Phase 1 Heritage Impact Assessment of two proposed new power lines at Witloop and Vlermuislaagte between Hotazel and Kathu, NC Province.

Report prepared for
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Executive Summary

At the request of EKO Environmental Consultants, a Phase 1 Heritage Impact Assessment was carried out for two proposed new power line sections south of Hotazel in the Northern Cape Province. The preferred options and alternative routes at Witloop are primarily underlain by well-developed red to flesh-coloured aeolian sands. A pedestrian survey revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the footprint of the preferred options. The footprint at Vlermuislaagte is primarily underlain by calcretes, terrace gravels and red sands. A pedestrian survey revealed no evidence of *in situ* Stone Age archaeological material, but a small number of individual surface scatters, mainly represented by informal types (chunks and waste flakes) and the occasional flake blade, as well as one irregular core with several striking platforms, have been recorded along the footprint. All the observations are surface occurrences and because of their exposed state, most likely derived to a certain degree. The density of scatters is low and the all of the stone tools observed were located as isolated finds. There are no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the confines of the preferred option. The palaeontological component at the Witloop and Vlermuislaagte sites is assigned the rating of Generally Protected C (GP.C). The proposed footprints at Witloop and Vlermuislaagte are regarded as of low archaeological significance and are assigned the rating of Generally Protected C (GP.C).

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Introduction

At the request of EKO Environmental Consultants, a Phase 1 Heritage Impact Assessment was carried out for two proposed new power line sections south of Hotazel in the Northern Cape Province (**Fig. 1 & 2**).

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.

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 archaeological 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**).

Description of the Affected Area

The study areas are located on flat terrain near the Witloop and Vlermuislaagte railway sidings, next to the R380 linking Hotazel and Kathu. (**Fig. 3**). The preferred and alternative options at Witloop are 950 m and 730 m long respectively (**Fig. 4**). The 850m - long preferred power line option at Vlermuislaagte runs perpendicular to the existing line that runs parallel to the R380 (**Fig. 5**).

Locality data

1 : 50 000 scale topographic map: 2722BD Sutton

1 : 250 000 scale geological map 2722 Kuruman

Power line coordinates (**Fig. 2 & 3**):

Witloop alternative option:

A) 27°17'47.69"S 22°58'17.70"E

B) 27°17'51.65"S 22°58'51.16"E

Witloop preferred option:

A) 27°29'23.89"S 22°57'20.61"E

B) 27°17'53.89"S 22°58'49.13"E

C) 27°18'14.48"S 22°58'52.71"E

Vlermuislaagte preferred option:

A) 27°29'14.86"S 22°56'51.77"E

B) 27°29'23.89"S 22°57'20.61"E

Geology

As indicated on the 1: 250 000 scale geological map 2722 Kuruman (Published by the Council for Geoscience, Pretoria, 1977), the proposed sites are Late Cenozoic sediments of the Kalahari Group, characterized by surface limestones, calcretes and wind-blown sands. Terrace gravels (hillwash) are well-developed near streams and around areas of topographic relief.

Background

Abundant fossil faunal remains and associated Early Stone Age (ESA) artefacts are known from Quaternary spring sediments at Kathu Pan, situated northwest of the town of Kathu and about 45 km south of Hotazel. The tufas at Norlim, near Taung below the Ghaap Escarpment, contain solution cavities that produced the first type specimen of *Australopithecus africanus.*

The archaeological footprint of the region is widespread. Several Early Stone Age (ESA) sites, containing Victoria West cores, handaxes and cleavers have been recorded along the Harts River, a tributary of the Vaal River, near Taung. Wonderwerk Cave situated halfway between Kuruman and Danielskuil, is also an important archaeological repository. Various archaeological investigations at the site demonstrated that Wonderwerk Cave contains *in situ*, ESA, Fauresmith and Middle Stone Age through Later Stone Age deposits, including rock art. 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. Dolomite terraces and exposed valley floors along the Kuruman River valley are at places decorated with rock engravings that reflect colonial and LSA/Iron Age frontier interactions. Rock art sites in the region, including rock engraving as well

as paintings, are known from Wonderwerk Cave (paintings) and the Danielskuil Townlands (engravings). Sites found northwest of Kuruman, include Gamohaan, Maropeng, Batlharos and Mahakane.

