining Extent and Portion 1 of Farm
Hartfell 172 and Remaining Extent, Portions 1 and 2 of
Farm Bullsrun 164 in the administrative district of Hay,
NC Province.**

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Executive Summary

At the request of Endemicvision Environmental Consultants, a Phase 1 Heritage Impact Assessment was carried out on the Remaining Extent of Farm Sandham 171 Remaining Extent and Portion 1 of Farm Hartfell 172 and Remaining Extent, Portions 1 and 2 of Farm Bullsrun 164, located about 70 km northwest of Prieska and 90 km southwest of Postmasburg in the Northern Cape Province, where Genet Manganese (Pty) Ltd has applied for a prospecting right to prospect for Manganese, Copper and Iron ore. The study area is characterized by a landscape that is primarily covered by well-developed aeolian sand and sand dunes and as a result, the field survey largely focused on the assessment of rocky outcrops in the area. The area falls within an outcrop area of palaeontologically insignificant Transvaal Supergroup strata (Ghaap Group, Koegas Subgroup) that are largely covered by well-developed superficial Quaternary sand, sand dunes and calcretes. Potential palaeontological impact resulting from the proposed drilling activities is considered low to very low. The palaeontological component at the study area is assigned the rating of Generally Protected C (GP.C). The stone tool archaeological component is negligible and clearly derived, but still regarded as a meaningful indication of past human activity on the landscape. It is advised as a matter of prudence that the supposedly unmarked graves area is to be avoided during the operational phase of the project. The study areas are assigned site ratings of Generally Protected C (GP.C).

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Introduction

At the request of Endemicvision Environmental Consultants, a Phase 1 Heritage Impact Assessment was carried out on the Remaining Extent of Farm Sandham 171 Remaining Extent and Portion 1 of Farm Hartfell 172 and Remaining Extent, Portions 1 and 2 of Farm Bullsrun 164, located about 70 km northwest of Prieska and 90 km southwest of Postmasburg in the Northern Cape Province (**Fig. 1**). Genet Manganese (Pty) Ltd has applied for a prospecting right to prospect for Manganese, Copper and Iron ore. The mineral resource and distribution will be determined by non-invasive (physical survey) and invasive prospecting methods (by trenching, pitting & triple-tube core drilling).

The region's unique and non-renewable archaeological and palaeontological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. As many such heritage sites are threatened daily by development, both the environmental and heritage legislation require impact assessment reports that identify all heritage resources including archaeological and palaeontological sites in the area to be developed, and that make recommendations for protection or mitigation of the impact of the sites.

Where possible archaeological and palaeontological sites should be saved, but where this is not possible, the loss of information about our heritage resources can be mitigated against or minimized through a process of excavation (or sampling) and dating of a representative sample of the evidence from the site. This allows the heritage specialist to record at least part of the history of the place. Early assessment and mitigation minimizes the negative effects of development and often saves the developer considerable delays and related costs.

Archaeological Impact Assessments (AIAs) and Palaeontological Impact Assessments (PIAs), or overarching Heritage Impact Assessments (HIAs) are most often specialist reports that form part of the wider heritage component of Environmental Impact Assessments (EIAs) required in terms of the National Environmental Management Act or of the Environment Conservation Act by the provincial Department of Environment Affairs; or Environmental Management Plans (EMPs) required by the Department of Minerals and Energy.

Legislative framework

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 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, 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;
- 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).

If a heritage resource is likely to be impacted by a development listed in Section 38 (1) of the NHR Act, a heritage assessment will be required either as a separate HIA or as the heritage specialist component (AIA or PIA) of an EIA.

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 (**Table 1**). This may include formally protected heritage sites or unprotected, but potentially significant sites or landscapes (**Table 2**). The involvement of the heritage specialist in such a process is usually necessary when a proposed development may affect a heritage resource, whether it is formally protected or unprotected, known or unknown. 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. This may involve site-significance classification standards as prescribed by SAHRA (**Table 3**). Alternatively, useful sources of information on heritage resources in South Africa can also be obtained through SAHRA's national database of heritage resources, including existing heritage survey information as well as other published or secondary source material on the overall history of a particular area or site.

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 and published literature. This was followed by a field assessment by means of a pedestrian survey of the power line route. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Relevant archaeological information, aerial photographs and site records were consulted and integrated with data acquired during the on-site inspection.

