

# A Stone Age analysis of an assemblage from a Portion of the Farm Middlepunt 420KS, North of Lebowakgomo, Limpopo Province

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## Declaration of Independence

The report has been compiled by Dr Tim Forssman acting as a heritage specialist. The results expressed in this report have been collected using standard archaeological procedures and are objective. The author declares no other conflicting interests in this report.

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## Executive summary

### *Introduction*

During a Phase 1 HIA on a Portion of the Farm Middlepunt 420KS, North of Lebowakgomo, Limpopo Province, for the Bokoni Platinum Mine, Stone Age artefacts were identified in an area identified for the development of a bridge (Pelser 2022). These artefacts were located in the vicinity of a road passing through a river bed. Following Pelsers (2022) recommendations, a representative sample of these artefacts were collected for curation and analysis. This report provides the details of the Stone Age collection.

### *Methods*

Analysis of the Stone Age collection followed standard archaeological methods. Given the limited contextual information for the artefacts, artefact analysis focused on broader archaeological trends and descriptions. This required a techno-typological approach, which involved the recording of basic morphological, technological and descriptive typological data.

### *Results*

In total, 39 artefacts were analysed from three locations: 1 (N=15), 2 (N=20) and 3 (N=4). The majority comprise debitage (waste products from artefact production; 87.2%) but four formal tools (10.3%) and a core (2.6%) were also identified. Raw material usage shows a spread of materials, with quartzite (N=11; 28.2%) being the most common material type, followed by silcrete (N=8; 20.5%), hornfels (N=6; 15.4%) and banded ironstone and chert (N=5; 12.8% each). The lack of cores, small flaking debris and formal tools suggests that the assemblage is incomplete, possibly indicating off-site manufacturing. However, the context of the finds is a concern and likely limits any interpretation. The sites' location along the periphery of a natural watercourse possibly indicates that post-depositional movement has had an influence on the assemblage. This appears to be supported by artefacts that span a large time period found together.

### *Discussion and conclusions*

Overall, the possibility of interpreting this assemblage is limited by several factors relating to the disturbed nature of the deposits and the overall incompleteness of the sample. With these limitations in mind, a reliable chronology cannot be established. However, based on broad technological comparisons with other assemblages from the region, using published data, and by looking at broader technological trends in the southern African Stone Age following the syntheses of others, there appears to be tools that date from the Earlier, Middle and Later Stone Ages. The analysis of these tools is important as it represents an assemblage from a little known landscape where comparatively fewer Stone Age studies have taken place relative to other regions in southern Africa.

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## Introduction and aims

During a Phase 1 HIA on a Portion of the Farm Middlepunt 420KS, North of Lebowakgomo, Limpopo Province, for the Bokoni Platinum Mine, Stone Age artefacts were identified in an area identified for the development of a bridge (Pelser 2022). These artefacts were located in the vicinity of a road passing through a river bed. Following Pelsers (2022) recommendations, a representative sample of these artefacts was collected for curation and analysis. This report provides the details of the Stone Age collection.

## Archaeological background

The Limpopo and Mpumalanga Provinces have seen less Stone Age research than most other South African provinces or neighbouring regions. As a result, we know less of the Stone Age past from these areas, which demands a greater need for archaeological research at sites with archaeological potential and a greater risk of losing Stone Age heritage without an opportunity to better understand it.

One of the challenges with the Stone Age of the region is the sites' contexts. Most are open air, surface scatters (e.g., Pistorius 2008; Coetzee 2017; Pelsers 2017 & 2019). These site types are common and hold significant information that will aid in our reconstruction of the past. However, they pose several challenges that include, but are not limited to, post-depositional movement, assemblage mixing, erosional influences, and human interactions. These forces, and others, threaten our ability to understand the past and record these cultural assemblages before they are dispossessed of their scientific potential.

