Phase 1 Heritage Impact Assessment of a proposed 5.5 ha development on the farm Vaalkoppies 40, Upington, NC Province.

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SUMMARY

A Phase 1 Heritage Impact Assessment was carried out over an approximately 5.5 ha area designated for industrial development on the farm Vaalkoppies 40 near Upington in the Northern Cape Province. The site is underlain by palaeontologically insignificant metamorphic rocks. The proposed development footprint within a degraded area because of the previously established ponds and associated agricultural activities. The site is capped by gritty to gravelly top soils, that varies between an admixture of weathered bedrock gravel and calcretes exposed towards the north and Quaternary-aged wind-blown sands with associated alluvium-accumulated drainage lines in the south. Impact on potential palaeontological heritage resources within more developed superficial sediments (overlying Quaternary sediments) along gullies and drainage lines is considered unlikely. The field assessment provided no aboveground evidence of prehistoric structures, buildings older than 60 years, graves 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 (GP.C).

INTRODUCTION

A Phase 1 Heritage Impact Assessment was carried out over an approximately 5.5 ha area designated for industrial development on the farm Vaalkoppies 40 near Upington in the 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 (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, 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).

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 based on existing field data, database information geological maps, Google Earth images and published literature. This was followed by a field assessment by means of a pedestrian survey of the area. Particular attention was given to low-lying areas and associated alluvial deposits. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. The study area was rated according to site significance categories as prescribed by SAHRA (**Table 1**).

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.

LOCALITY DATA

1 : 50 000 scale topographic map 2821 AD Upington Oos

1 : 250 000 scale geological map 2820 Upington

The study area is located about 8km southeast of Upington, next to the N10 (R64) national road on the farm Vaalkoppies 40 (**Fig. 2).** The study area lies on low relief terrain, incised by shallow alluvial features (**Fig. 3**).

Site coordinates of the proposed development footprint (see **Fig. 2**):

A) 28°27'15.81"S 21°19'25.50"E

B) 28°27'22.88"S 21°19'27.21"E

C) 28°27'24.56"S 21°19'18.54"E

D) 28°27'17.90"S 21°19'15.88"E

BACKGROUND

According to the 1:250 000 geological map 2820 Upington, the study area is underlain by ~ 1000 million year old biotite granites of the late Mokolian Keimoes Suite. Late Cenozoic river terrace deposits between Upington and Augrabies consists of thin remnants preserved as bedrock lags and small sediment accumulations concentrated at local bedrock nickpoints (De Wit 2006). There are currently no records of vertebrate fossil remains from alluvial contexts associated with the Orange River around Upington. Paleogene fossil assemblages are known from a crater-lake deposit within a volcanic pipe at Stompoor, located about 160 km due south of Upington, and include a diversity of fish, frogs, reptiles, insects, and palynological remains (Smith 1988). Fluvial deposits from the ancient Koa Valley have yielded fossil vertebrate bone as well as fossil wood (Maglio 1978; De Wit 1996; De Wit and Bamford 1993) while a rich, Middle Miocene vertebrate site is located further downstream in proto-Orange River gravel deposits on the Namibian side of the Orange River at Arrisdrift, about 40 km northeast of Oranjemund.

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. 5A**). 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) (**Fig. 5B**). 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 (**Fig. 6**). A large number of burial cairns were excavated near the Orange River in the Kakamas area and appear to be related to Korana herders (Morris 1995).

The characteristics of the terrain and underlying geology suggest that impact on potential rock art localities is highly unlikely.

FIELD ASSESSMENT

The proposed development footprint within a degraded area because of the previously established evaporation ponds and associated agricultural activities (**Fig. 7**). The site is primarily underlain by granites capped by gritty to gravelly top soils, that varies between an admixture of weathered bedrock gravel and calcretes exposed towards the north and Quaternary wind-blown sands with associated alluvium accumulated drainage lines in the south (**Fig. 8**). There is no aboveground evidence of intact Stone Age archaeological assemblages or sites. The pedestrian survey also revealed no evidence of prehistoric structures or graves within the confines of the study area.