The archaeological footprint northeast of Hotazel is primarily represented by stone wall remnants of the early 19th century BaTlaping capital Dithakong, located near the modern village of Dithakong. At the time of the 1801-1803 Borcherds and Somerville expedition, Dithakong was an important BaTlhaping (BaTswana) capital. It was calculated that the number of huts there were at least not less than 1 500 and the number of occupants at somewhere between 8 000 and 25 000 (Maingard, 1933; Beaumont 1983; Morris 1990). Extensive stone wall enclosures are found on the adjacent hills and archaeological investigations during the 1980's have revealed that the ruins were built during the 15th century A.D. and possibly by sedentary Khoi groups. The area consists of primary and secondary enclosures and cover a total area of about 1 km^2 comprising hundreds of circles of varying size **(Fig. 6**).

Field Assessment

Witloop

The alternative and preferred routes are primarily underlain by well-developed red to flesh-coloured aeolian sands (**Fig. 7**). A pedestrian survey revealed no evidence of intact fossil material or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the footprint of the preferred options.

Vlermuislaagte

The footprint at Vlermuislaagte is primarily underlain by calcretes, terrace gravels and red sands (**Fig. 8 & 9)**. A foot survey revealed no evidence of palaeontological exposures, or intact fossil material in the affected area. There are also no evidence of *in situ* Stone Age archaeological material or sites, but a small number of individual surface scatters, mainly represented by informal types (chunks and waste flakes) and the occasional flake blade, as well as one irregular core with several striking platforms, have been recorded along the footprint (**Fig. 10 & 11**). All the observations are surface occurrences and because of their exposed state, most likely derived to a

certain degree. The density of scatters is low and the all of the stone tools observed were located as isolated finds. There are no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the footprint of the preferred option.

Impact Statement and Recommendation

Significance of impacts is summarized in **Table 4**. Potential palaeontological impact resulting from access to the proposed sites, as well as the installation of pylons to support the new power lines is regarded as low. The palaeontological component at the Witloop and Vlermuislaagte sites is assigned the rating of Generally Protected C (GP.C). The lithic component at the Vlermuislaagte footprint has been recorded and mapped. Potential archaeological impact resulting from access to the proposed sites, as well as the installation of pylons to support the new power lines is regarded as low. The proposed footprint is regarded as of low archaeological significance and is assigned the rating 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 *inter alia* 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 dumps 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 Historical structures, i.e. older than 60 years Historical burial sites Places associated with social identity/displacement, e.g. Witsieshoek Cave Historical mission settlements, e.g. Bethulie, Beersheba	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 Free State Province.

Historically, archaeologically and palaeontologically significant heritage sites & landscapes	**Examples**
Landscapes with unique geological or palaeontological history	Karoo Basin Beaufort Group sedimentary strata Vredefort Dome 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.
Relic landscapes with evidence of past, now discontinued human activities	Cave sites in the Maluti Drakensberg region Southern Highveld pre-colonial settlement complexes.
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).
Battlefield Sites, burial grounds and grave sites older than 60 years.	Sannaspos

