

Phase 1 Heritage Impact Assessment for proposed construction of a 1.7 km – long freshwater pipeline from the Orange River to Plangeni on Farm Blaauwskop 36 near Keimoes, Northern Cape Province.



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## SUMMARY

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A Phase 1 Heritage Impact Assessment was carried out for proposed construction of a ~1.7 km long freshwater pipeline from the Orange River to the Plangeni township development, situated on the farm Blaauwskop 36 in the Kai !Garib Municipality near Keimoes, Northern Cape Province. The proposed linear footprint is underlain by metasedimentary rocks (Keimoes Suite, Kannoneiland Granite) that are capped by a veneer of bedrock – derived, gritty to gravelly top soils and sand. The footprint transects small sandy pediments along dry stream beds and ephemeral water courses draining into the Orange River from the east. A ~200 m long section of the footprint transects potentially sensitive alluvial deposits flanking the current river channel, but these overbank sediments have been severely degraded (in terms of archaeological and palaeontological disturbance), by intensive agricultural activities. Except for a low density distribution of locally derived LSA artefacts (< 1 / 300 m), no *in situ* Stone Age archaeological features were observed. There are no indications of rock art (fineline, scraped or pecked engravings), aboveground evidence of graves or cairns, stonewalled structures or historically significant buildings older than 60 years within the immediate boundary of the proposed footprint. The proposed development footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C. It is advised that the proposed project can proceed with no further palaeontological or archaeological assessments required.

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## INTRODUCTION

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A Phase 1 Heritage Impact Assessment was carried out for proposed construction of a ~1.7 km long freshwater pipeline from the Orange River to the Plangeni township development, situated on the farm Blaauwskop No. 36 in the Kai !Garib Municipality near Keimoes, Northern Cape Province (**Fig. 1**). 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.

The primary legal trigger for identifying when heritage specialist involvement is required in the Environmental Impact Assessment process is the National Heritage Resources 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, 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 m<sup>2</sup> 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 m<sup>2</sup>.

- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

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). 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 (2005).

### **Methodology**

The significance of the affected area was evaluated using existing field data, database information and published literature. This was followed by a field assessment (site visit) of the linear footprint. 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 and palaeontological information, maps, Google Earth images and site records were integrated with data acquired during the on-site inspection.

### **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.

Archaeological rating of the footprints followed SAHRA-prescribed field rating categories listed in **Table 1**.

## **LOCALITY DATA**

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1 : 50 000 scale topographic map 2821CA Kanoneiland

1 : 250 000 scale geological map 2820 Upington

The footprint transects open veld and agricultural land on the farm Blaaws Kop 36, located about 27 km southwest of Upington (**Fig. 2 & 3**).

General site coordinates of the proposed pipeline footprint (see **Fig. 2**):

- A) 28°39'58.45"S 21° 6'12.79"E
- B) 28°39'52.66"S 21° 6'3.19"E
- C) 28°40'10.51"S 21° 5'50.73"E
- D) 28°40'4.49"S 21° 5'38.15"E
- E) 28°39'57.69"S 21° 5'27.41"E

## BACKGROUND

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### Palaeontology

*Potential palaeontological occurrences: Late Neogene vertebrate fossils associated with intact (Orange River) river terrace gravels; Quaternary vertebrate fossils associated with well-developed Pleistocene alluvial deposits.*

The pipeline footprint transects palaeontologically insignificant Keimoes Suite, granites, and moderately significant alluvial overburden associated with the the Orange River to the west (**Fig. 4 & 5**).

### Archaeology

*Potential archaeological occurrences: Intact Stone Age open sites; rock shelters, burial cairns (graves placed underneath raised, man-made stones piles), unmarked graves, kraals & historically significant stone – built structures*