There are some sites in the extended region that have provided insights into the last several thousand years of Stone Age history in the region. Well-known examples are Bushman's Rock Shelter and Heuningneskrans (Porrass *et al.* 2015). At the former, excavations began in the 1960s and the site has more recently been re-investigated. The shelter has an incredible 7m of deposit that span the mid-Holocene until approximately 100,000 years ago. Stone tools from the Later Stone Age but more so the Middle Stone Age are preserved at the site with exceptional examples of stone points, Middle Stone Age technological reduction strategies, excellent faunal preservation, and worked bone and shell beads. Heuningneskrans is also an impressive site with a deposit in excess of 6m in depth (Porrass and Val 2019). It was also excavated in the 1960s initially and has an occupation sequence that mostly spans 27,000 to 8000 years ago and a later Iron Age use. The site possess rare combustion features that are assisting with understanding palaeoclimatic information, which will aid in generating an environmental context for the region.

Another well-known site in Limpopo Province is Cave of Hearths (Latham and Herries 2004). The site possesses Earlier, Middle and Later Stone Age deposits as well as an historic occupation. Also found here are early hominid fossils.

Although there are other sites in the two provinces and there have been Stone Age studies investigating the sequences of different areas (Korsman and Plug 1992; Kuman, Kathleen *et al.* 2005; Forssman 2020), there is still much to learn of these regions. Future studies and

Phase 2 archaeological mitigations are necessary to grow our local understanding of the Stone Age.

### Materials and methods

The stone artefacts were collected from three locations in the vicinity of one another (Figure 1). The sites are situated along a north-running watercourse where a road crosses the river (Figure 2). Sites 1 and 2 are on the western side of the river and Site 3 on the eastern side. Surrounding the river crossing is rural development, specifically residential areas. The watercourse itself is deeply cut into the landscape as a result of erosion and this has exposed embankments (Figure 3). However, none of these contain stratigraphy or artefacts.

The assemblage was analysed using a Lithic Analysis Workbook compiled by Lotter and colleagues in 2018, designed specifically for the purposes of recording techno-typological information on artefacts obtained during survey and excavation. Typological designations follow those classification systems of Kleindienst (1962), Leakey (1971), Deacon (1984), Clark and Kleindienst (2001), Kuman (2001) and Shea (2008). Maximum lengths and widths were measured for every artefact, as were raw material designations (following Bell & Wright 1985; Norman & Whitfield 2006). Blank types were also identified for all formal tools and cores. Additional descriptive technological data were also obtained on the artefacts, where possible. This included observations on flake platform faceting and dorsal scar patterns, core reduction strategies and formal tool retouch characteristics.

### Maximum lengths and widths

Maximum length is a measurement obtained in millimeters along the longest possible axis of all artefacts (between the two most distal points). Maximum width is a measurement obtained 90° to the maximum length, and it is the greatest distance from lateral edge to lateral edge. Maximum thickness was not recorded. See Figure 4 for the method.