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

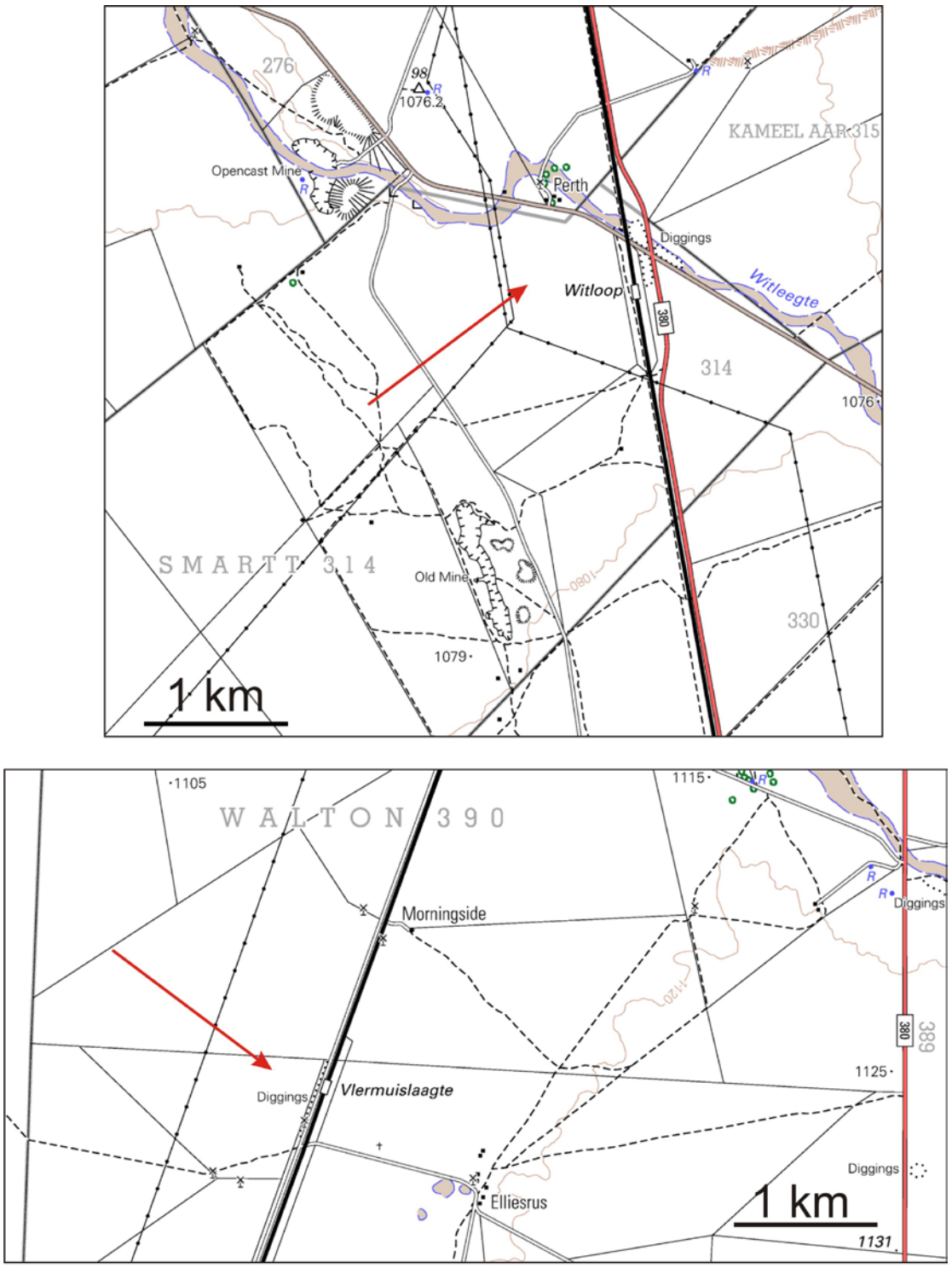

Figure 1. The railway sidings at Witloop and Vlermuislaagte (portion of 1:50 000 scale topographic map 2722BD Sutton).

