McGregor Museum
Department of Archaeology

Archaeological Impact Assessment Phase 1 for Erfs 5117, 5118, & 6574, Kathu, Northern Cape.

Prepared for Assmang Proprietary Limited.

David Morris & Michael Chazan

May 2019

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1. Introduction

This report provides an Archaeological Impact Assessment relative to a proposed housing development on Erfs 5117, 5118, & 6574, Kathu, Northern Cape. Originally, Walker Archaeological Services (Walker 2015) was approached by Mr Tinus Barnard of Assmang Proprietary Limited to assist the process of rezoning a property straddling Erfs 5117, 5118, & 6574 for a proposed housing development (Fig. 1a & b). The McGregor Museum, assisted by Prof Michael Chazan, has completed the task and provides this report accordingly.

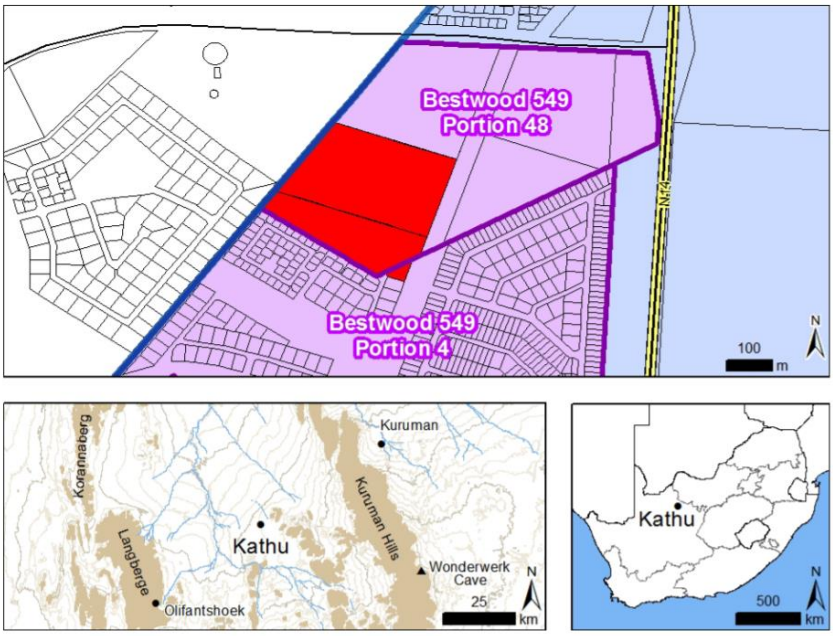


Figure 1a. Project location (in red) (from a document prepared by Steven Walker).

Figure 1b. Project location relative to Erven (top) and (below) proposed project footprint (from a document prepared by Steven Walker).

The property, immediately south of the Heritage Square Mall, includes the south east corner of the archaeological site known as "Kathu Townlands". This site has already been graded by SAHRA as Grade 1 (of national significance) and is in the process of becoming a National Heritage Site (Phillip Hine pers. comm. 21 May 2019). However, it has not yet been formally declared with protected site boundaries determined by notice in the Government Gazette (Walker 2015). This allows for the potential for the proposed development to proceed as originally envisioned, with mitigation measures to be recommended (this report). SAHRA would need to evaluate the proposals and recommendations made in this report, to provide permission to either destroy the archaeological deposit on the property in question, or present a development plan that does not impact upon the archaeological resources. Two options are presented in this report: to avoid disturbance of that part of the Kathu Townlands site that lies within the proposed development by way of modifying the housing development footprint in the north west corner (preferred); or to mitigate disturbance if it cannot be avoided. In the latter scenario a destruction permit would be envisaged in terms of which monitoring and sampling by professional archaeologists would be required, as well as devising a plan for disposal of displaced archaeological sediment ('gravel').

This impact assessment has been aimed in part at determining the exact extent and nature of the archaeological deposits on the property in question. This enables the preparation of the recommendations alluded to for development and/or mitigation.

