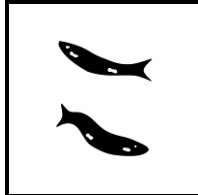


**PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT
THE PROPOSED KALAGADI MANGANESE SMELTER
IN THE COEGA INDUSTRIAL DEVELOPMENT ZONE
PORT ELIZABETH
EASTERN CAPE PROVINCE**

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EXECUTIVE SUMMARY

Coastal and Environmental Services requested that the Agency for Cultural Resource Management conduct a Phase 1 Archaeological Impact Assessment for the proposed construction of the Kalagadi Manganese Smelter at Coega situated about 20 km outside Port Elizabeth in the Eastern Cape Province.

The aim of the study is to locate and map archaeological heritage sites and remains that may be negatively impacted by the planning, construction and implementation of the proposed project, to assess the significance of the potential impacts and to propose measures to mitigate the impacts.

The subject property is located north of the National Road (N2) in Zone 6 – the zone designated for heavy ferrous metal industries of the Coega Industrial Development Zone (IDZ). The proposed 209 ha site is mostly covered with dense indigenous vegetation, resulting in very low archaeological visibility. Apart from several gravel farm roads and barely visible single tracks, much of the proposed site is inaccessible due to thick impenetrable bush. Apart from several dry water pans, there are no significant landscape features on the proposed site.

The following finds were made -

- Relatively large numbers of Early Stone Age and Middle Stone Age artefacts were documented on the property, but these are spread very thinly and unevenly over the surrounding landscape. The tools were mostly found in highly disturbed and degraded areas such as gravel roads and tracks. No evidence of any factory or workshop site, or the result of any human settlement was identified. It is very likely that the flaked tools are not in primary context, but have been moved around as a result of past fluvial (or river) activity. Several specialist archaeological studies undertaken in the Coega study area have yielded similar results.

The archaeological remains have been rated as having low local significance.

The Phase 1 Archaeological Impact Assessment has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed development activities, as there is no evidence to suggest the artefacts occur in primary context

With regard to the proposed Kalagadi Manganese Smelter in Zone 6 at Coega, the following recommendations are however made -

- Should any layers of sub-surface archaeological remains be exposed or uncovered during earthworks, these should immediately be reported to the archaeologist or the South African Heritage Resources Agency (Dr A. Jerardino - 021 462 4502).
- Should any unmarked human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to the South African Heritage Resources Agency (Dr A. Jerardino, or Ms C. Scheermeyer - 021 462 4502).

TABLE OF CONTENTS

1	INTRODUCTION	5
1.1	Background and brief.....	5
2	TERMS OF REFERENCE	6
3	THE STUDY SITE	7
4	STUDY APPROACH	14
4.1	Method.....	14
4.2	Constraints and limitations	14
4.3	Identification of potential risks	14
4.4	Results of the desk top study	14
5	LEGISLATIVE REQUIREMENTS	17
5.1	The National Heritage Resources Act (Act No. 25 of 1999).....	17
5.2	Archaeology (Section 35 (4))	17
5.3	Burial grounds and graves (Section 36 (3)).....	17
6	FINDINGS	18
7	IIMPACT STATEMENT	21
8	RECOMMENDATIONS	22
9	REFERENCES	23

LIST OF FIGURES

Figure 1.	Locality map (3425 BA Port Elizabeth)	8
Figure 2.	Aerial photograph indicating the approximate boundary of the proposed study area.....	9
Figure 3.	View of the site facing north	10
Figure 4.	View of the site facing south east	10
Figure 5.	View of the site facing east.....	10
Figure 7.	View of the site facing east.....	10
Figure 6.	View of the site facing north east.....	11
Figure 8.	View of the site facing north east.....	11
Figure 9.	View of the site facing west	11
Figure 10.	View of the site facing north east.....	11
Figure 11.	View of the site facing west	11
Figure 13.	View of the site facing west	11
Figure 12.	View of the site facing east.....	11
Figure 14.	View of the site facing north west	11
Figure 15.	View of the site facing north east.....	12
Figure 16.	View of the site facing north east.....	12
Figure 17.	View of pan 1 facing west.....	12
Figure 18.	View of pan 2 facing north east	12
Figure 19.	Farm homestead	13
Figure 20.	Farm building	13
Figure 21.	Workers building.....	13
Figure 22.	Farm building	13
Figure 23.	Ruined farm building.....	13
Figure 24.	Workers building.....	13
Figure 30.	Scatter of tools in road.....	20
Figure 31.	Collection of tools from gravel road. Scale is in cm.....	20
Figure 29.	Collection of stone tools. Scale is in cm.....	20

LIST OF TABLES

1 INTRODUCTION

1.1 Background and brief

Coastal and Environmental Services (CES) in Grahamstown on behalf of Kalagadi Manganese (Pty) Ltd requested that the Agency for Cultural Resource Management conduct a Phase 1 Archaeological Impact Assessment for the proposed construction of the Kalagadi Manganese Smelter within the Coega Industrial Development Zone (IDZ), located outside Port Elizabeth in the Eastern Cape Province.