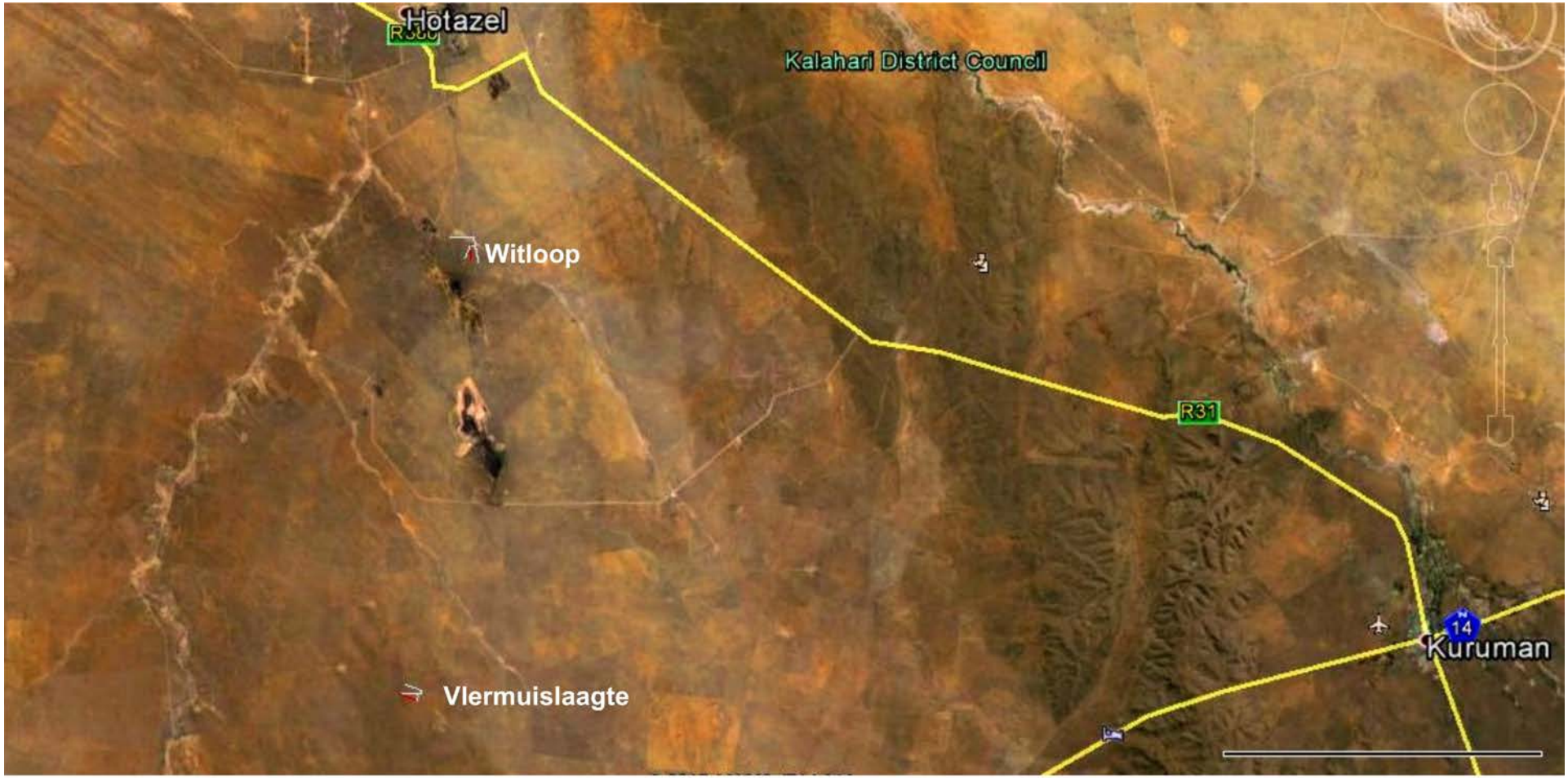

Figure 2. Aerial view and position of the proposed developments in relation to Hotazel and Kuruman.