The task also involved identification and assessment of possible archaeological heritage within the proposed project area, in accordance with section 9(8) and appendix 6 ("Specialist reports") of the NEMA EIA Regulations, 2014, whereby the specialist report takes into account the following 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;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

The study area is rated according to field rating categories as prescribed by SAHRA (**Table 3**) as well as a probability of impact methodology for assessing the Duration (time scale), Extent (spatial scale), and Irreplaceable loss of resources, Reversibility of the potential impacts and the Probability of occurrence of potential impacts (**Table 4**).

Description of the Affected Area

Locality data

1 : 50 000 scale topographic map: 2822BA Duikersdal

1 : 250 000 scale geological map 2922 Prieska

General Site coordinates: 29° 3'40.83"S 22°34'6.47"E

The study area is characterized by a landscape that is primarily covered by well-developed aeolian sand and sand dunes (**Fig. 2**) and as a result, the field survey largely focused on the assessment of rocky outcrops in the area.

Geology

The area falls within an outcrop area of palaeontologically insignificant Transvaal Supergroup strata (Ghaap Group, Koegas Subgroup) that are largely covered by well-developed superficial Quaternary sand, sand dunes and calcretes (**Fig. 3**).

Background

Shallow marine and lacustrine stromatolites and organic-walled microfossils preserved within Transvaal Supergroup dolomites of the Ghaap Plateau, 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.

The Precambrian dolomites at the eastern edge of the Ghaap Plateau have been incised at various points by drainage lines that created gorges in which travertine deposits have formed. As a result, the tufas at Norlim (Buxton) near Taung contain solution caves which are fossiliferous, including the one within the Thabaseek Tufa that produced the type specimen of *Australopithecus australis*. Situated about 600m north-west of the *A. australis* type site, another solution cavity called Equus Cave yielded the Quaternary fossil remains of more than 40 mammalian species, including the extinct taxa *Equus capensis*, *Antidorcas bondi* and *Megalotragus priscus*.

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. The most famous mining site is Blinkklipkop (Gatkoppies), situated about 5 km northeast of Postmasburg on the townlands. 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 specularite mine at Doornfontein has a maximum length of over 100 m and consists of four interlinked chambers. It was estimated that over 36 million kilograms of specularite had been removed from the entire working. Excavations conducted by Peter Beaumont yielded mining tools stone artefacts of various types of pottery, bone arrow heads, and hundreds of ostrich eggshell beads. The animal bone remains indicated that the miners lived mainly on buffalo and zebra. Extensive damage on the antelope horn cores revealed that these had been used as chisels. The Blinkklipkop and Doornfontein sites near provide evidence of LSA mining practices and the introduction in the region by 1200 BP, of domesticated ovicaprids and possibly cattle as well as pottery. The Stone Age archaeological footprint in the region is represented by Early, Middle and Later Stone Age sites often associated with pans, while the landscape in general is characterized by low density surface scatters (Beaumont 1995; Kiberd 2006). MSA surface scatters have also been recorded at Elswater, Brakfontein and Nuwejaarskraal near Douglas. Rock engravings have been recorded in the younger valley fills along the steeper slopes located near the eastern and south-eastern margins of Sandfontein 356 (van Riet Low 19). In addition, rock art sites have been recorded on a number of farms around Prieska, including Kleindoring, Wonderdraai and Omdraaisvlei. Historical ruins and graveyards associated with the asbestos mining industry during the first half of the 20th century are located at Kliphuis and Engeldewilgeboomfontein north of Prieska. Further away, stone pipes and LSA artefacts have been recorded on the farm Doornkuil near Britstown, while prehistoric graves and clay pottery have been recorded along the Orange River in the vicinity of Douglas.

Field Assessment

Sandham 171

The pedestrian survey revealed no evidence of Quaternary fossil remains preserved within sandy deposits associated with rivers and streams or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. Low density distributions of highly weathered and mostly isolated stone tools are infrequent and primarily confined to the rocky outcrops. No indications of rock art, prehistoric or historically significant structures older than 60 years were found within the boundaries of the footprint. A formal and clearly marked graveyard is located near the farmstead (site coordinates 29° 1'37.00"S 22°32'11.12"E) (**Fig. 4**)

Remaining Extent and Portion 1 of Farm Hartfell 172

The pedestrian survey revealed no evidence of Quaternary fossil remains preserved within sandy deposits associated with rivers and streams or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. Low density distributions of highly weathered and mostly isolated stone tools are infrequent and primarily confined to the rocky outcrops. No indications of rock art, prehistoric or historically significant structures older than 60 years were found within the boundaries of the footprint. A formal and clearly marked graveyard is located near the farmstead (site coordinates 29° 1'45.99"S 22°35'9.43"E) (**Fig. 4**)