1.1 Focus and Content of Specialists' Report

The archaeology specialist study (commissioned by Mr Tinus Barnard of Assmang) is focused on the development footprint of the proposed housing development (Fig. 1)

This specialist study is a stand-alone report and incorporates the following information:

» Archaeological Specialists (1.2)

» Description of the affected environment (2)

» Description of heritage features of the region (2.1)

» Description of issues and potential impacts (2.2)

» Methodology (3)

» Assumptions and limitations (3.1)

» Observations (4)

» Recommendations (5)

1.2 Archaeology Specialists

The authors of this report are 1) an archaeologist (D. Morris: Head of Archaeology at the McGregor Museum and Professor in the School of Humanities, Sol Plaatje University) accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists, having previously carried out surveys and fieldwork on sites in the Kathu area and wider Northern Cape (Beaumont & Morris 1990; Morris & Beaumont 2004); and 2) an archaeologist (M. Chazan, Professor of Archaeology at the University of Toronto) co-directing current research in the Kathu-Kuruman landscape including Kathu Pan, Kathu Townlands, Bestwood and Wonderwerk Cave (Chazan et al. 2012; Porat et al. 2009; Walker et al. 2014; Wilkins & Chazan 2012; Wilkins et al 2012 being publications relevant to Kathu itself).

Both authors work independently of the organization commissioning this specialist input, and provide these impact assessment observations within the framework of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and palaeontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This means that a Heritage Impact Assessment should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

2. Description of the affected environment and potential impacts

The terrain in which the proposed housing development is to be situated is a slightly undulating surface immediately west of the national road by-passing Kathu on its eastern side and immediately south of the Heritage Mall development. It clips the south eastern corner of the known Kathu Townlands archaeological site which is graded for declaration is a Grade 1 National Heritage site. It is underlain in part (south easterwards) by calcrete which is partly mantled by shallow aeolian sand (deepening to the east). Banded ironstone outcrops and rises slightly to the north-west in a deposit immensely rich in stone artefacts of Pleistocene age, comprising the south-eastern corner of the Kathu Townlands site.

Geologically, these features are referred to as the Mokalanen Formation (Almond 2014) calcrete (not uniformly ancient – Walker *et al*. 2013) and younger Gordonia Formation aeolian sands (Almond 2014). In places such as Kathu Pan, north west of Kathu, the Mokalanen Formation calcrete contains a series of solution hollows (sinkholes or dolines) which were in-filled with Quaternary and Holocene sediments rich in both archaeological and fossil remains (Wilkins & Chazan 2012; Wilkins et al. 2012). Outcropping above/between the bodies of calcrete in places are the far older Late Archaean to Early Proterozoic rocks of the Transvaal Supergroup, here in the form of banded ironstone bedrock features (which also form the hills east and north east of Bestwood).

2.1 Description of heritage features of the region

The main 'site' clusters forming the Kathu Complex, an archaeological landscape, are Kathu Pan, located north west of the town of Kathu, Townlands site in what was the eastern perimeter, with further localities to the east of the town, including archaeological occurrences on Bestwood farm and along the western flank of the Kuruman Hills (Fig. 2).

Highly significant archaeological sites occur in and around Kathu, becoming well-known in international scientific literature, and with the renowned Kathu Pan Handaxe having been exhibited in museums in Europe and the USA, and featured on a South African postage stamp. One of the Kathu Pan sites has been key to discussions on the earliest innovation of stone-tipped spear technology at 500 000

years BP. Recognition by SAHRA of Grade 1 (national) significance for these sites, and progress towards their formal declaration, has been mentioned above.

An issue identified by Walker et al (2013), which is the "main difficulty" in reviewing previous work, "is understanding where deposits are located, and where they are not." Walker *et al* add that:

> The archaeological deposits at Kathu are enormous and represent a tremendous amount of early human activity. The Kathu Complex presents an opportunity unique in South Africa to explore early human behaviour at the scale of the landscape rather than discreet sites. This set of localities also raises the obvious question of why hominin occupation was so dense in this particular area. A review of these deposits (as individual 'sites') is useful. (Walker et al. 2013:34-5).

The main 'site' clusters include Kathu Townlands, Kathu Pan, localities to the east of the town on Bestwood farm, and upslope from the Kathu Cemetery on Uitkoms.