The Coega IDZ has been rezoned for industrial development and is currently being developed. Authorization for the change in land-use of the IDZ was granted by the Department of Environmental Affairs and Tourism (DEAT) and services for the development and operation of the site are currently being installed.

The farm names, parts of which will be occupied by the proposed smelter site, are -

- The Aloes 220
- Limehurst 221
- Limehurst 221, Portion 1
- Farm 304

The proposed manganese smelter is to be constructed on a 209 ha site in Zone 6 – the zone designated for heavy ferrous metal industries – of the Coega IDZ. The smelter will initially be capable of producing about 310 000 tons of high carbon ferro-manganese alloy a year, with the potential for expansion to double the annual production.

The aim of the study is to locate and map archaeological heritage sites and remains that may be negatively impacted by the planning, construction and implementation of the proposed project, to assess the significance of the potential impacts and to propose measures to mitigate the impacts.

The extent of the proposed development (about 120 ha) falls within the requirements for an archaeological impact assessment as required by Section 38 of the South African Heritage Resources Act (No. 25 of 1999).

Consulting palaeontologist Dr John Pether has been commissioned to undertake a palaeontological desk top study of the entire 10 000 ha, Coega IDZ. Recommendations pertaining to possible mitigation actions arising out of the study will be made by Dr Pether.

2 TERMS OF REFERENCE

The terms of reference for the archaeological heritage study were:

- to determine the likelihood of archaeological remains of significance in the proposed site;
- to identify and map (where applicable) the location of any significant archaeological remains;
- to assess the sensitivity and significance of archaeological remains in the site; and
- to identify mitigatory measures to protect and maintain any valuable archaeological sites and remains that may exist within the proposed site

3 THE STUDY SITE

A locality map is illustrated in Figure 1.

An aerial photograph of the proposed site is illustrated in Figure 2.

The proposed Kalagadi Manganese site is located in Zone 6 (specifically identified for heavy ferrous metal industries) in the Coega IDZ, about 25 km outside of Port Elizabeth. The site is situated north of the N2 and alongside R102.

The proposed site and surrounding area has a sloping topography, but is generally flat. There are no significant landscape features such as hills or kopjes occurring on the site. A strip of land alongside the western boundary of the property has recently been cleared (Figures 3-5), and there are some services already in place, but the bulk of the site is covered in very dense thicket mosaic vegetation (Figures 6-16). Much of the site, particularly in the north east, comprises impenetrable and barely accessible veld. Some domestic (beef) grazing still takes place on the farm. There are a few sporadic dry pans situated on the property (Figures 17 & 18), as well as some degraded and disturbed areas. Several gravel farm roads intersect the property, as well as numerous (barely visible) single tracks and even smaller animal tracks.

The geology of the area includes a thin soil covering over a thick layer of calcrete. Some surface calcrete is also visible in places sometimes covered with a scatter of quartzite cobbles and pebbles.

A modern farm homestead, comprising a main house and several outbuildings occur alongside the southern boundary of the proposed site (Figures 19-24 and refer to Figure 2). There are also several ruined buildings, the remains of building foundations and farming-related structures (such as drinking troughs, abandoned windmills) that occur in the immediate surrounding area as well. Harvesting of fire wood is currently taking place on the farm, most of which is processed at the main homestead. The surrounding land use comprises mostly rezoned agricultural land.