Remaining Extent, Portions 1 and 2 of Farm Bullsrun 164

The pedestrian survey revealed no evidence of Quaternary fossil remains preserved within sandy deposits associated with rivers and streams or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. Low density distributions of highly weathered and mostly isolated stone tools are infrequent and primarily confined to the rocky outcrops. No indications of rock art, prehistoric or historically significant structures older than 60 years were found within the boundaries of the footprint. A formal and clearly marked graveyard is located near the farmstead (site coordinates 29° 4'46.05"S 22°36'12.91"E) (**Fig. 4**). According to the owner of the property, several informal (unmarked) are located about 700 m north of the Bulls Run farmstead (**Fig. 5**). However, no graves were found following an investigation of the area.

Impact Statement and Recommendation

Significance of impacts is summarized in **Table 4**. Potential palaeontological impact resulting from the proposed drilling activities is considered low to very low. The palaeontological component at the study area is assigned the rating of Generally Protected C (GP.C).

The stone tool archaeological component is negligible and clearly derived, but still regarded as a meaningful indication of past human activity on the landscape. It is advised as a matter of prudence that the supposedly unmarked graves area (**Fig. 5**) is to be avoided during the operational phase of the project. The study areas are assigned site ratings of Generally Protected C (GP.C).

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Tables and Figures

Table 1: Relationship between different heritage contexts, heritage resources likely to occur within these contexts, and likely sources of heritage impacts in the central interior of South Africa.

Heritage Context	Heritage Resources	Impact
Palaeontology	Precambrian shallow marine and lacustrine stromatolites, organic-walled microfossils, Ghaap Plateau (Transvaal Supergroup) Palaeozoic and Mesozoic fossil remains, e.g. Karoo Supergroup Neogene regolith	Road cuttings Quarry excavation Bridge and pipeline construction (Quaternary alluvial deposits)
Archaeology Early Stone Age Middle Stone Age LSA - Herder Historical	Types of sites that could occur in the Free State include: Localized Stone Age sites containing lithic artifacts, animal and human remains found near <i>inter alia</i> the following: River courses/springs Stone tool making sites Cave sites and rock shelters Freshwater shell middens Ancient, kraals and stonewalled complexes Abandoned areas of past human settlement Burials over 100 years old Historical middens Structural remains Objects including industrial machinery and aircraft	Subsurface excavations including ground levelling, landscaping, foundation preparation, road building, bridge building, pipeline construction, construction of electrical infrastructure and alternative energy facilities, township development.
History	Historical townscapes, e.g. Kimberley Historical structures, i.e. older than 60 years Historical burial sites Places associated with social identity/displacement, e.g. Witsieshoek Cave, Oppermansgronde Historical mission settlements, e.g. Bethulie, Beersheba, Moffat Mission	Demolition or alteration work. New development.
Natural Landscapes	Formally proclaimed nature reserves Evidence of pre-colonial occupation Scenic resources, e.g. view corridors, viewing sites, Historical structures/settlements older than 60 years Geological sites of cultural significance.	Demolition or alteration work. New development.
Relic Landscape Context	Battle and military sites, e.g. Magersfontein Precolonial settlement and burial sites Historical graves (marked or unmarked, known or unknown) Human remains (older than 100 years) Associated burial goods (older than 100 years) Burial architecture (older than 60 years)	Demolition or alteration work. New development.

Table 2. Examples of heritage resources located in the central interior of South Africa.

Historically, archaeologically and palaeontologically significant heritage sites & landscapes	Examples
Landscapes with unique geological or palaeontological history	Karoo Basin Beaufort Group sedimentary strata Glacial striations on Ventersdorp andesites Vredefort Dome World Heritage Site. Taung World Heritage Site
Landscapes characterised by certain geomorphological attributes where a range of archaeological and palaeontological sites could be located.	Vaal, Modder and Riet River valleys Pans, pandunes and natural springs of the Free State panveld. Ghaap Plateau
Relic landscapes with evidence of past, now discontinued human activities	Wonderwerk Cave Stone Age deposits Cave sites and rock shelters in the Maluti Drakensberg region (rock art) Southern Highveld pre-colonial settlement complexes. Dithakong settlement complexes Rock engravings on Ventersdorp andesites
Landscapes containing concentrations of historical structures.	Concentration camps & cemeteries from the South African War.
Historical towns, historically significant farmsteads, settlements & routes	Batho historical township area in Mangaung (Bloemfontein). Kimberley
Battlefield Sites, burial grounds and grave sites older than 60 years.	Sannaspos Magersfontein

Table 3. 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 4. Summary of potential Heritage Impact at the sites before and after the Phase 1 Impact Assessment.