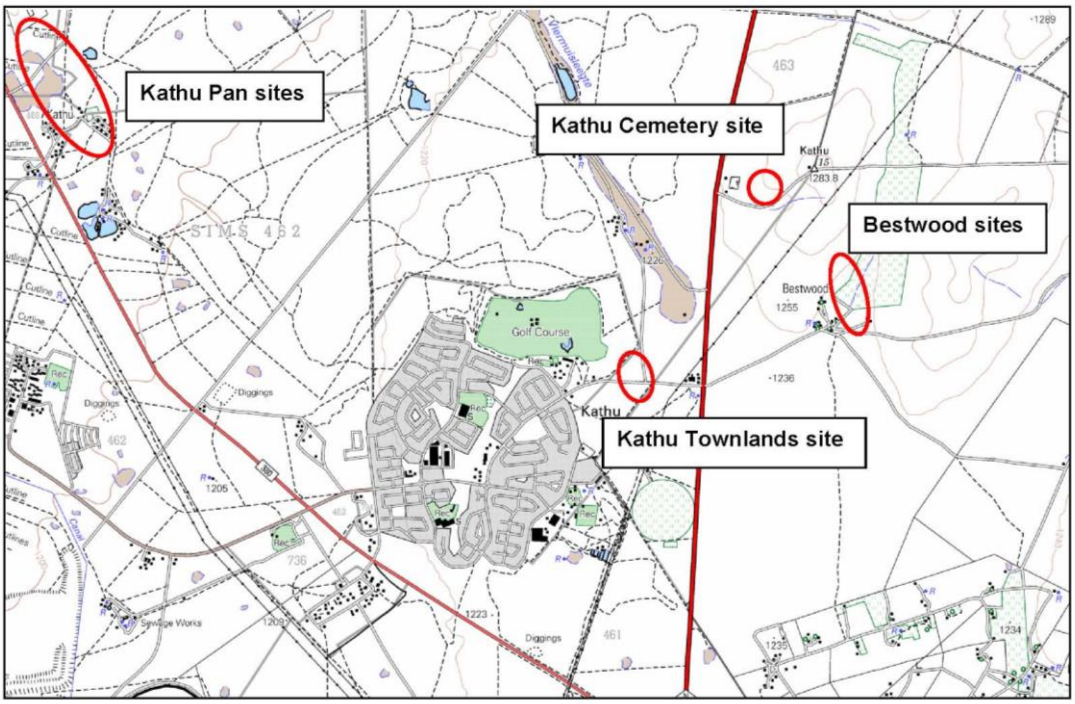


Figure 2. Extract from 1:50 000 sheet 2723CA showing the locality of some of the Kathu Complex archaeological occurrences.

2.1.1. Kathu Townlands

The famously rich aggregate of Earlier Stone Age (ESA) artefacts known as Kathu Townlands is characterised as a banded-ironstone quarry site, described by Walker et al (2014). It has yet to be definitively defined in terms of total spatial extent and volume, though seemingly it is spread over not less than some 250 000 m^2. A portion of the south eastern part of the Kathu Townlands site was subjected to intensive investigation in relation to the Rooisands (now Heritage) Mall project (part of the site was subsequently destroyed), revealing (consistently with Beaumont's (2004) earlier work at Kathu Townlands) that deposits up to a metre deep are exceedingly rich in artefacts, including bifaces and debitage, and material consistent with its interpretation as a quarry site. Figure 3 provides an indication of the location of Kathu Townlands as plotted prior to the Heritage Mall development.