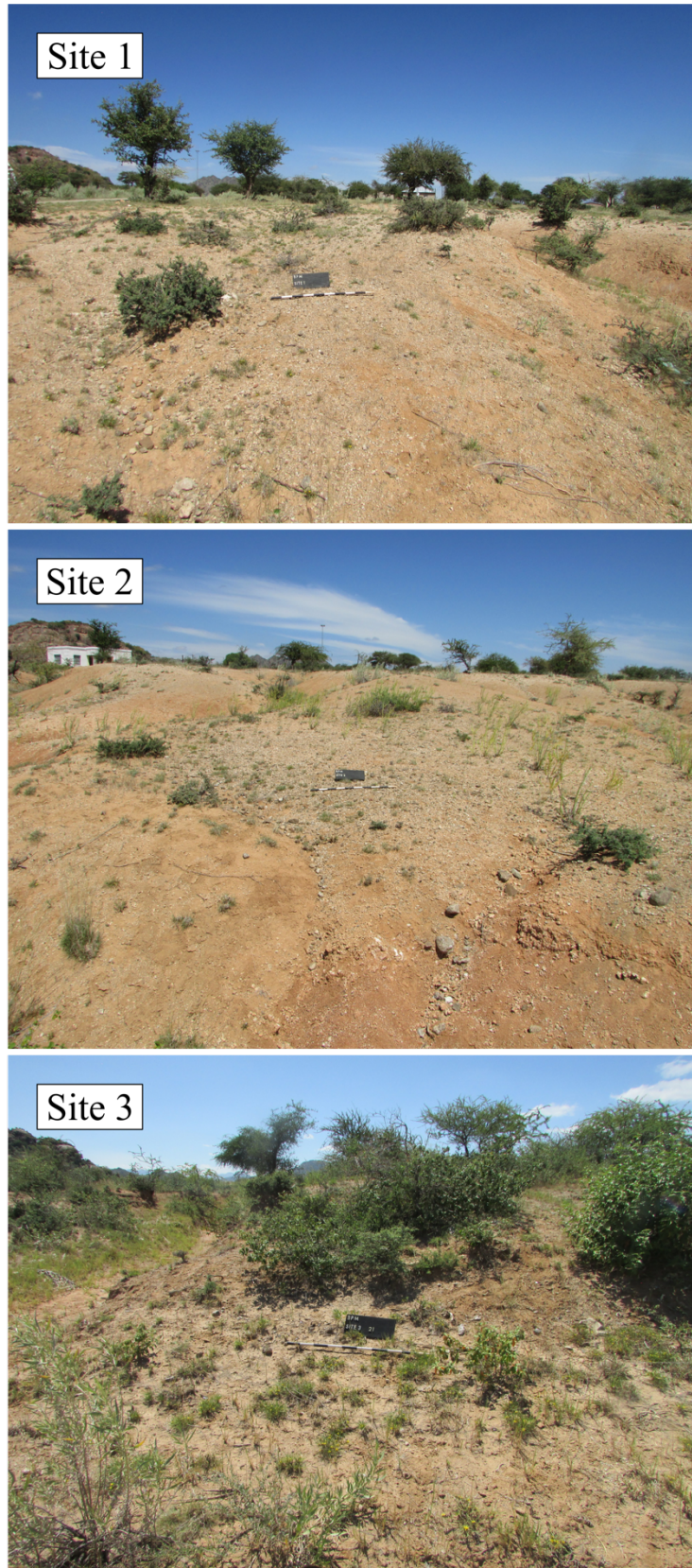


**Figure 1. The location of the three sites: a, regional map; b, close-up view of the Bokoni Platinum Mine community bridge area; and c, map displaying the location of the three sites.**

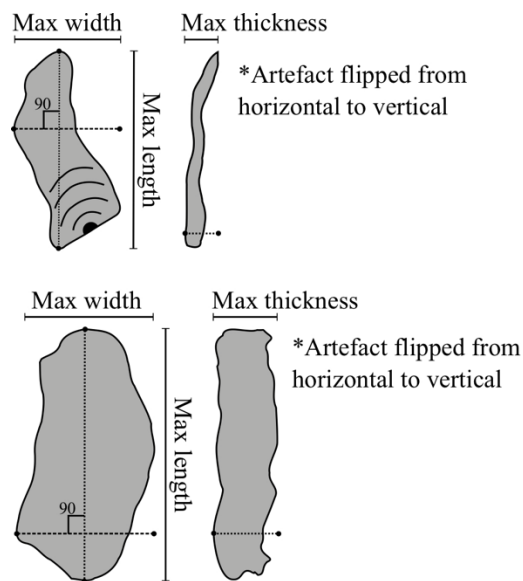




**Figure 2. Images showing the water course: a, looking eastwards across Site 1 with Site 3 over the water course and to the left of the road; and b, a closer view of the exposed river bank showing a uniform deposit.**



**Figure 3. Images of the sites at which the assemblages were collected (Sites 1 above, 2 middle and 3 below).**



**Figure 4. Recording method for maximum dimensions. Thickness was not recorded (top=flake; bottom=core).**

The following typological terms are presented in the Lithic Analysis Workbook by Lotter and colleagues and are used here in accordance with these descriptions:

#### Debitage

Divided into the following categories:

**Complete:** those flakes/blades/bladelets that have a complete striking platform, bulb of percussion and the piece is complete to the lateral boundaries of termination with no breakage at the distal end. Pieces with stepped, hinged or overshot terminations are classified as complete, but for stepped pieces the termination must be clearly the result of the flaking process (versus breakage of the flake from other forces e.g., *in-situ* breakage).