The Middle Orange River and Bushmanland regions have been populated more or less continuously during prehistoric times (Beaumont *et al.* 1995). According to Beaumont (1986) archaeological visibility in the region was high during the Last Glacial Maximum, a viewpoint that is in contrast to that indicated for southern Africa as a whole (Deacon and Thackeray 1984). Early Stone Age artefacts have been recorded *in situ* at Kalkgaten on the farm Ratel Draai, while Middle Stone Age and Later Stone Age sequences have been recorded from a number of cave sites on the farms Zoovoorbij, Droëgrond and Waterval in the Upington district (Beaumont *et al.* 1995) (**Fig. 6**). Archaeological and historical evidence also show that the region was extensively occupied by Khoi herders and San hunter-gatherers during the last 2000 years (Smith 1995). The principal Khoikhoi inhabitants of the Middle Orange River were the Einiqua who belonged to the same language group as the Namaqua and Korana, namely the Orange River Khoikhoi (Penn 2005). The Einiqua occupied the area around and east of the Augrabies Falls while the Korana occupied the Middle-Upper Orange River further to the east (Burchell 1822; Penn 2005). A large number of burial cairns were recorded on the Orange River in the Kakamas area on the farms Renosterkop, Rooipad and Augrabies Town and appear to be related to Khoekhoen people, specifically the Einiqua, and historical data shows that a large number of the graves date to the 18th and early 19th centuries (Dreyer & Meiring 1937; Morris 1992, 1995).

## FIELD ASSESSMENT

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The proposed footprint lies on low relief terrain where metasedimentary rocks are capped by bedrock – derived, gritty to gravelly top soils, with small sandy pediments flanking dry stream beds and ephemeral drainage lines (**Fig. 7**). The substrate along certain sections have been degraded by township development and agricultural activities (see **Fig. 2**, ~200 m – long Section A-B & ~370 m - long Section D-E; **Fig. 8**). Except for a low density of locally derived LSA artefacts (< 1 / 300 m), no *in situ* Stone Age archaeological features were observed (**Fig. 9**). There are no indications of rock art (fineline, scraped or pecked engravings), aboveground evidence of graves, stonewalled structures or historically significant buildings older than 60 years, or aboveground evidence of graves or cairns within the immediate boundary of the proposed footprint.

## IMPACT STATEMENT AND RECOMMENDATION

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The proposed development footprint is underlain by palaeontologically insignificant metamorphic rocks and geologically recent superficial sediments as well as potentially significant alluvium that has been extensively disturbed by agricultural activities. The field assessment provided no aboveground evidence of prehistoric structures, buildings older than 60 years, or material of cultural significance or *in situ* archaeological sites within the study area. The proposed development footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C (**Table 1**). It is advised that the proposed project can proceed with no further palaeontological or archaeological assessments required.

## REFERENCES

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#### DECLARATION OF INDEPENDENCE

Paleo Field Services act as an independent specialist consultant and do not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. Paleo Field Services has no interest in secondary or downstream developments as a result of the authorization of this project.

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

10/05/2023



## TABLES AND FIGURES

**Table 1.** Field rating categories as prescribed by SAHRA.

<b>Field Rating</b>	<b>Grade</b>	<b>Significance</b>	<b>Mitigation</b>
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