Proposed Kalagadi Manganese Smelter Site, Zone 6, Coega IDZ

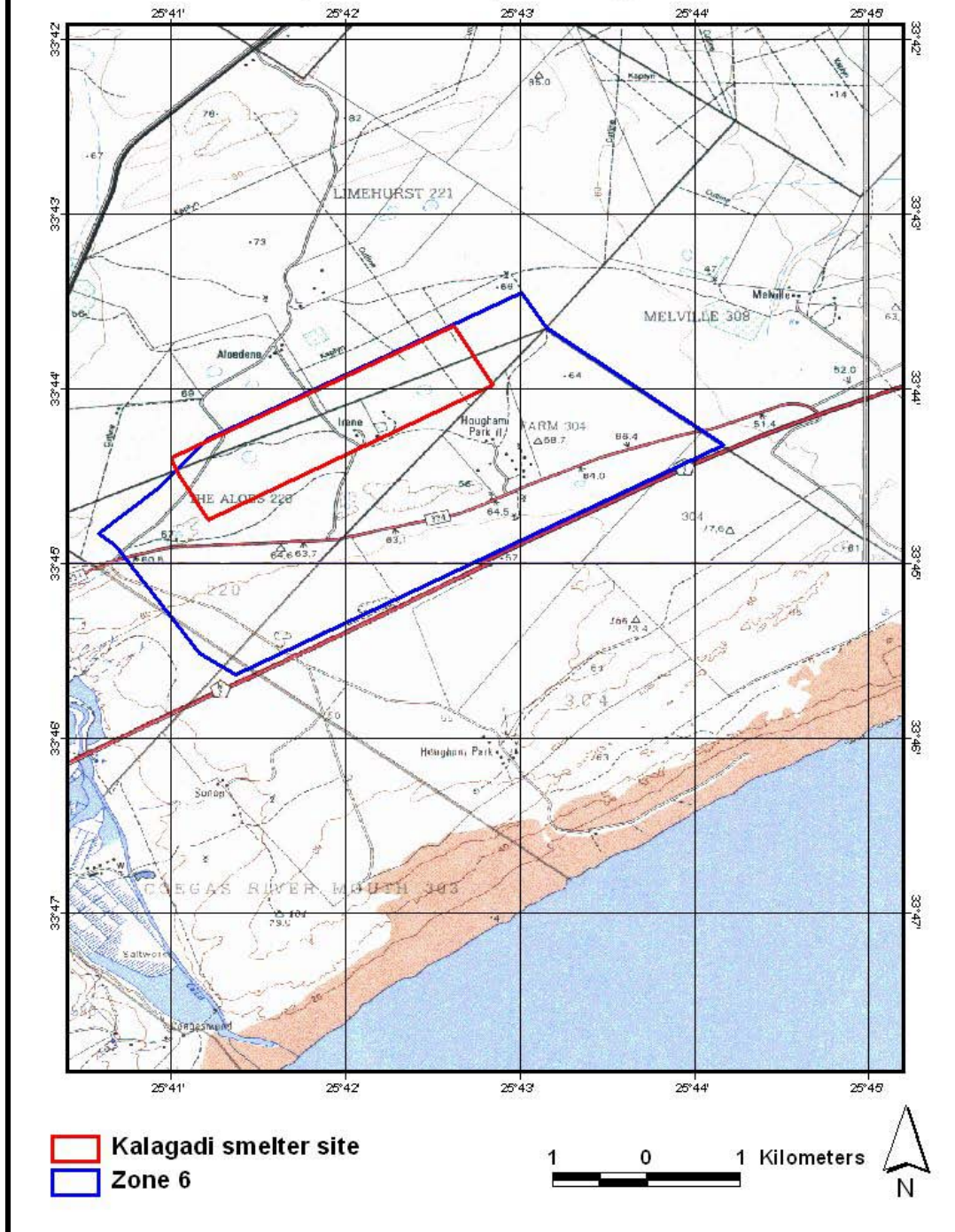


Figure 1. Locality map (3425 BA Port Elizabeth)



Figure 2. Aerial photograph indicating the approximate boundary of the proposed study area



Figure 3. View of the site facing north



Figure 4. View of the site facing south east



Figure 5. View of the site facing east



Figure 7. View of the site facing east



Figure 6. View of the site facing north east



Figure 8. View of the site facing north east



Figure 9. View of the site facing west



Figure 10. View of the site facing north east



Figure 11. View of the site facing west



Figure 13. View of the site facing west



Figure 12. View of the site facing east

Figure 14. View of the site facing north west



Figure 15. View of the site facing north east



Figure 16. View of the site facing north east



Figure 17. View of pan 1 facing west



Figure 18. View of pan 2 facing north east



Figure 19. Farm homestead



Figure 20. Farm building



Figure 21. Workers building

Figure 22. Farm building



Figure 23. Ruined farm building

Figure 24. Workers building

4 STUDY APPROACH

4.1 Method

The approach followed in the archaeological study entailed a ground survey of the 209 ha site. All visible farm roads were searched for archaeological remains. As many as possible of the single track paths were also searched, as well as disturbed areas situated on the site, including most of the dry water pans where these were accessible.