IMPACT STATEMENT AND RECOMMENDATION

The site is underlain by palaeontologically insignificant metamorphic rocks. Impact on potential palaeontological heritage resources within more developed superficial sediments (overlying Quaternary sediments) along gullies and drainage lines is considered unlikely. 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 (**Table 1**). The proposed development footprint and associated access road are not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C (GP.C).

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference and have no interest in secondary or downstream developments resulting from the authorization of this project.

11 August 2021

TABLES AND FIGURES

Table 1. 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

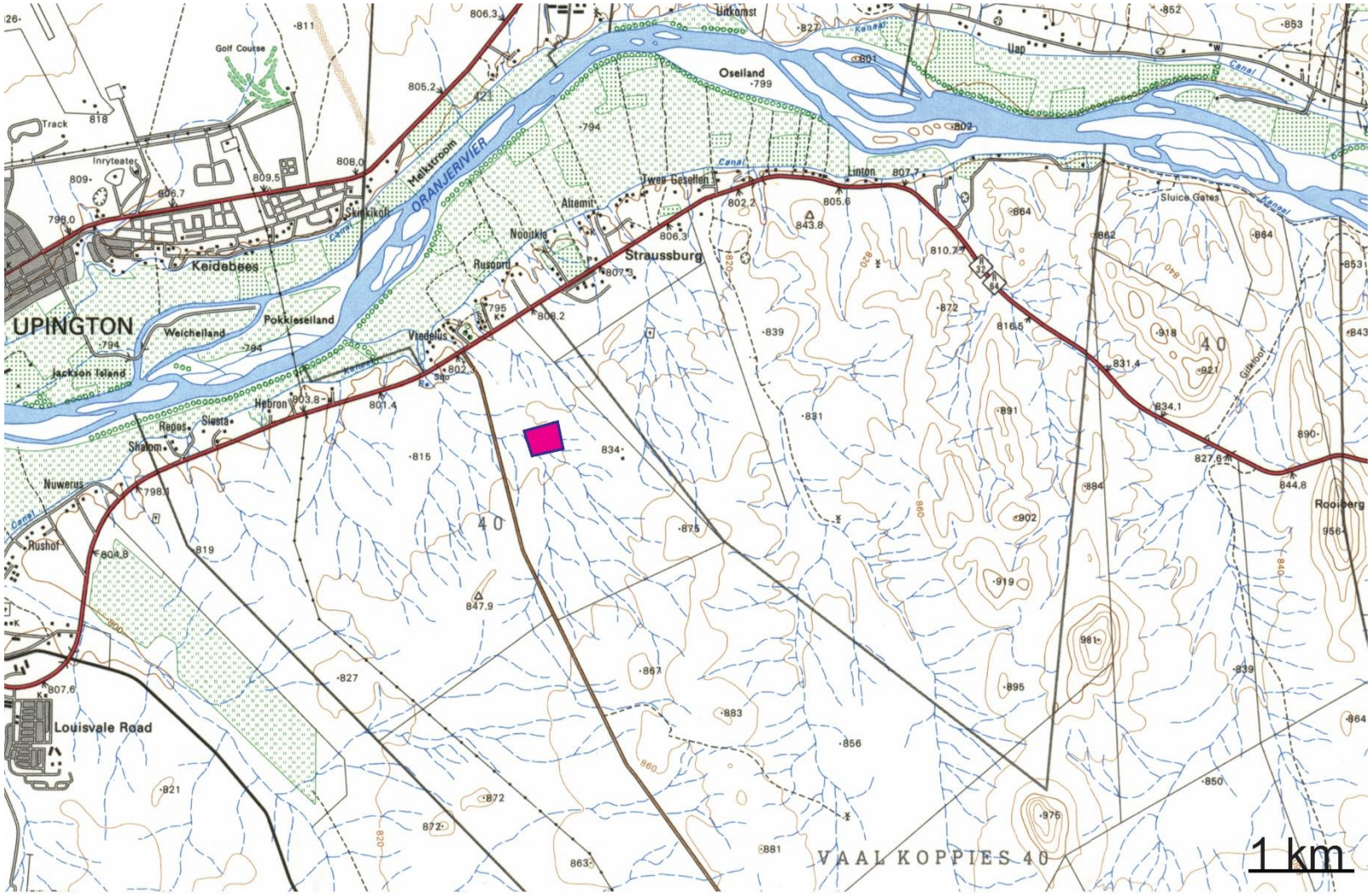

Figure 1. Map of the study area (portion of 1:50 000 scale topographical map 2821AD Upington Oos).