**Incomplete:** those flakes/blades/bladelets that are broken and lack one or more distal or lateral portions but retain all or most of the striking platform (proximal portion of the piece). They frequently possess a clear dorsal and ventral surface and bulb of percussion.

**Fragment/chunk:** those broken pieces of flakes/blades/bladelets that do not possess the striking platform (proximal end). They possess a clear dorsal and ventral surface and sometimes preserve a portion of the bulbar scar. Core fragments and chunks are included here.

Thereafter, debitage is grouped by type into the following categories:

**Flake ( $\geq 10$  mm):** a by-product of the flaking process, struck from a core and retaining characteristic features like a bulb of percussion, dorsal and ventral surfaces and a flaking platform.

**Blade ( $\geq 25$  mm):** a by-product of the flaking process, struck from a core and retaining characteristic features like a bulb of percussion, dorsal and ventral surfaces and a flaking platform. Blades are flakes that have a length measurement that is two or more times the width measurement.

Core management pieces ( $\geq 10$  mm; CMPs; following Hovers et al. 2011 and Malinsky-Buller et al. 2011): these are pieces that have been removed from a core to maintain and manage overall core shape/angles/lateral convexities/flaking platforms. These can be flakes, blades, or tablets, and they include all core rejuvenation flakes, débordant flake/blades (core edge), core tablets and core trimming flakes. These CMPs are often used to remove exhausted core flaking platforms, or remove a platform so that flaking from a new direction can be pursued. In the case of tablets, these remove the entire upper surface of a core, from which a new reduction sequence can begin.

Convergent flake ( $\geq 10$  mm): flakes characterised by converging dorsal scars that meet at the distal end of the piece.

#### Formal tools

Large Cutting Tool (LCT): large unifacial, partly bifacial, or bifacial artefacts with intentional primary shaping removals and secondary edge shaping removals to create an artefact with a predetermined shape. Those with converging distal ends are commonly known as handaxes and picks, whereas those with large frequently oblique non-convergent distals are known as cleavers.

Retouched piece (RP): artefacts with intentional small removals that provide edge modifications, in preparation for tool use. These are further divided into:

Scraper (RP): these retouched pieces show several unifacial removals (retouch) in one or more areas of the tool, which were used for scraping purposes (steep edged). These can be divided into several categories.

Notch (RP): piece with either a single or multiple small removal/s that create a distinct/small concavity along a lateral edge.

Retouched flake (RP): flakes with more than minimal or discontinuous retouch (that would then be a miscellaneous retouched piece), which cannot be readily assigned to a more formal type (e.g., a scraper).

#### Cores

Irregular: a core that has been worked in a completely unorganised fashion. The shape is more irregular and flatter than a polyhedral core. Characterised by only a few removals from any given direction.

Single platform: a core with flakes removed from a single striking platform. Typically, in such cores, this platform is relatively flat giving the core a cone-like appearance with removals progressing from the platform towards the base of the 'cone'.

Prepared core: these cores exhibit intentional trimming of the upper and lower portions to prepare a single flake outline on the upper portion for removal. Sometimes, these present as tablets in which the top portions has been removed to rejuvenate the core for further flaking.

## Results

Thirty-nine artefacts were collected and analysed from the three sites (Table 1). Site 2 possessed the most stone tools (N=20), followed by Sites 1 (N=15) and 3 (N=4). Since the assemblages are from the surface and in what is very likely a disturbed context there is no value in examining densities between the sites as this will not yield any statistically significant data.