Duration	Extent	Irreplaceability	Reversibility	Probability of Archaeological Impact	Probability of Palaeontological Impact	Cumulative Impact
Before site visit						
Permanent	Local	Moderate	Irreversible	High	Moderate	Moderate
After site visit						
Permanent	Local	Low	Irreversible	Low	Low	Moderate

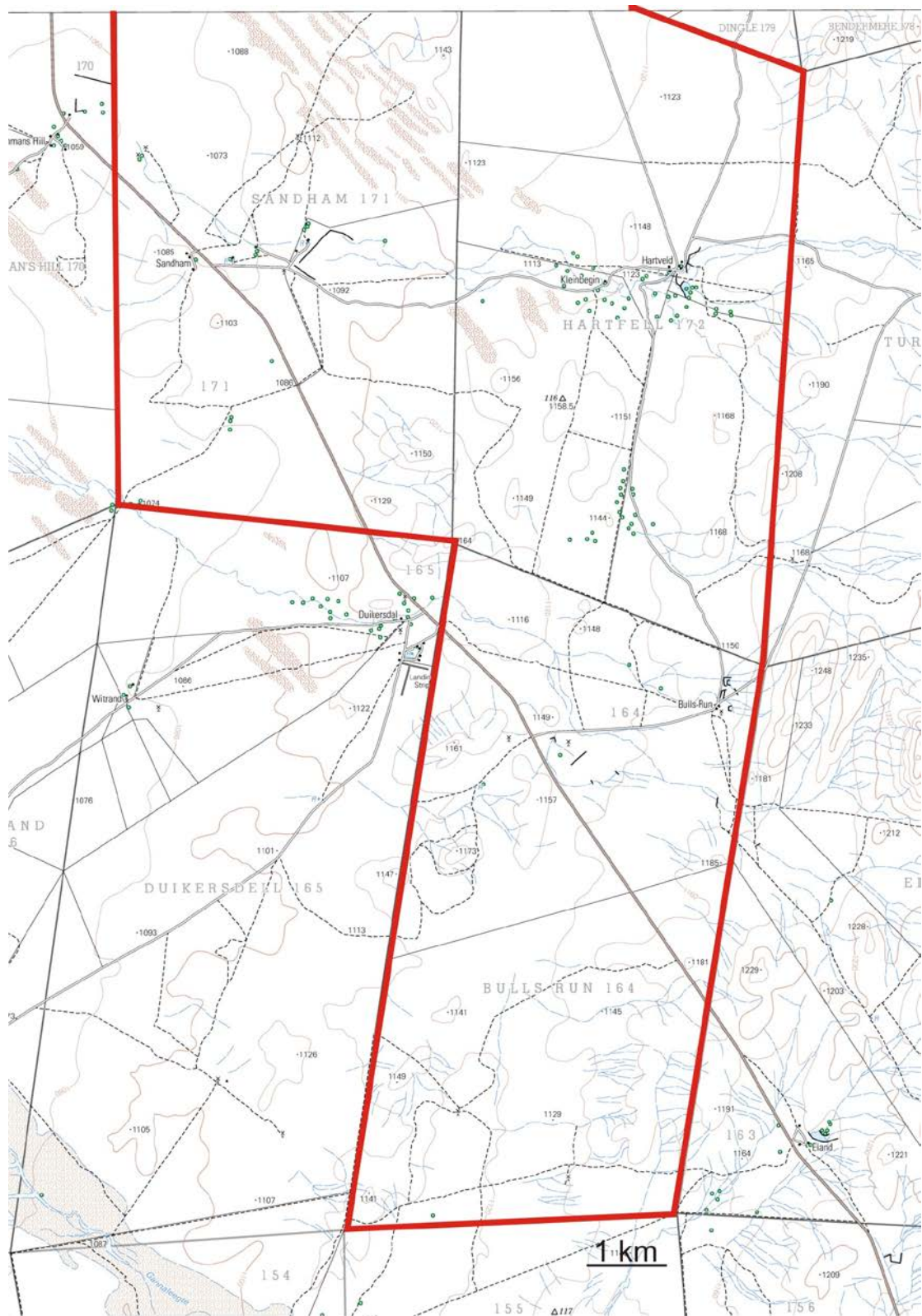


Figure 1. Map of the study area (portion of 1:50 000 scale topographic map 2822BA Duikersdal).