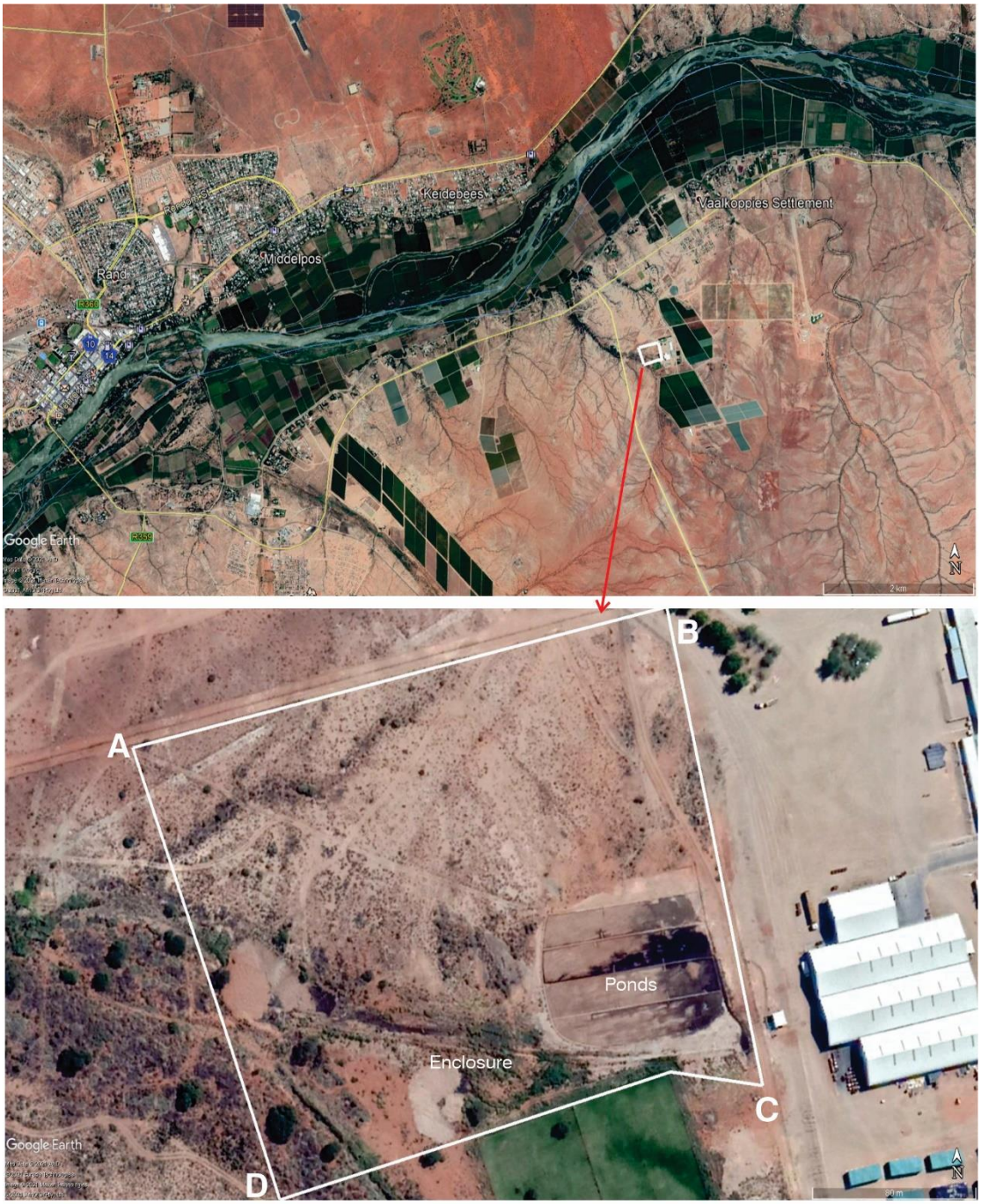

Figure 2. Aerial view and layout of the proposed development.