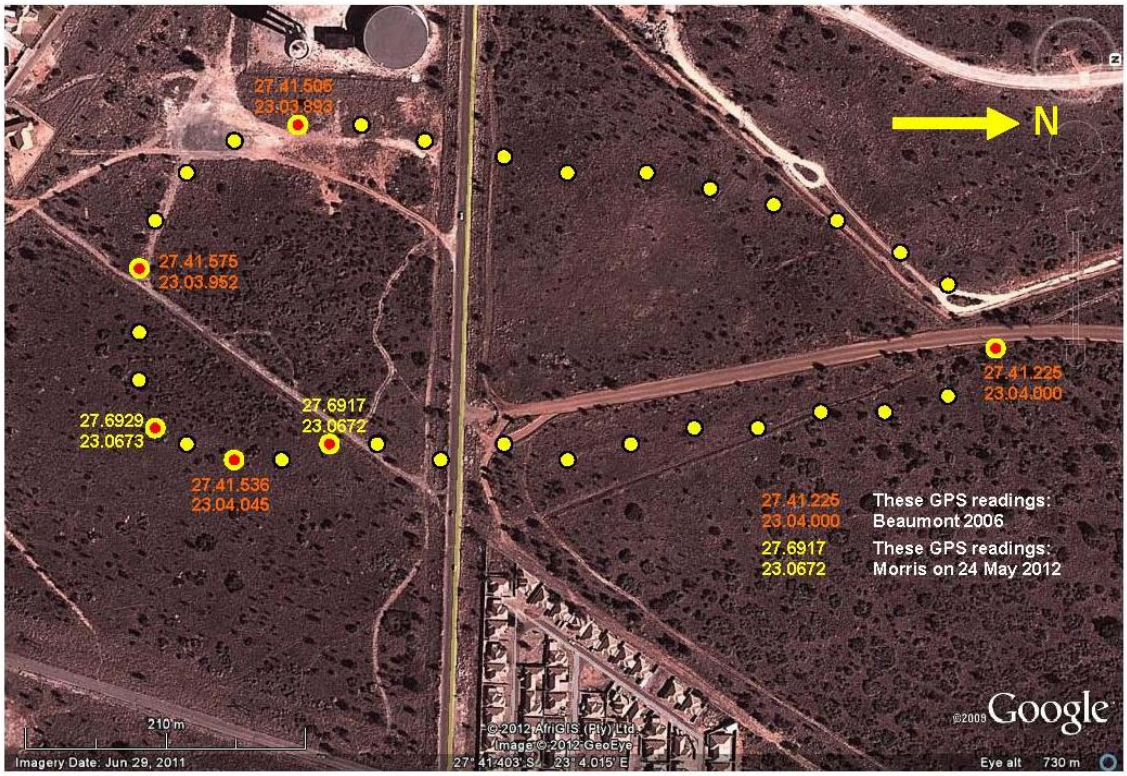


Figure 3. A May 2012 (pre-Heritage Mall) estimate of the extent of the Kathu Townlands occurrence based on GPS readings by Beaumont in 2006 and by Morris in May 2012.

An important finding, documented in test excavations and development-related trenches, was that the apparent edge of the 'site' as it dips beneath the sands may be misleading, and that calcrete growth sub-surface to the east of this point incorporates artefacts albeit in diminishing thicknesses (Walker et al. 2013). It remained a moot question as to how much further eastwards and to what depth the artefacts continue, beneath what becomes a calcrete surface.

2.1.2. Kathu Pan

The site of Kathu Pan 1 has produced a sequence of ESA deposits including St 4a attributed to the Fauresmith and dated to ca. 500,000 BP. Research at this site has produced what is averred to be the earliest evidence for human use of stone-tipped spears for hunting (Wilkins*, et al.* 2012) and some of the earliest known evidence of blade production (Wilkins & Chazan 2012). Kathu Pan 1 is unique among the sites of the Kathu Complex in that it includes faunal remains (Klein 1988). The fauna from Kathu Pan 1 include species such as hippopotamus, that point to a far wetter environment than is found in the region today (Walker *et al*. 2013).

2.1.3. Bestwood sand quarries

The archaeological deposits on the Farm of Bestwood 459, specifically those discovered in sand quarrying activity (Fig. 2), were first described by Dreyer (2008) and are now part of the broad research programme at Kathu (Chazan *et al.* 2012). A preliminary investigation in 2010 identified a lithic industry characterized by well-made handaxes, well retouched scrapers, occasional blades and a great diversity of core types, including choppers, polyhedrons, discoidal cores and unidirectional Levallois cores. In 2012, excavations by Chazan and Walker opened an area of 36 m^2 exposing these deposits in plan. This excavation confirmed that the industry found in a surface collection is found *in situ* in a single horizon under the covering sands. Artefacts are all extremely fresh, showing no evidence of either transport or extensive exposure. It is highly likely that the archaeological material extends beyond the limits of the quarry. A field visit by Chazan and Morris in 2011 found handaxes in a disused quarry approximately 1 km to the south that is now filled by dumped calcrete blocks. Further field observations in 2012 and 2013 in adjacent sand quarry operations have revealed artefact rich deposits directly beneath the sands further to the south. The sands that cover the Bestwood 1 archaeological horizon extend northwards towards the east of the farm Uitkoms. ESA tools are

found dispersed across the hills, in some areas at very high density, lying directly on exposed bedrock (Walker *et al*. 2013).