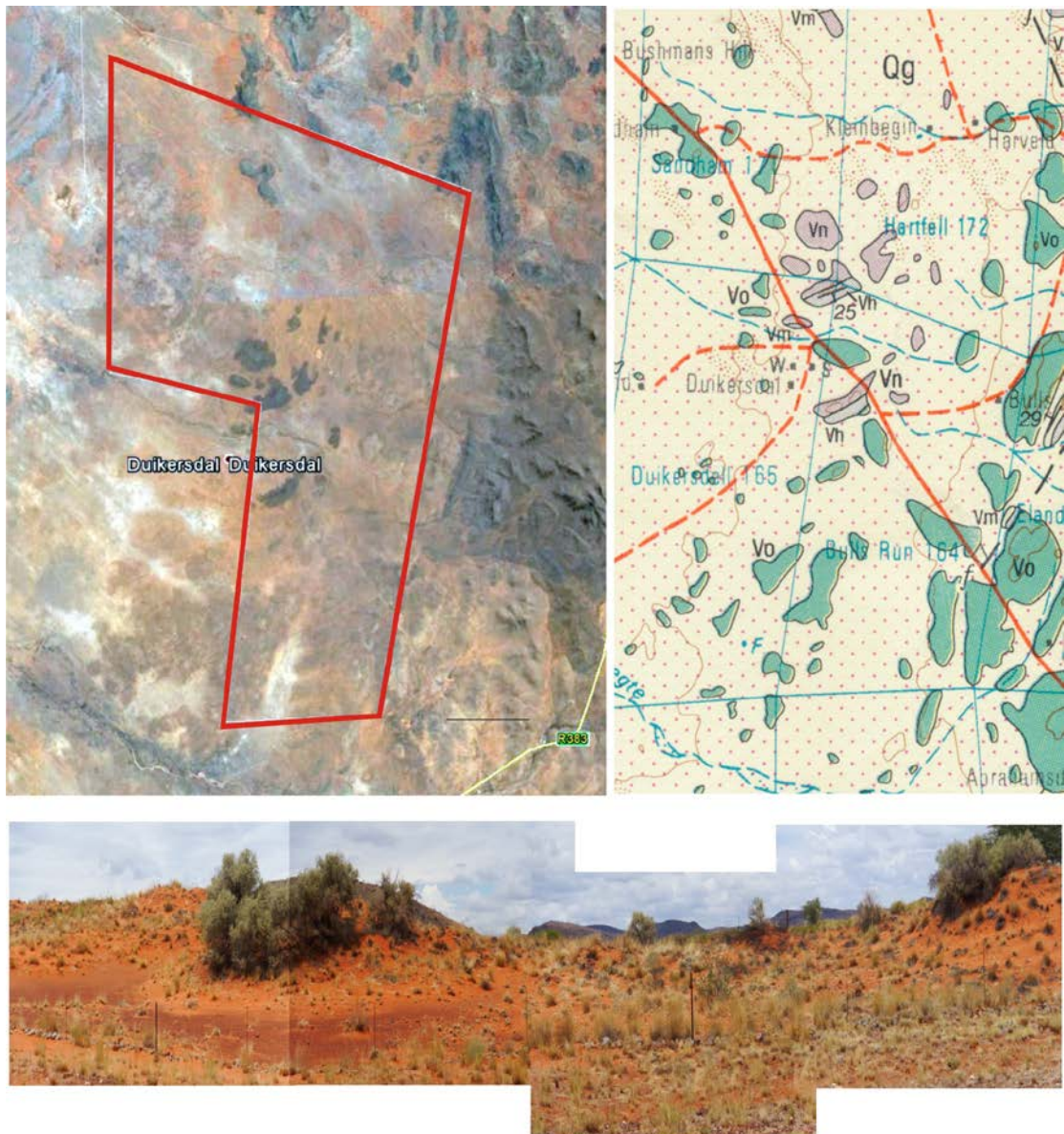


Figure 2. Aerial view (left) and geology (portion of 1:250 000 scale geological map (2922 Prieska) of the study area. The study area is characterized by a landscape that is primarily covered by well-developed aeolian sand and sand dunes.