Figure 3. General view of the site, looking east (above) and west (below).

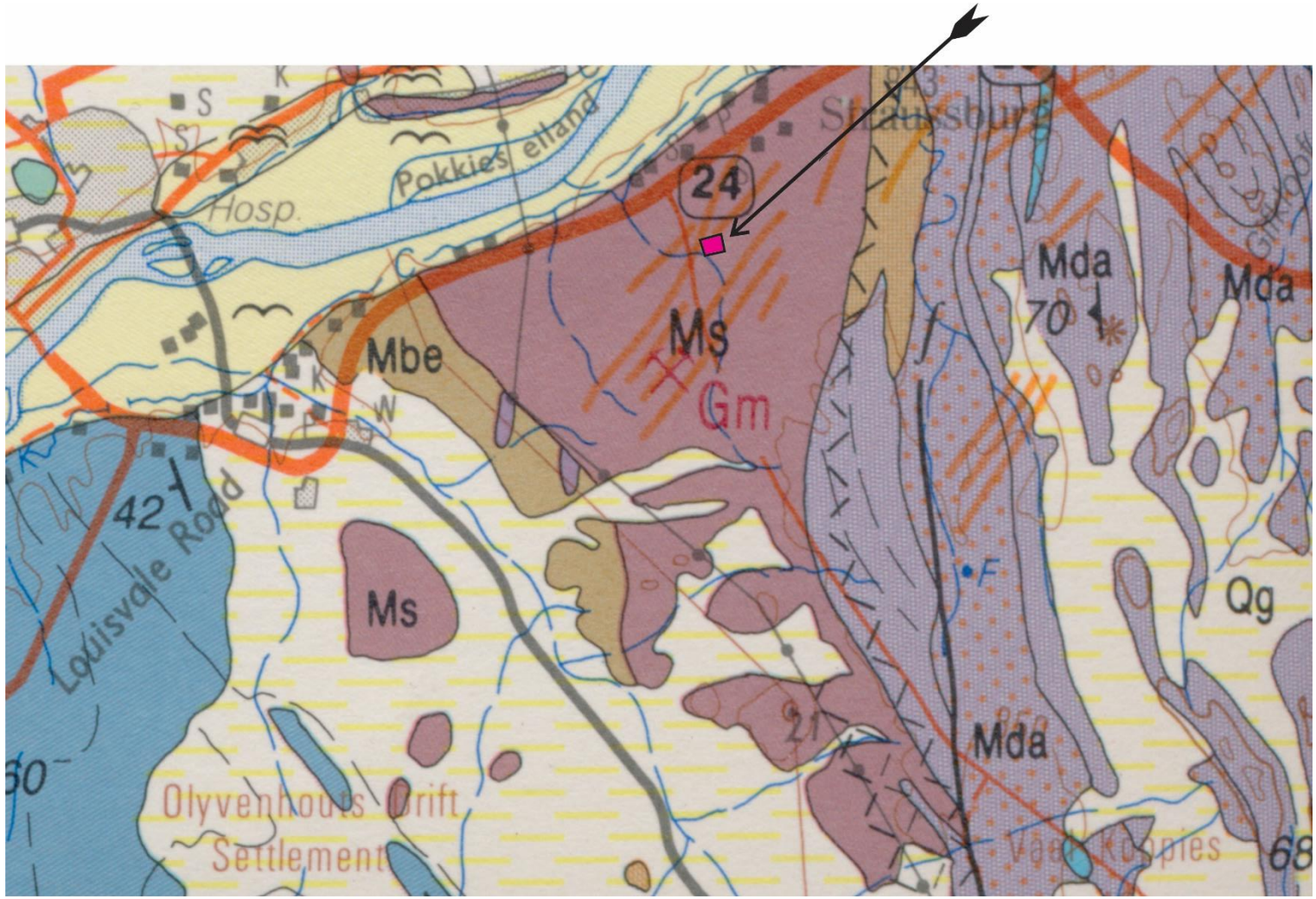

Figure 3. Portion of 1:250 000 scale geological map 2821 Upington. The study area is underlain by Keimoes Suite granites (*Ms*).