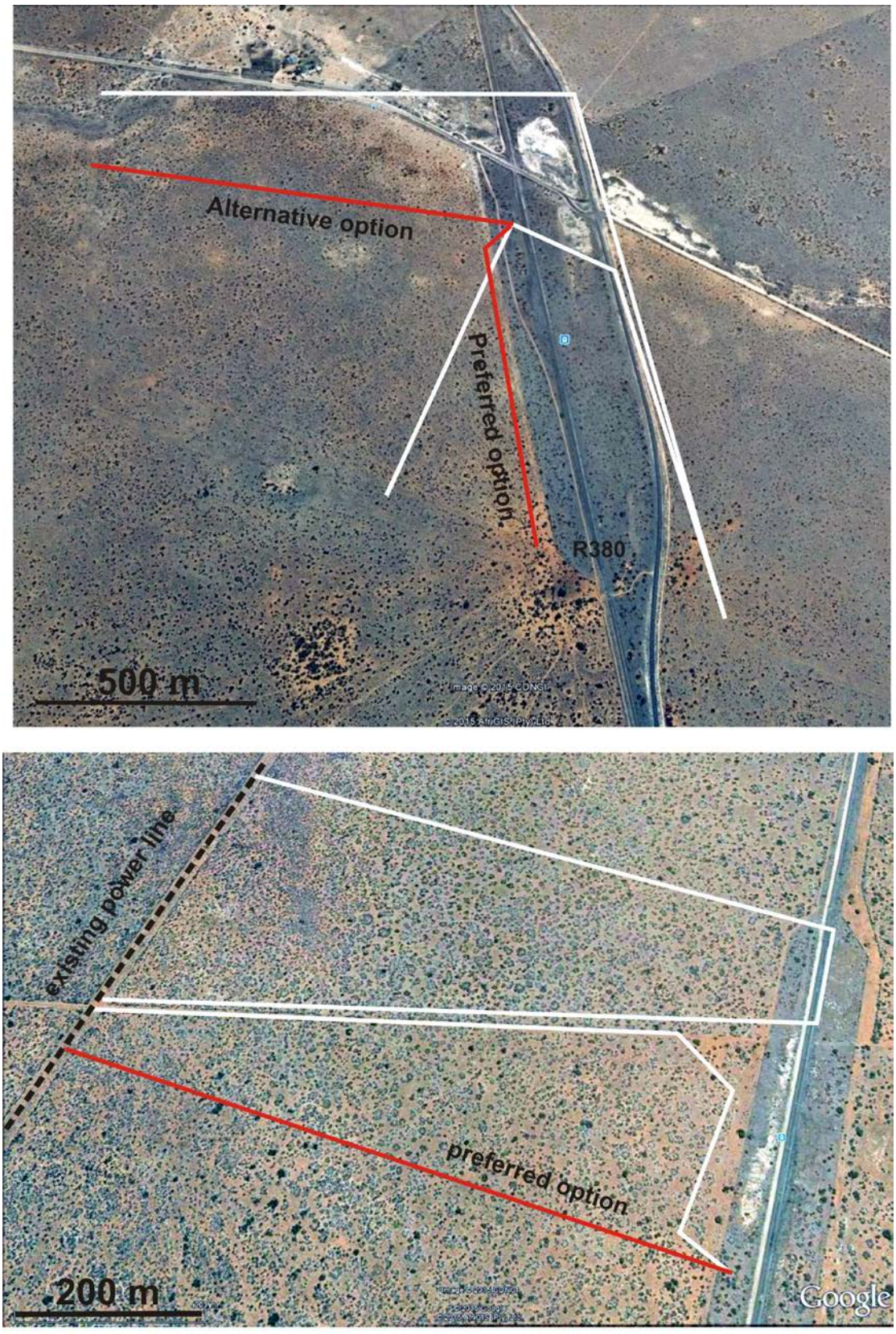

Figure 3. Layout of the proposed power line options at Witloop (top) and Vlermuislaagte (bottom).

Figure 4. The alternative (above) and preferred (below) power line options at Witloop.