Figure 3. The area falls within an outcrop area of palaeontologically insignificant Transvaal Supergroup strata exposed as rocky outcrops (top and bottom left), that are largely covered by well-developed superficial Quaternary sand, sand dunes and calcretes (bottom right).



Figure 4. Formal graveyards at Sandham (top) Hartfell (center) and Bulls Run (bottom).

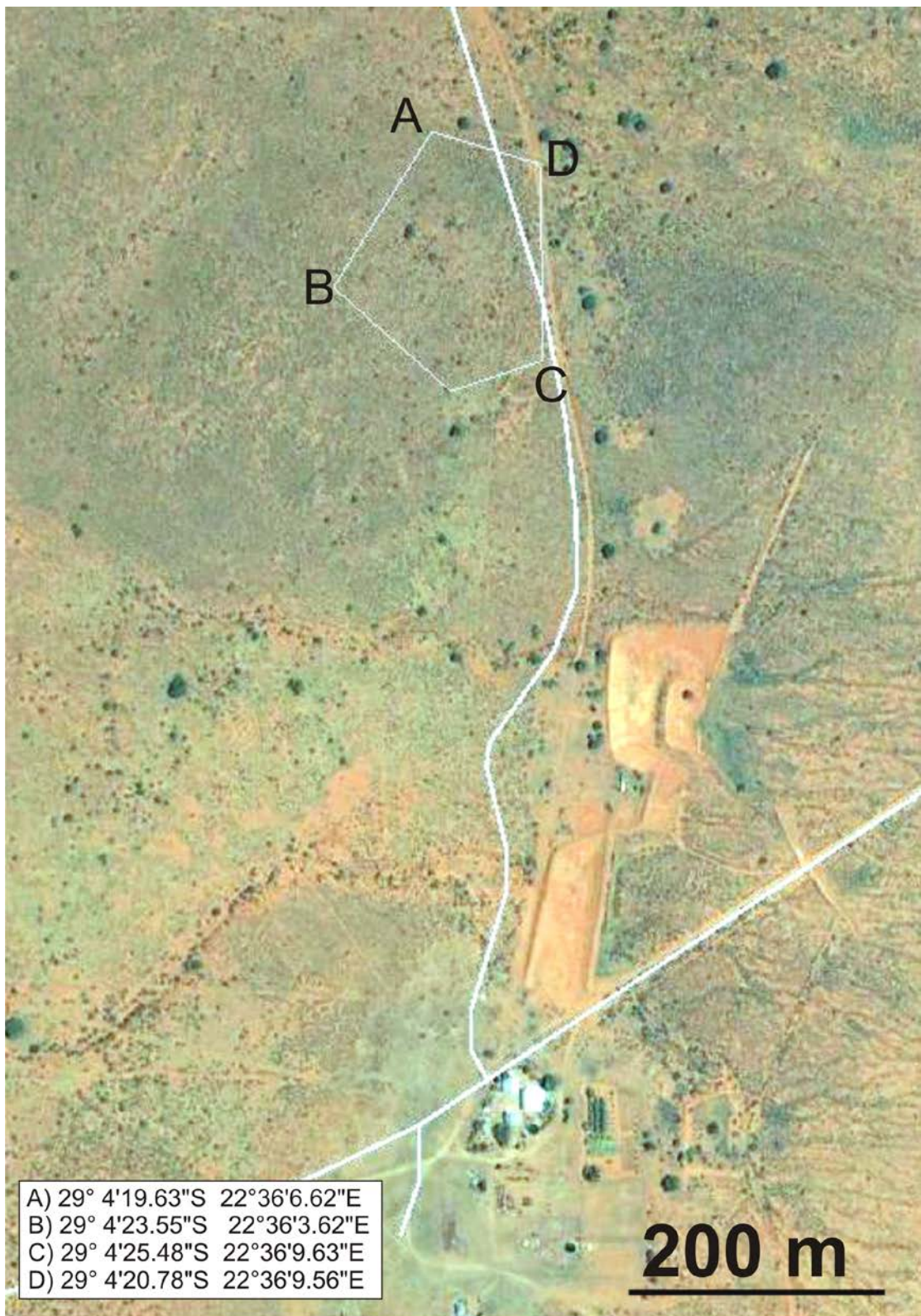


Figure 5. Aerial view of the supposedly unmarked graves area.