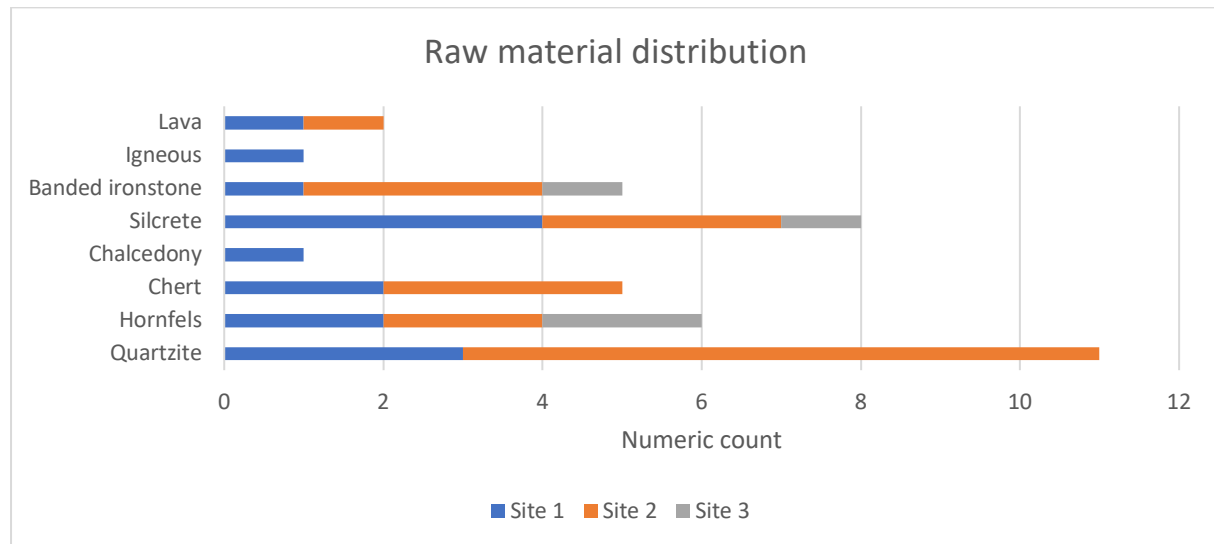
**Table 1. Artefact types and distributions (% refers to the percentage of tools of that type within that category).**

Category	Subunit	Site 1		Site 2		Site 3	
		No	%				
Stone tools		15	NA	20	NA	4	NA
Raw material							
	Silcrete	4	26.67	3	15.00	1	25.00
	Quartzite	3	20.00	8	40.00	0	0.00
	Chert	2	13.33	3	15.00	0	0.00
	Hornfels	2	13.33	2	10.00	2	50.00
	Banded Ironstone	1	6.67	3	15.00	1	25.00
	Chalcedony	1	6.67	0	0.00	0	0.00
	Lava	1	6.67	1	5.00	0	0.00
	Igneous	1	6.67	0	0.00	0	0.00
Primary tool types							
	Debitage	12	80.00	18	90.00	4	100.00
	Formal tool	3	20.00	1	5.00	0	0.00
	Core	0	0.00	1	5.00	0	0.00
	Manuport	0	0.00	0	0.00	0	0.00
Debitage							
	Incomplete	2	13.33	9	45.00	1	25.00
	Complete	7	58.33	5	25.00	1	25.00
	Fragment/chunk	3	25.00	4	20.00	2	50.00
	Core fragment	0	0.00	0	0.00	0	0.00
	CMP*	3	25.00	2	10.00	0	0.00
Formal tool							
	LCT	1	6.67	0	0.00	0	0.00
	Misc. RP	2	66.67	0	0.00	0	0.00
	Chopper	0	0.00	1	100.00	0	0.00
Core							
	Single platform	0	0.00	1	100.00	0	0.00

\*CMPs are counted in the irregular and complete subunits as well.