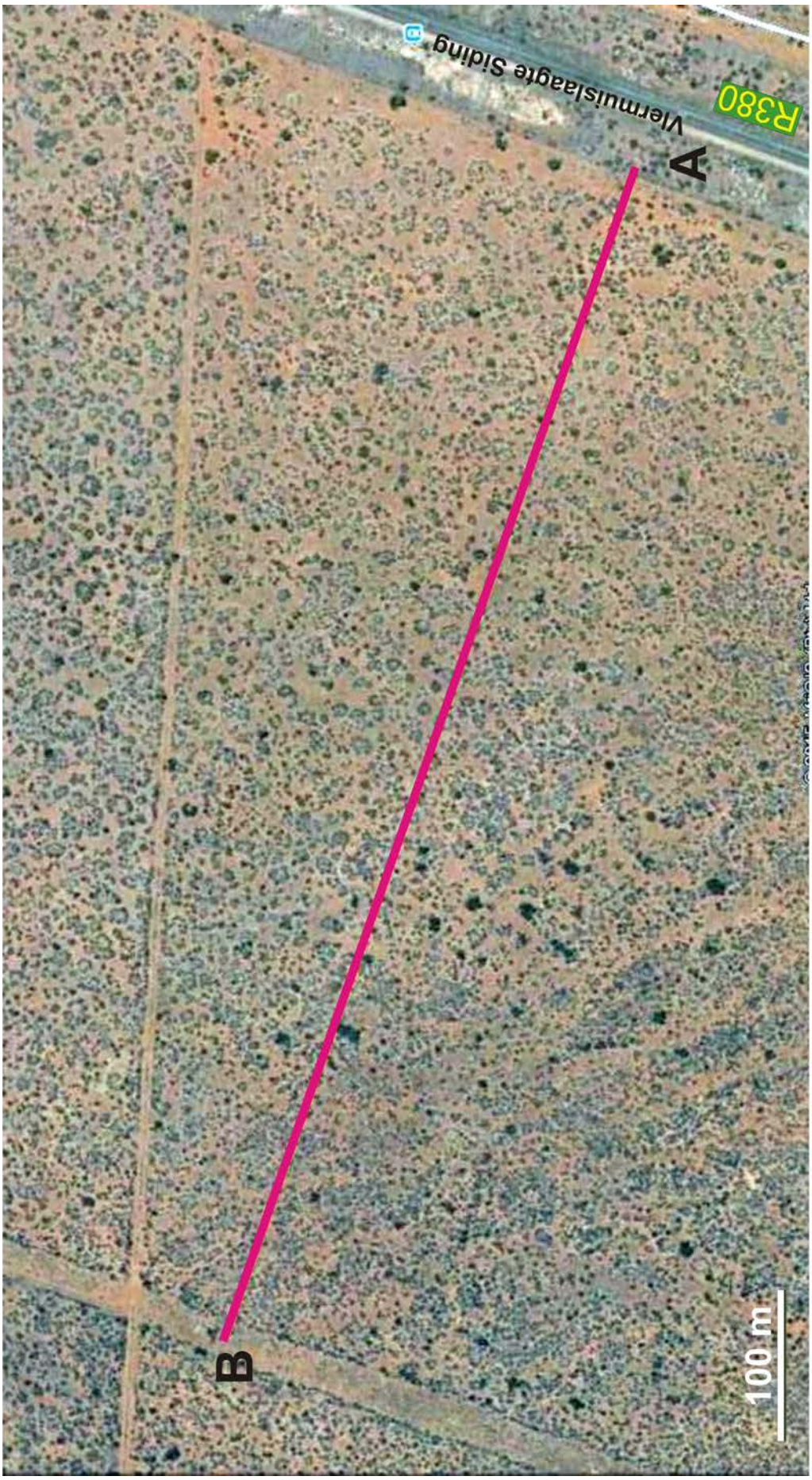

Figure 5. The preferred power line option at Vlermuiskraal.