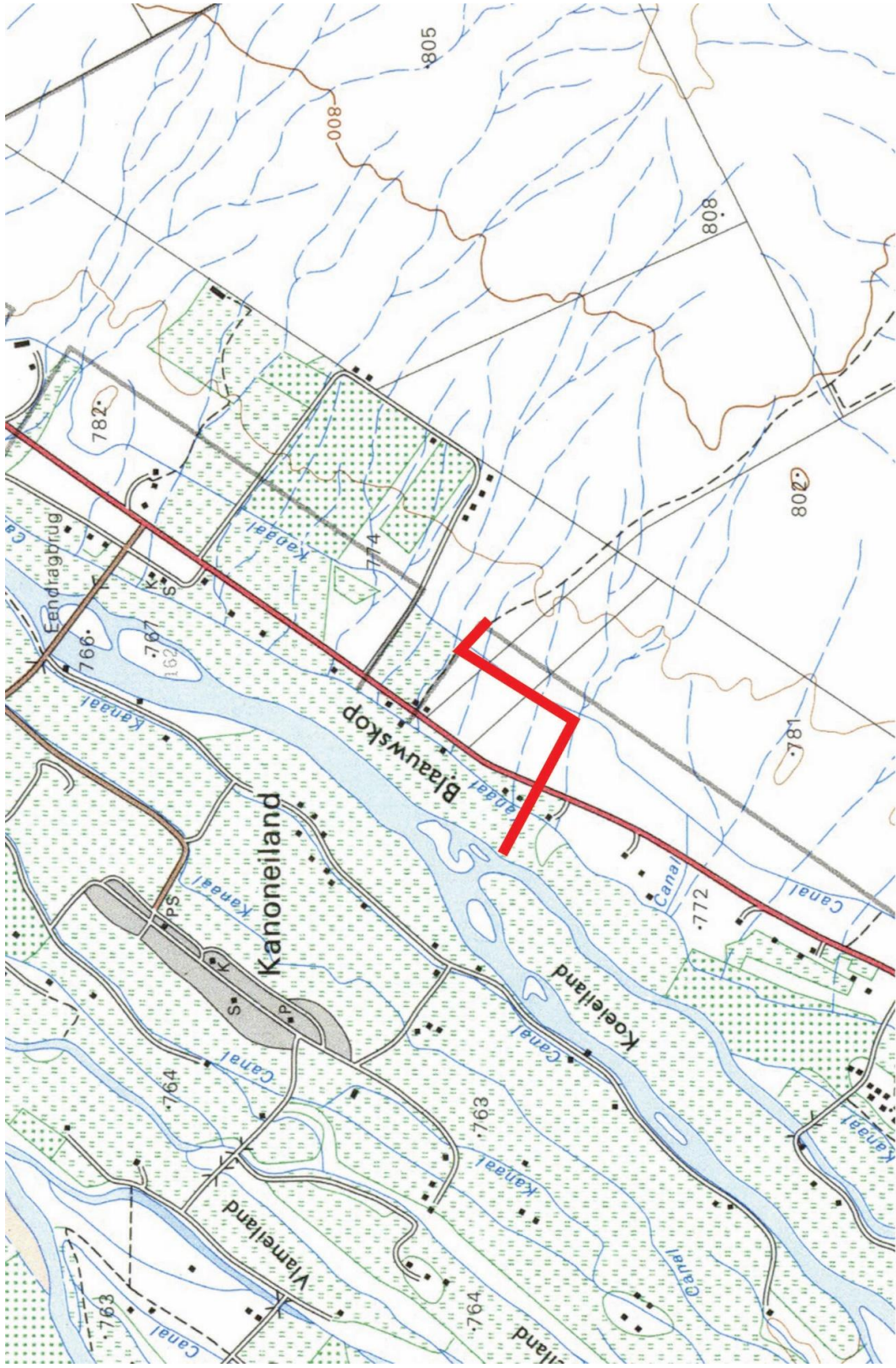


Figure 1. Map of the proposed pipeline footprint marked on portion of 1:50 000 scale topographic map 2821CA Kanoneiland.