The preferred raw material is quartzite (N=11; 28.21%), followed by silcrete (N=8; 20.51%), hornfels (N=6; 15.38%) and banded ironstone and chert (N=5; 12.82% each). Occurring in

low numbers are lava, igneous rock and chalcedony (see Figure 5). It may be that the common material types are locally available, or abundant in the area, hence their preference, or simply that the stone knappers preferred these materials over others for tool production. Further analysis of the district would be required to assess the distribution of local raw material sources. To determine whether these patterns are meaningful, a larger assemblage is required.

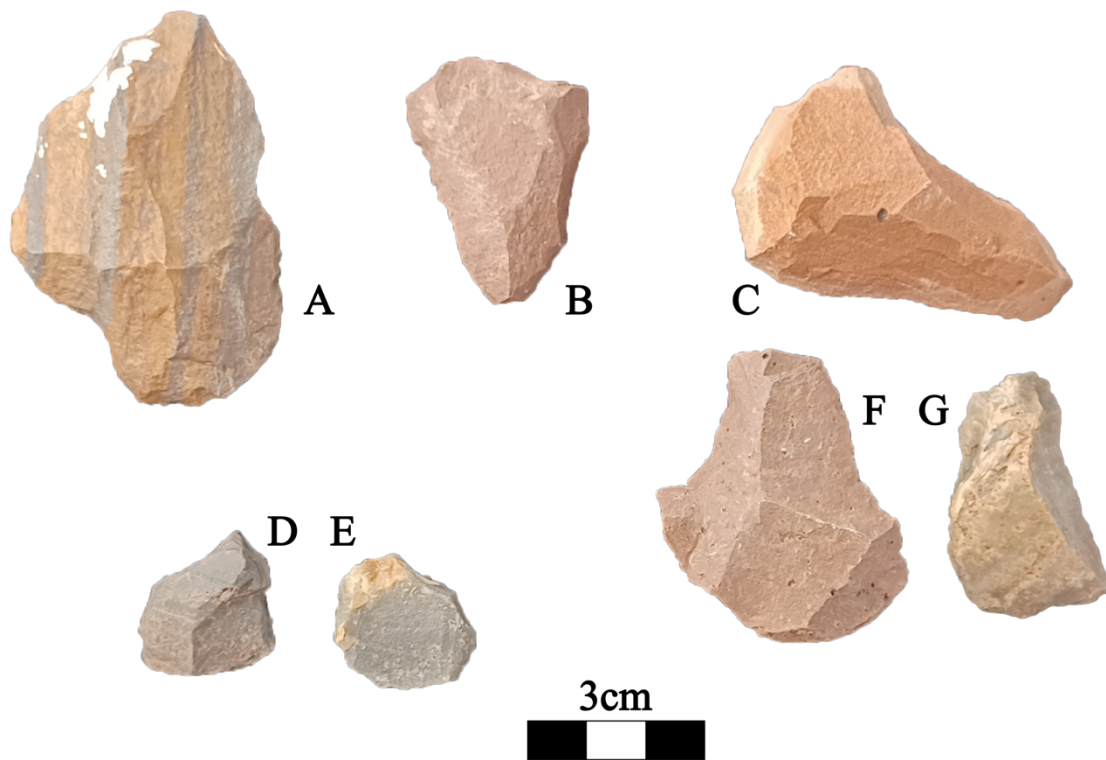


**Figure 5. The distribution of raw material types between the different sites (note these are numeric values and not percentages or density data).**