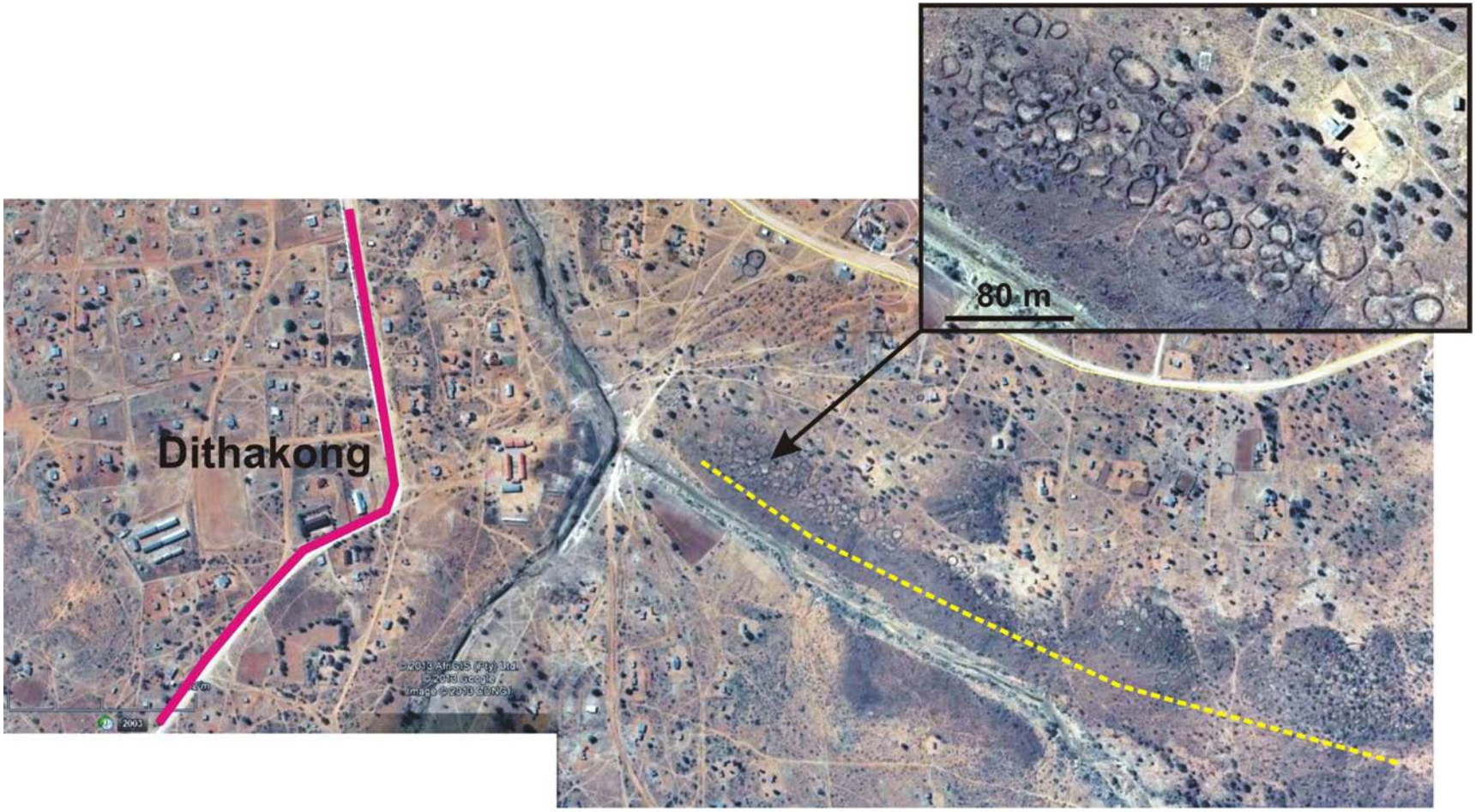

Figure 6. Aerial view of extensive stone wall enclosures found near Dithakong, situated 100 km east-northeast of Hotazel.

Figure 7. The study area at Witloop, looking west along the alternative power line option (top) and south along the preferred power line option (above left). Both footprints are underlain by well-developed red to flesh-coloured aeolian sands. (Scale: 1=10 cm).