2.1.4. Uitkoms

There are also archaeological materials in the area around the Kathu Cemetery (Fig 2) and across the farm of Uitkoms that have been designated by Beaumont as Uitkoms 1, 2, 3 & 4. At Uitkoms 1 foot search and a test pit survey pointed to similar lithic densities and debitage frequencies as at Kathu Townlands 1 (Beaumont 2008). Uitkoms 4 is described as a buried site at approximately ~100 m wide, "where bifaces are very similar to those from the quarries, but with a formal tool incidence about a thousand times higher, and like that at a typical occupation site" (Beaumont 2008: 3). There has not yet been any controlled excavation at Uitkoms 4. Uitkoms 2 & 3 are observed artefact deposits in road cuttings along the N14 (Walker *et al*. 2013).

2.2 Description and evaluation of environmental issues and potential impacts

Heritage resources, in this case archaeological occurrences, are in each instance unique and non-renewable resources. Area and linear developments such as those envisaged can have a permanent destructive impact. The objective of an EIA is to assess the sensitivity of such resources where present, to evaluate the significance of potential impacts and, if and where appropriate, to recommend no-go areas and measures to mitigate or manage said impacts.

Area impacts are expected in the case of the proposed housing development.

2.2.1 Direct, indirect and cumulative impacts (in terms of nature, magnitude and extent)

The destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during an initial construction period. In the long term, the proximity of activity in a given area could result in secondary indirect

impacts resulting from the movement of people or vehicles or further developments in the immediate or surrounding vicinity. This is precisely what is occurring in and around Kathu, where for instance Kathu Townlands site was once situated beyond the edge of the town (see Fig. 3, dated May 2012, prior to the development of the Heritage Mall). An Environmental Management Plan for this project and a Conservation Management Plan for the Kathu Complex as a whole (which SAHRA should initiate in collaboration with the Gamagara Local Municipality) should seek to minimize the latter impacts as far as possible.

3. METHODOLOGY

A site visit was necessary to evaluate the possible impact of the proposed housing development, especially the impact on the known south eastern extent of the Kathu Townlands Site.

The entire area of proposed development was inspected on foot and by way of strategic trenching to assess subsurface features.

3.1 Assumptions and limitations

This study has sought to understand the extent of the Kathu Townlands archaeological occurrence relative to the proposed development. In the event that archaeological materials not noted in this study be encountered during construction/development (this could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone artefacts not noted in Phase 1 survey work), it should be reported immediately to SAHRA, with steps taken as set out in management recommendations in this report.

This study does not address palaeontology (see Almond 2014 for an assessment of the immediately abutting Bestwood development).

4. OBSERVATIONS AND ASSESSMENT OF IMPACTS

The manner in which archaeological and other heritage traces or values might be affected by the proposed development may be summed up in the following terms: it would be any act or activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). The most obvious impact in this case would be

potential land surface disturbance associated with the proposed housing development.

4.1 Fieldwork observations

The proposed development footprint area was partially investigated by Walker in July 2015 with a follow-up field assessment (this report) in September 2018.

The tested site includes the southeastern edge of the Townlands site, which is among the densest Earlier Stone Age localities in South Africa. Given the spectacular density of artefacts on this site, preservation (proposed Grade 1 National Heritage) is warranted, but given the extent of the site it is possible to balance the need for preservation with the demands of development. The tested area is a remnant south of the area where the Heritage Mall was constructed and is isolated from the main site area located north of Frikkie Meyer Street.

A series of five trenches was excavated using a JCB along the northern most dirt road, numbered sequentially west to east (Fig. 4). This provides a transect from the slight hill in the west to the emergences of the calcretes in the eastern sector.

Test Trench	**Location**	**Observations**
1 Figs. 6-7 & 14	27°41'34.7" S 23°03'58.5" E	Artefacts visible on surface. Trench dug to a depth of 75 cm, stopped because of bedrock. The west profile shows banded ironstone bedrock of stacked massive slabs. This is not continuous and to the east there is an infill of gravel. However, artefacts appear limited to the top ca. 10 cm. Artefacts collected include a biface.
2 Figs. 8 & 15	27°41'35.1" S 23°04'00.2" E	Excavated to a depth of 80 cm. Bedrock massive BIF slabs at around 30 cm. Some artefacts in overlying gravel.
3 Fig. 9	27°41'35.2" S 23°04'01.7" E	Excavated to a depth of 90 cm. 30 cm sand overlying banded ironstone bedrock. Low density of artefacts associated with the sands; none found in situ. There is a low density of small ironstone gravel in the sands, like at Bestwood. There are also what appear to be lenses of this angular gravel within the banded ironstone. The