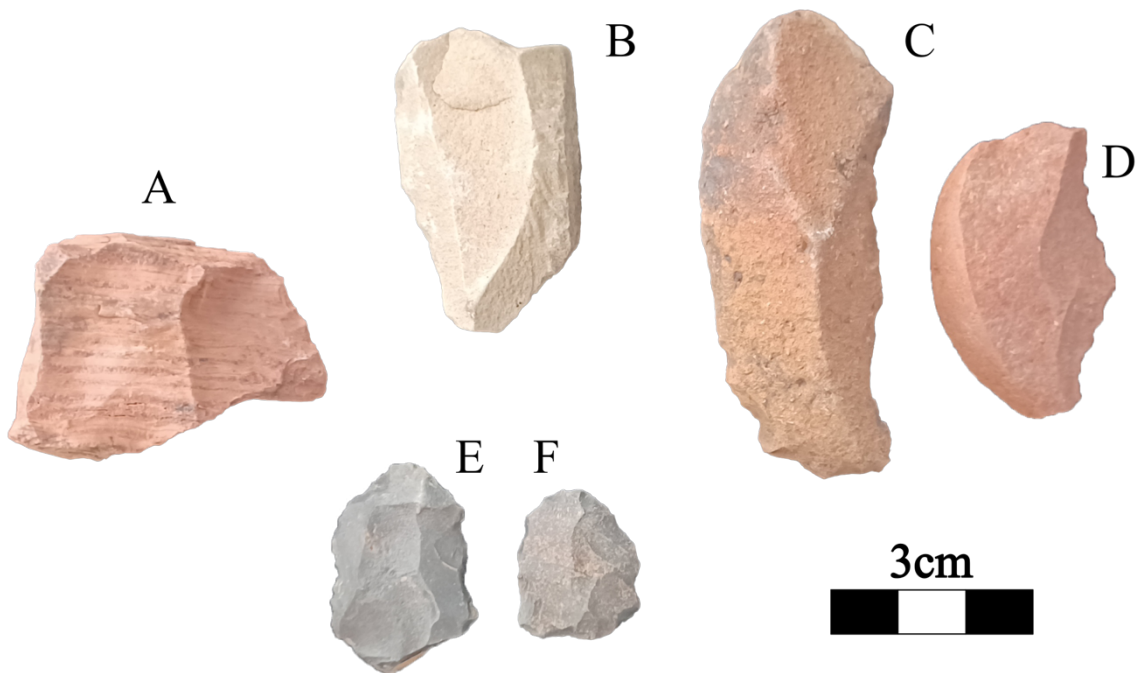
The measured tools, which include complete flakes, formal tools and cores, demonstrate that they vary in size and range between 89.02 and 21.97mm in maximum length (average = 46.46mm) and 69.08 and 18.54mm in maximum width (average = 33.51mm). Most artefacts are larger than 30mm in maximum length, but three are less. All of these appear Later Stone Age-like. Two are formal tools, both miscellaneous retouched pieces, and the other is a small complete flake. All are made from fine-grained cryptocrystalline silicates, in this case chert (N=2) and chalcedony (N=1). These types of tools would not be out of place in a Later Stone Age assemblage. Most of the tools appear to be Middle Stone Age, but this will be further described below.

Debitage is the largest primary category, the others being formal tools, cores, and manuports. Debitage accounts for 87.18% of the assemblage (N=34) (see Figures 6 & 7 for examples of stone tools from Sites 1 and 2, respectively). Twenty-five of these pieces are flakes. Of these flakes, six are chunks (17.65%), five core management pieces (14.71%), and two each are convergent and core fragments (5.88%). Complete flakes (N=13; 52%) slightly outnumber incomplete flakes (N=12; 48%). The relatively high number of flakes compared to the total assemblage might indicate on-site production. This possibility is supported by the high number of core management pieces, which are struck from a core in an attempt to rejuvenate the core for further flaking. However, no small flaking debris was identified and only a single irregular core was recorded. The assemblage also lacked cortex on the specimens other than low percentages on the core management pieces. There is little evidence as it stands to draw conclusions, but what there is does not indicate production took place where the assemblage

was retrieved. This, would of course, need to be subjected to further investigations including a geoarchaeological study, but the sites' context is one that has more than likely been disturbed.



**Figure 6. Stone tools from Site 1: A, flake on banded ironstone; B, convergent flake; C, F & G, core management piece; and D & E, miscellaneous retouched piece.**



**Figure 7. Stone tools from Site 2: A, irregular core; B, convergent flake; C & D, core management piece; and E & F, flakes.**

Four formal tools were recorded (10.26%). Three are retouched pieces. They include two miscellaneous retouched pieces, one from chalcedony and the other from chert, and a chopper. The chopper is well-preserved and exhibits negligible weathering. It is made from a fine-grained quartzite cobble with a single lateral edge containing a series of removals (Figure 8). The fourth piece is large cutting tool that has been bifacially worked mostly along a single lateral edge.