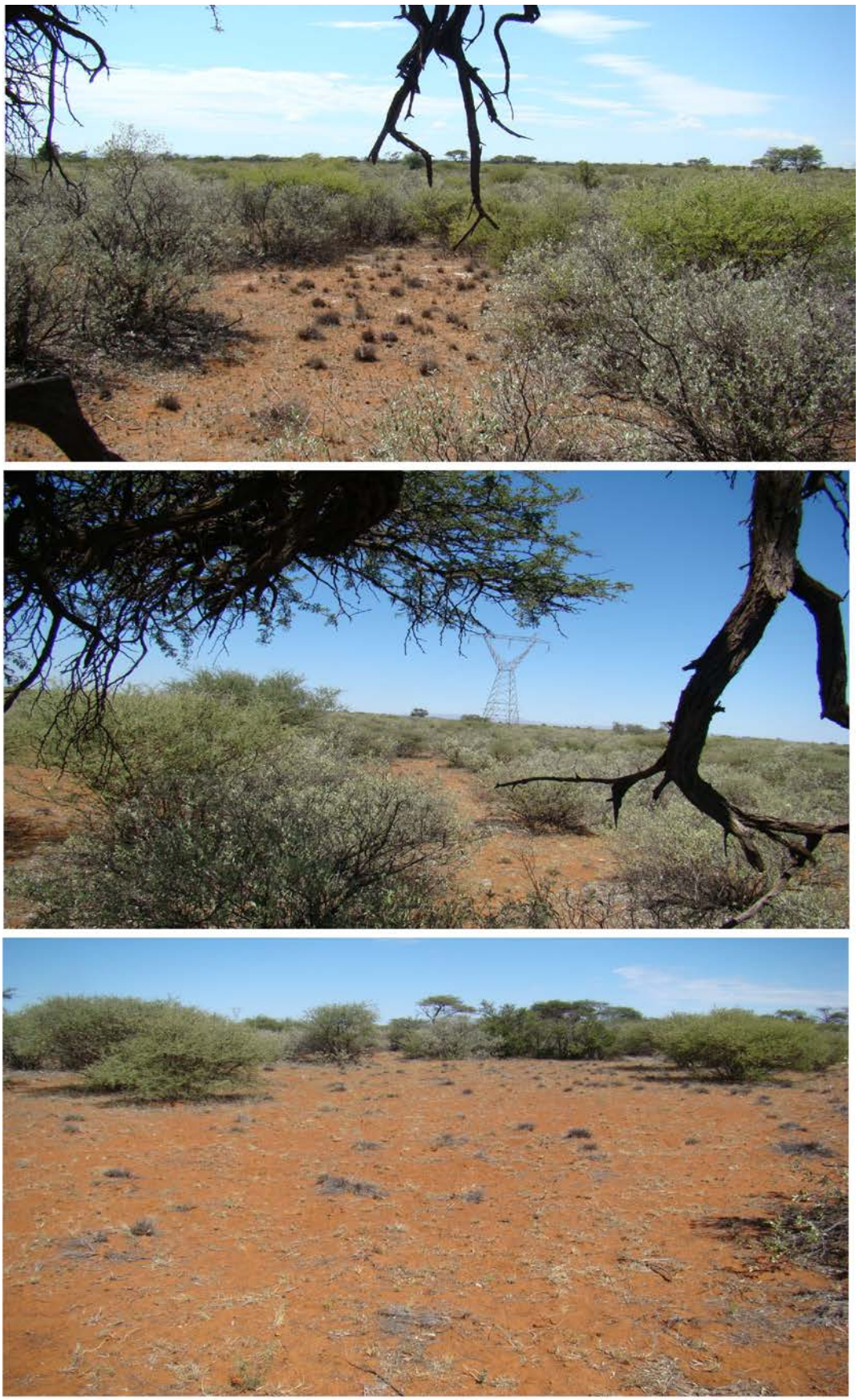

Figure 8. The study area at Vlermuislaagte, looking east (top), south towards the existing power line (middle) and west (bottom).

Figure 9. The footprint at Vlermuislaagte is underlain by calcretes (top left, middle), wind-blown sands (top right, centre) and terrace gravels (bottom).
Scale: 1 = 10 cm

Figure 10. An isolated flake blade with evidence of retouch (top) and an assortment of informal types (center and bottom).
Scale: 1 = 10 cm.

Figure 11. An irregular core with several striking platforms.