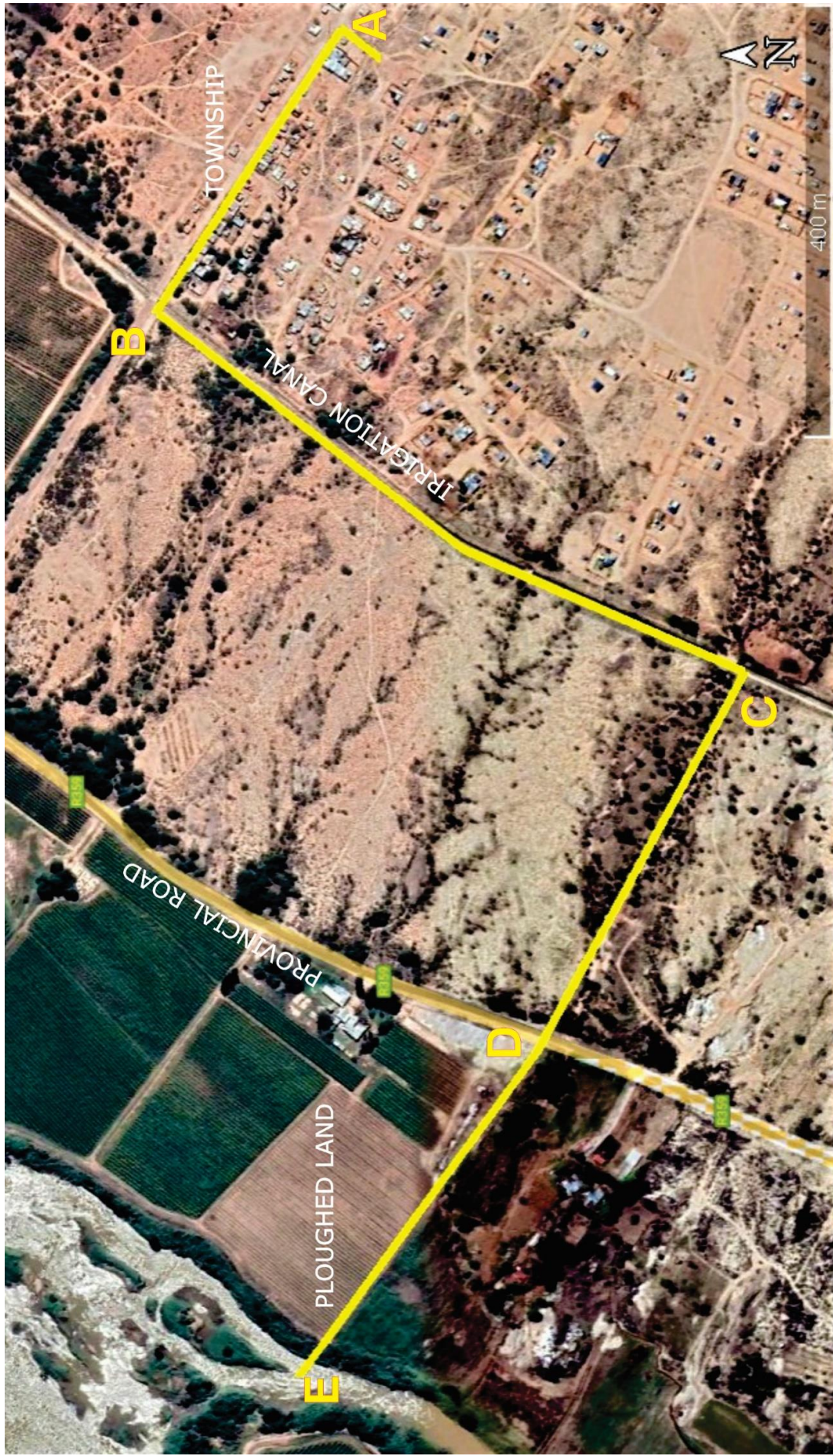


Figure 2. Aerial view and layout of the proposed development.



Figure 3. General view of the area, looking north, (east of R359, above), west (east of R359, center) and northwest (west of R359, bottom).





Figure 5. Pipeline footprint marked on 2023 SAHRIS palaeosensitivity map.