**Figure 8. Both faces of the chopper.**

### Discussion

It is not known whether the small artefact sample recovered from the study area is a representative sample of the larger original assemblage from elsewhere, which is likely due to the sites' context. Being alongside a watercourse, it is very possible that the artefacts have moved post-depositionally or have had components of their assemblage removed by fluvial action. This possibility is supported by the lack of various stages of production in the assemblage (more on this below), notably smaller pieces less than 30mm. However, the tools



are mostly fresh and exhibit negligible weathering except for two quartzite and one hornfels flakes. The tools' freshness may indicate little movement of those tools in place, but this would need to be further assessed with additional spatial data and a larger assemblage.

The assemblage is very limited in its size and in the types of artefacts that are represented. This in itself also suggests that the artefact sample is non-representative of the original source location. Namely, this is suggested by a lack of production evidence. Had the artefacts been produced at the location from which they were retrieved, one might expect to find small flaking debris, additional cores, and specimens with cortex. It therefore seems possible that the artefacts were at least initially flaked elsewhere and deposited on site, however this would need to be further assessed by additional investigations at and around the site including identifying raw material source outcrops. As mentioned, due to the context of finds it is also very likely that the artefacts have been displaced post-depositional, which may have led to artefacts arriving at the sites or being removed from them.

The small and non-diverse formal tool sample provides little insight into overall technological strategies. Since other types of artefacts in this assemblage have been shown to be incomplete, one must also assume that the formal tool sample is in a similar state. Miscellaneous retouched pieces are not diagnostic but these small tools resemble those found in Later Stone Age assemblages, in which formal tools are also mostly made from cryptocrystalline silicates. The chopper is of further interest due to its occurrence in Earlier Stone Age assemblages from southern and eastern Africa. However, these tools are also found in Middle Stone Age assemblages from East Africa (Shea 2008; Blinkhorn and Grove 2018) as well as central Zambia (Barham and Smart 1996). In southern Africa choppers as well as chopper-cores, which are very similar but were unused, are known from Sangoan assemblages that date to around 300,000 BP, the end of the Earlier Stone Age. These tools are much larger than the specimen investigated here (Kuman, K *et al.* 2005). Nonetheless, choppers are more common in southern African Earlier Stone Age assemblages and the author is unaware of their presence in Middle Stone Age assemblages.

When considering the chopper, the small formal tools, and the overall maximum length and form of the majority of the assemblage, it appears possible that tools from the Earlier, Middle and Later Stone Age are present in the assemblage, although the majority are Middle Stone Age. This timeframe spans the last two million years through until possibly the last several hundred years. However, it is not possible to determine more specific time ranges within this chronological span. Nonetheless, there are indicators that the tools represent a mixed cultural assemblage across the sites. Mixing is to be expected in a watercourse where the deposition location is unclear without considerably more research.

## Conclusions

Three assemblages from a portion of the Farm Middlepunt 420KS, North of Lebowakgomo, Limpopo Province, were analysed to determine stone tool representation, features on the stone tools themselves that might assist with their context, and chronological markers. The analysis of 39 stone tools revealed a relatively fresh assemblage albeit seemingly incomplete

with only some stages of production present. Some diagnostic features were identified that showed that Earlier, Middle and Later Stone age components were present. This indicates that the assemblage may be mixed. Mixing is to be expected in the context of the sites, which occur along a watercourse where artefacts are highly mobile. It cannot be determined, though, whether the tools were deposited in their final location due to fluvial action or if tools were removed from these sites under the same circumstances. The analysis of these tools is important as it represents an assemblage from a little known landscape where comparatively fewer Stone Age studies have taken place relative to other regions in southern Africa.

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