		banded ironstone here seems slightly different from Trench 1 and 2, more weathered perhaps with rounded edges. Small chunks of ferricrete, one collected.
4 Figs. 10-11	27°41'35.6" S 23°04'03.0" E	This is right about the point where the first calcrete bedrock appears on the surface of the road and surrounding area. No artefacts identified. In the west half of the trench sand was excavated to a depth of 1 meter. The east the trench hit a solid mass of calcrete with embedded banded ironstone rubble at about 30 cm. below the surface. The transition between calcrete and sands is abrupt. The calcrete is extremely dense, hard rock.
5 Figs. 12-13	27°41'35.6" S 23°04'04.8" E	This is in an area where the surface appears to be continuous calcrete. No artefacts. Excavated to ca. 80 cm by removing massive nodules of calcrete. The calcrete is nodular within a sand rubble. No banded ironstone rubble in the calcrete.

Figure 4. Proposed construction area with the location of trenches indicated (numbered 1-5 from west to east).

Figure 5. View of area covered by transect towards the east. Trench 1 visible in foreground.

Figure 6. South profile of Trench 1 showing rubble overlying slabs of banded iron bedrock

10 cm.

Figure 7. Detail of banded ironstone bedrock in west profile of Trench 1.

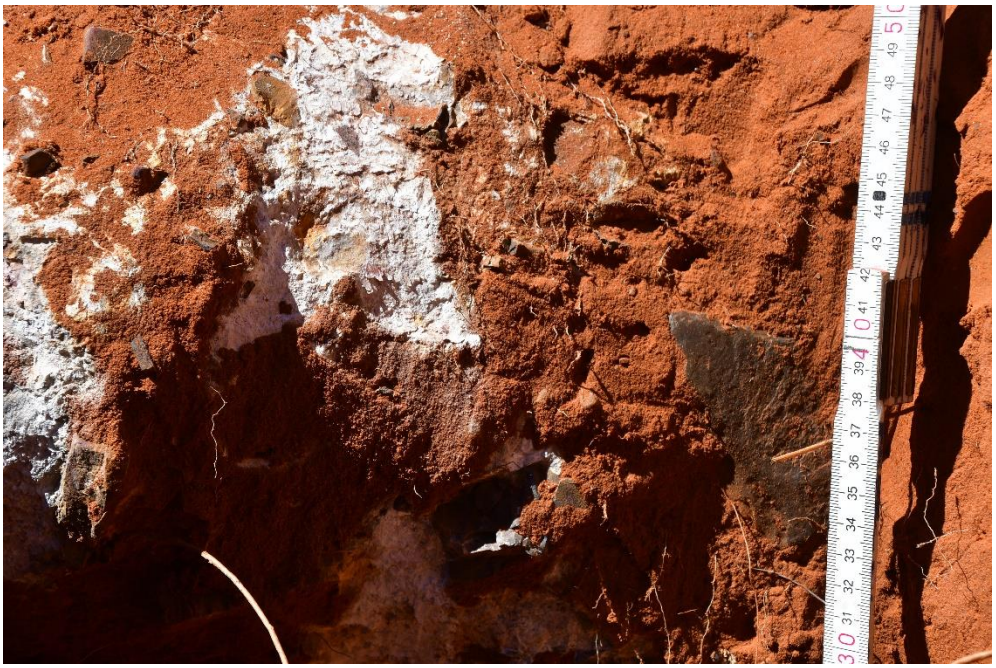
10 cm.

Figure 8. Trench 2 south profile showing shallow rubble overlying banded ironstone bedrock.

Figure 9. Trench 3 south profile showing deep sand in the west and banded ironstone bedrock under sand in the east

10 cm.

Figure 10. Trench 4 south profile, juncture of sand (in south wall) and calcrete (running N-S). Note sharp contact between sand and calcrete.



10 cm..

Figure 11. Trench 4, detail of calcrete showing embedded banded ironstone rubble.

Figure 12. Trench 5 south profile showing large nodule of calcrete in sand matrix.

Figure 13. Large nodules of calcrete removed from Trench 5, camera lens cap for scale.