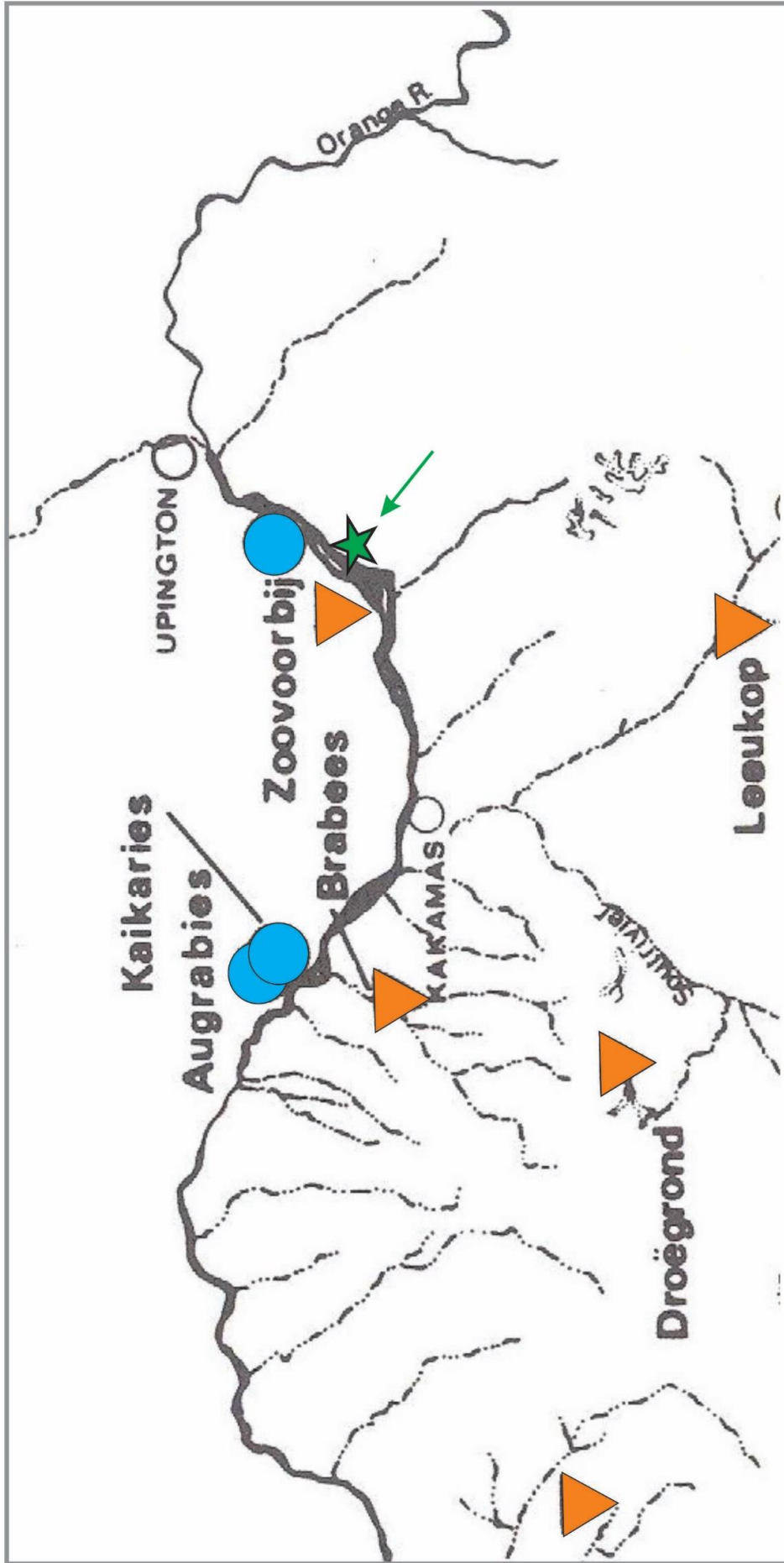


Figure 6. Location of known MSA, LSA & pastoralist sites (triangles) and burial sites (blue circles) in relation to position of study area (green star, above). Maps after Smith & Metelerkamp (1995) and Smith (1995).



Figure 7. The footprint transects low relief terrain capped by gritty to gravelly top soils and sand (above left & right) as well as dry stream beds and ephemeral drainage lines (below left & right).