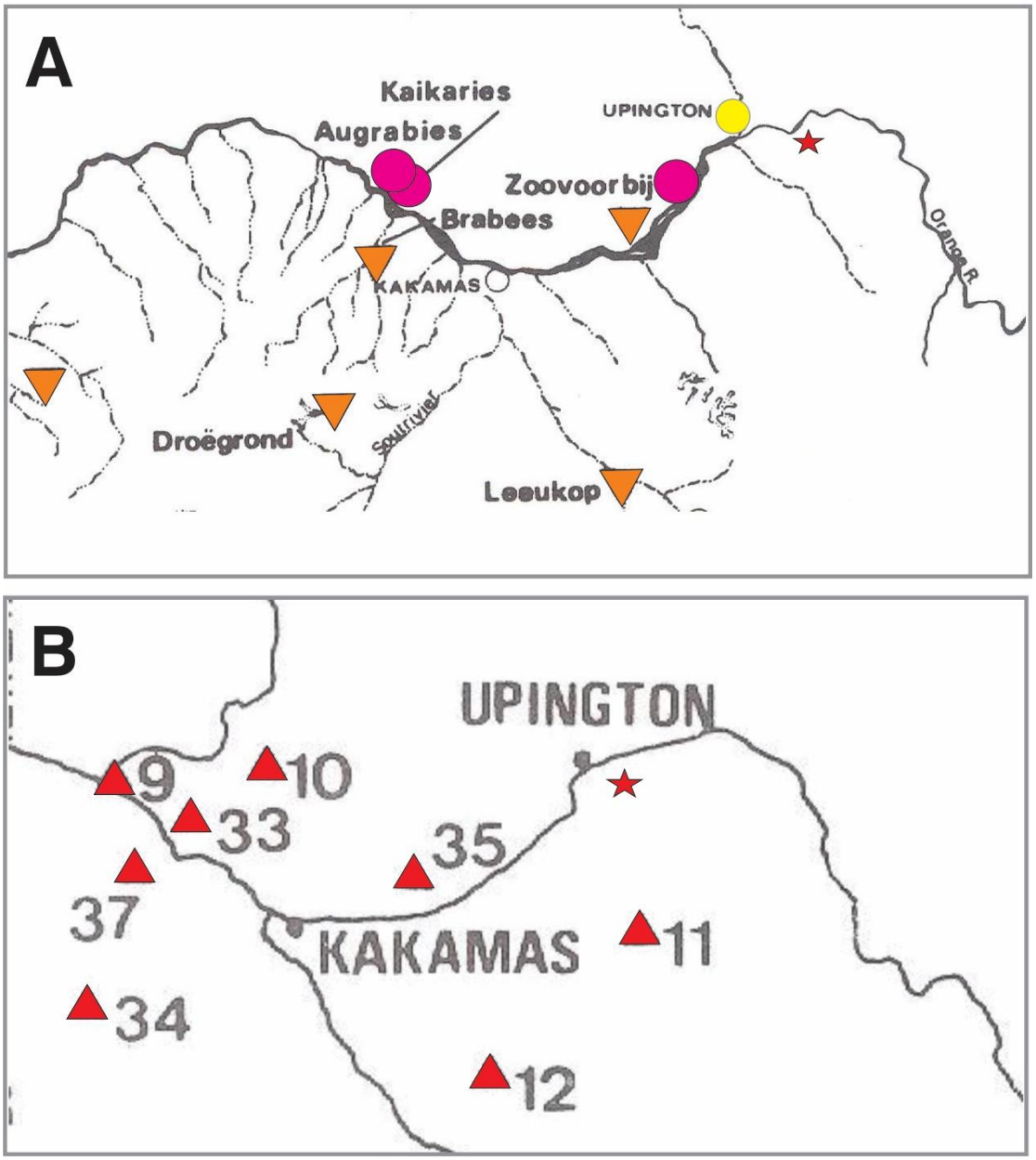

Figure 5. Location of known of Stone Age, pastoralist and burial sites in the region in relation to position of study area (red star). Maps after Beaumont et al. 1995 and Smith 1995.