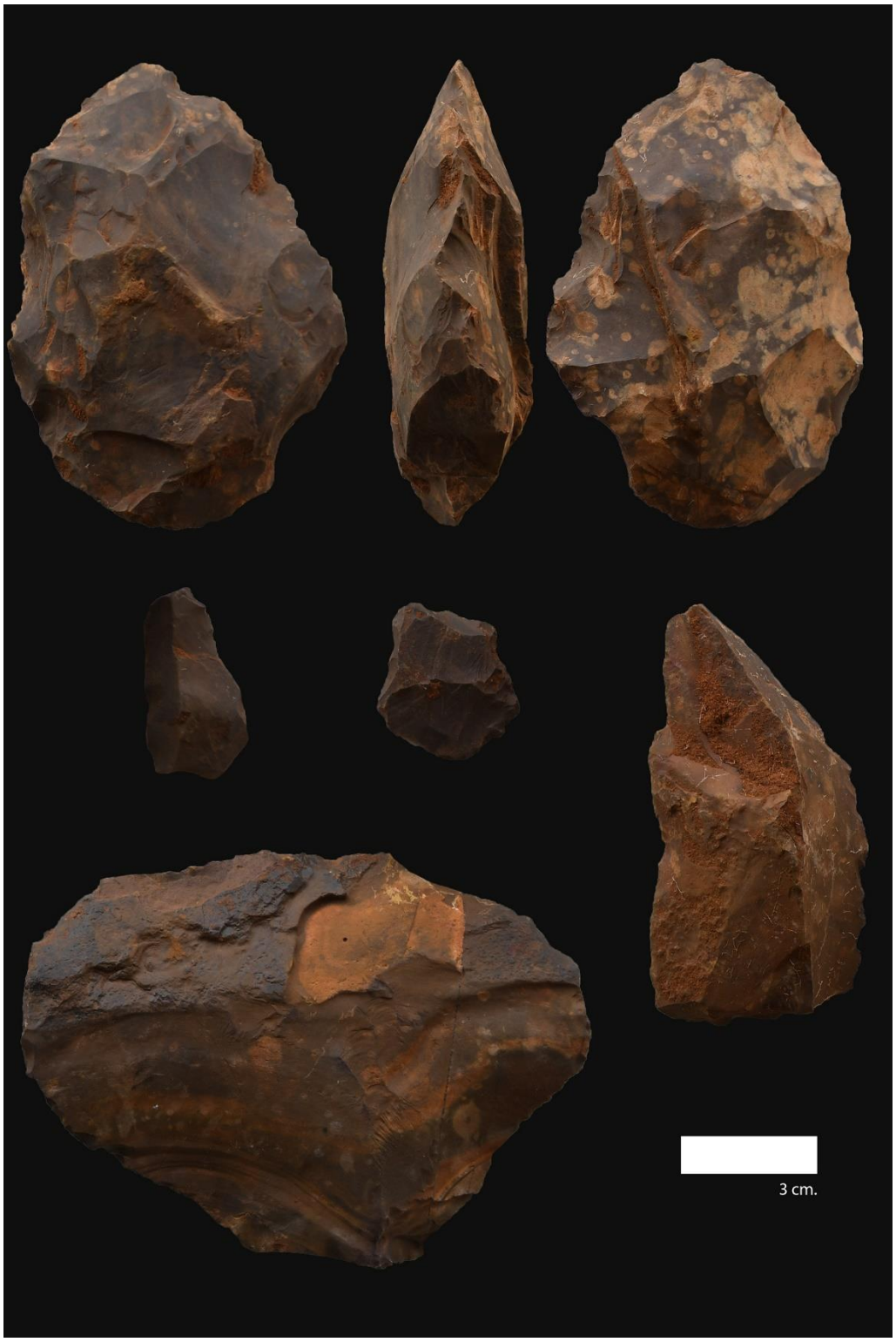


Figure 14. Artifacts recovered from Trench 1, including a handaxe and various sizes of flakes. All recovered material is stored in the McGregor Museum.