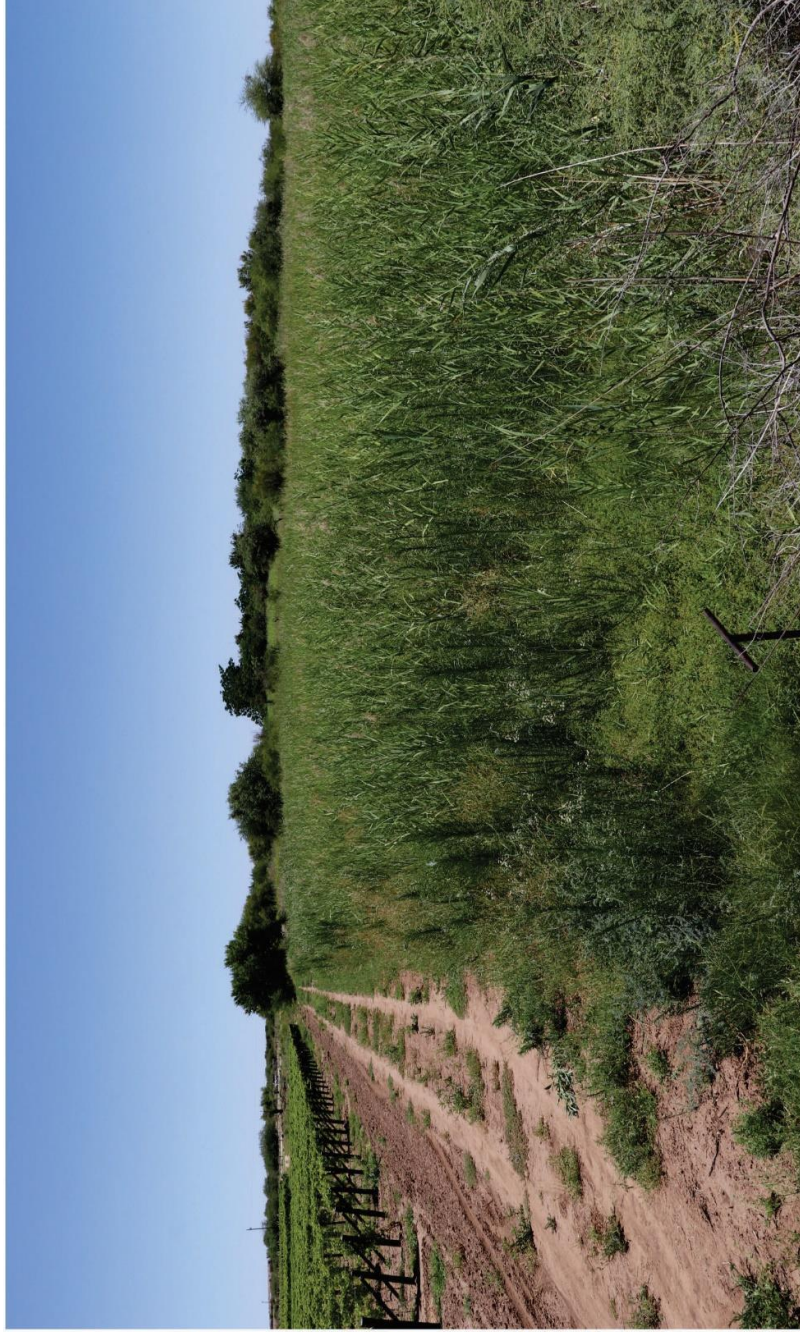
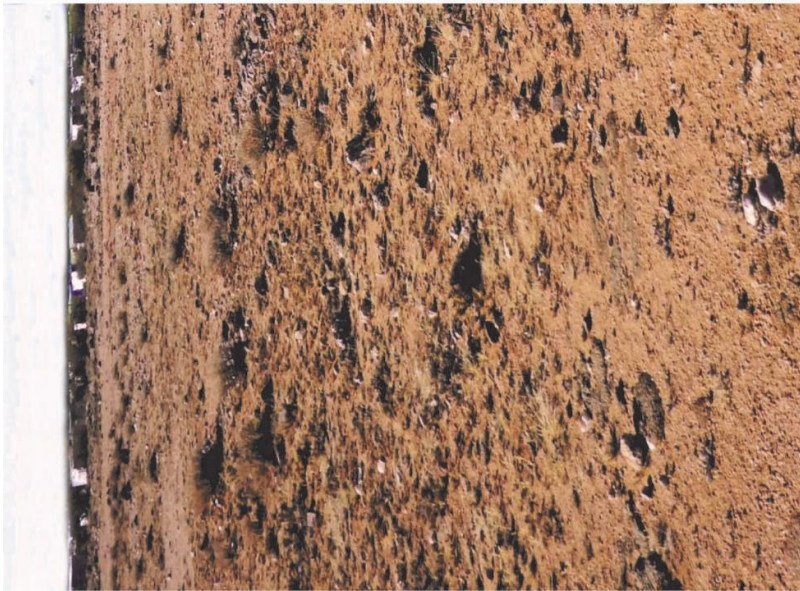


Figure 8. General view of the township and agricultural areas (Section A-B, left & D-E, right).



Figure 9. Low density artifact scatter Section (Scale 1 = 10).