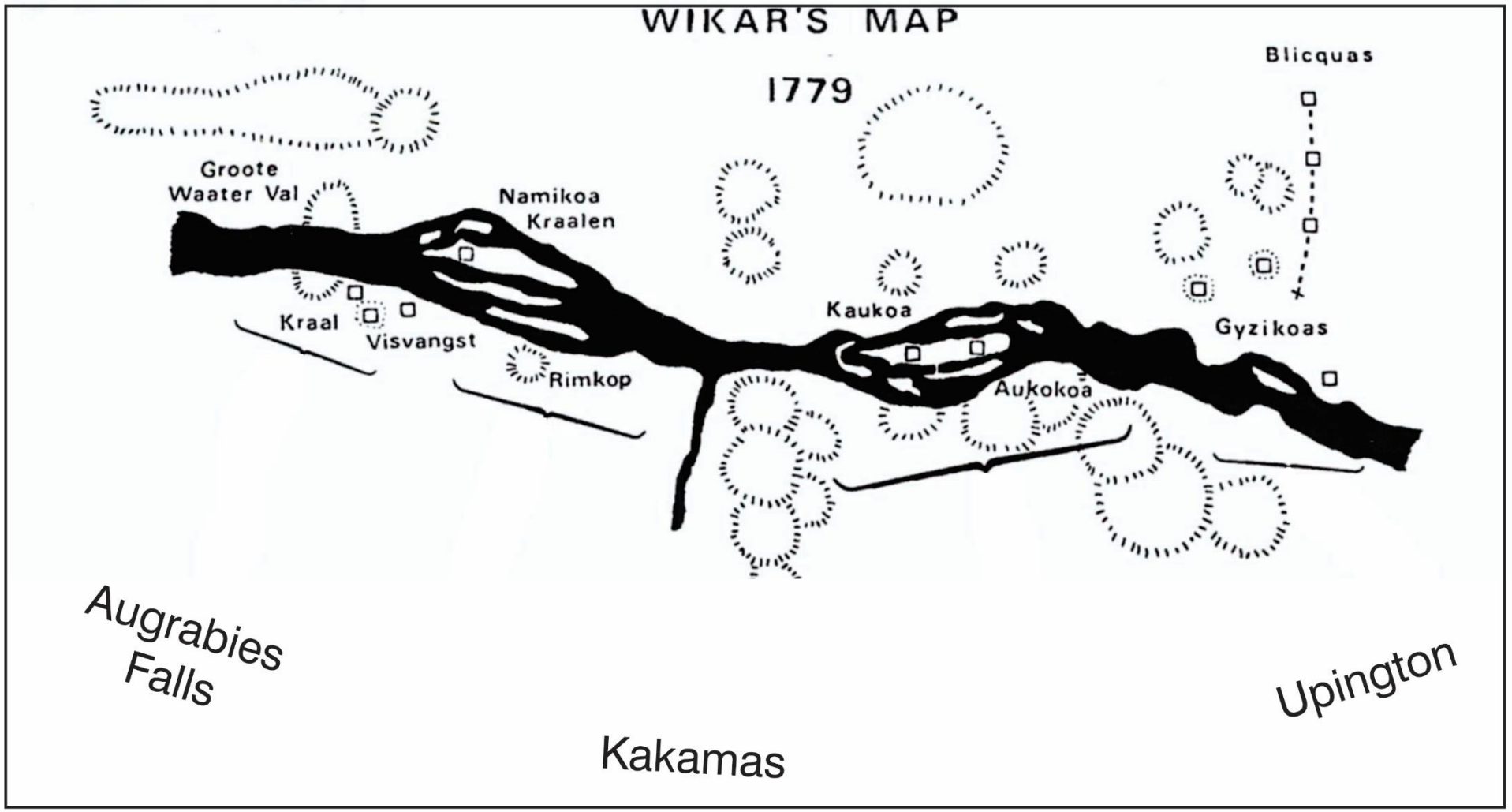

Figure 6. Wikar's 1779 map of Khoikhoi settlements along the Orange River between Augrabies and Upington (after Morris 1995)

Figure 7. Industrial-related activities at the site.

Figure 8. Weathered granites (top left) capped by gritty to gravelly, brown topsoils (top right), that varies between an admixture of weathered bedrock gravel and calcretes (center left & right) and Quaternary wind-blown sands and alluvium (bottom). Scale 1 = 10 cm.