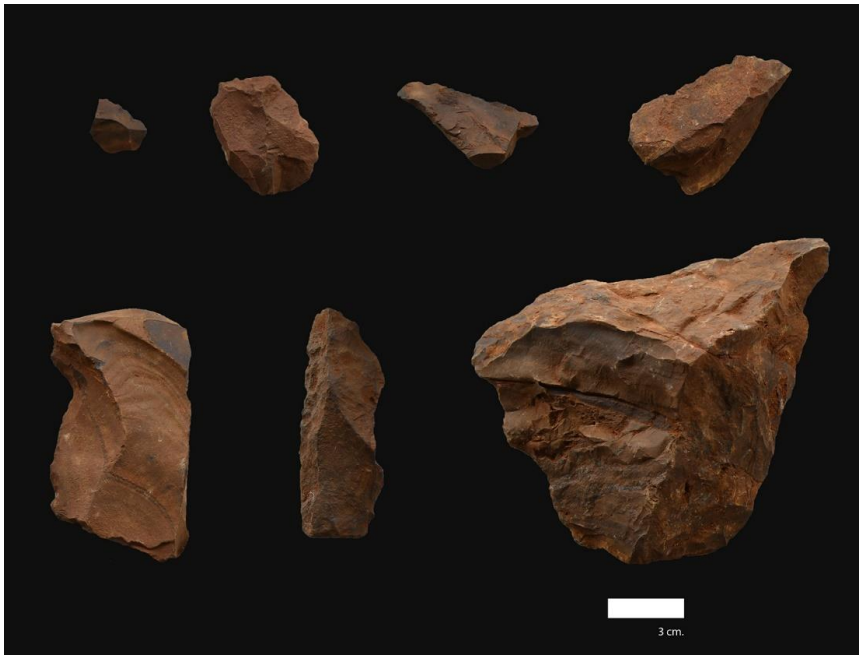


Figure 15. Unretouched flakes of various sizes recovered from Trench 2. All recovered material is stored in the McGregor Museum.

Figure 16. The estimated south eastern extent (thin red line) of the Townlands site (after Walker), superimposed here on the housing development layout plan, is broadly in accord with the findings of this report.

The major finding is that: moving from west to east there is a complex transition from banded ironstone rubble overlying banded ironstone bedrock to large nodular calcrete embedded in a sand matrix. Artifacts are dense at the west end of the transect and are only found in trenches associated with banded ironstone bedrock.

5. Recommendations

The Kathu Townlands site has already been assessed as highly significant and has been graded for protection as a Grade 1 National Heritage Site.

Part of the site has been adversely impacted by development of the Heritage Mall.

It is the opinion of the authors of this report that there is no reason not to have construction move forward on Erfs 5117, 5118, & 6574, immediately south of the Heritage Mall, and at the south-eastern-most part of the Townlands site, given that the main area of the site is still protected in the area to the north of Frikkie Meyer Street.

It is important to emphasize that in light of ongoing construction in the area the preservation of the designated site area, especially that part north of Frikkie Meyer Street, is absolutely essential.

Observations made in the test trenches indicate a high density of artefacts in the northwest sector of Erf 5117. The stone artefacts, similar to those known from other parts of the Townlands site, include handaxes, flakes, and cores. Flakes of all sizes are present as in other areas.

It is recommended that:

1. One of two options be considered:

    A. Extensive modification/disturbance of the rise in the northwest sector of the construction area is to be **avoided** (see Fig. 17).

    Levelling (or other disturbance) would permanently destroy the archaeological deposit in this part of a site graded for national heritage declaration. It would also generate a volume of gravel with very large numbers of artefacts that cannot easily be dumped off-site.

    This option implies reconfiguring the housing layout in the north western part of the property, with Figure 17 suggesting the extent to be considered.

Figure 17. For consideration: the degree of layout reconfiguration suggested in order to avoid disturbance of archaeological sediments as set out in Option 1A, above.

B. If large scale modification of this part of the site cannot be avoided then it will require renewed heritage planning inter alia for sampling/preservation where necessary, and to make sure that displaced materials are removed and dumped in an appropriate manner.

   Budget for this would need to provide for on-site monitoring by trained professionals.

2. Basic trenching for water and other infrastructure would result in only minimal disturbance.

   Plans for where materials from trenches in the northwest corner of the lot could be moved to would require consultation and oversight from heritage professionals.

Option 1A is the preferred option from a heritage perspective. Option 1B would, from a heritage viewpoint, be more costly.

It is hoped that a solution might be reached that safeguards the archaeological materials preserved in this site.

Acknowledgements

The authors thank Mr Tinus Barnard for assistance given and for his patience.

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