Archaeological remains were recorded using a Garmin Gecko 201 GPS unit set on map datum wgs 84.

The site visit and assessment took place over four days, between the 18th and 21st August, 2008.

A desktop study of work done in the Coega IDZ and surrounding areas was undertaken.

Archaeologist Dr Johan Binneman from the Albany Museum in Grahamstown was also consulted.

4.2 Constraints and limitations

A large portion of the study site is covered in very dense vegetation, resulting in low archaeological visibility. In some areas, particularly in the north east, access is virtually impossible due to the thick impenetrable veld.

4.3 Identification of potential risks

The field study, including the desk top study indicates that there are no potential risks associated with the proposed project.

Unmarked human burials may possibly be uncovered or exposed during earthmoving operations and excavations.

4.4 Results of the desk top study

The Coega River was first mentioned by early travellers in 1752. The name Coega is of Khoekhoen origin and means `seacow' or hippopotamus. In 1776 a community of displaced Khoekhoen herders were reported to be living on the Coega River and the estuary, caring for the stock of several Dutch farmers (Binneman 2006). These were remnants of the Cochoqua, who had fled the Cape after their defeat in the second Khoekhoen-Dutch War one hundred years previously.

Coega Kop itself is shown on maps dating back to 1834, and is reported to have been used as a navigation beacon by sailing ships wishing to enter Port Elizabeth Harbour. The `kop' has also been quarried since the 1920s by the SA Railways and Harbours for the development of the Port Elizabeth harbour (Webley 2007). The salt pan behind Coega Kop (not the present locality of the salt works at the river estuary) was being mined for salt as early as the 1920s (Binneman 2006).

According to Binneman (2006) an 1851 map, which indicated the original road between Port Elizabeth and Grahamstown that crosses the Coega River, also revealed the presence of a 'Junction Post' on the crossing at the Coega River that was likely to represent one of a number of temporary earthen fortifications established between 1812 and 1819 to protect the eastern frontier. This post, in all likelihood, no longer exists.

There are historical structures within the Coega IDZ as well that are older than 60 years, and which are protected by current heritage legislation. However, a 1996 survey indicated that these structures have been badly maintained or vandalised and the Eastern Cape branch of SAHRA confirmed that there are no conservation-worthy buildings within the proclaimed Coega IDZ (Binneman and Webley 1996).

Early Stone Age (ESA), Middle Stone Age (MSA) as well as younger Later Stone Age (LSA) tools have been recorded in the gravels of old river terraces which line most of the Coega River and its estuary (Binneman and Webley 1997). ESA handaxes have been collected from Coega Kop as well as from the banks and the gravels from the river between the N2 and the salt works (Kaplan 1993). These tools were mostly found spread over a wide area, in secondary, (i.e. disturbed) context and as a result have been rated as being low priority sites (Webley 2007).

Occurrences of fossil bone and MSA tools were also reported south of Coega Kop by Gess (1969). Some archaeological remains were found on the surface, but the bulk of the bone remains were found in limestone deposits between one and 1.5 m below the surface. The excavations (for lime) exposed a large number and variety of bones, teeth and horn cores from animals including warthog, leopard, hyena, rhinoceros and ten different antelope species. The association of stone tools and animal bones strongly suggested that they were the result of human activity. A radiocarbon date of greater than 37 000 years was obtained for the site (Gess 1969).

One of South Africa's most important ESA finds and excavations was conducted a few kilometres west of Zone 13 (north west of Zone 6) at Coega, at Amanzi Springs (Deacon 1970). In a series of spring deposits a large number of stone tools were found in situ, to a depth of about 3-4 metres. Remarkably, wood and seed material preserved in the spring deposits, possibly dating to between 250 000 to 800 000 years old, were also recovered at the time.

LSA shell middens (or ancient rubbish dumps) and the remains of at least 12 clay pots, stone, flakes as well as ostrich eggshell were also documented on the coast, west of the Coega River in the 1960's (Kaplan 1993; Rudner 1968).

More recently, older ESA and MSA tools and younger, LSA sites at the coast have been recorded within the Coega IDZ, in a series of specialist Archaeological Impact Assessments (AIAs) prior to development activities commencing (Binneman 2006, 2004, 1999; Binneman and Webley 1997, 1996; Kaplan 2007, 2008 in prep; Webley 2007, 2006; Len van Schalkwyk pers. comm. 2007).

A survey of the Coega IDZ and the industrial harbour was undertaken in 1996 (Binneman and Webley 1996). However, the study only focussed on the estuary and adjacent coastal region. The inland area was not surveyed due to the thick vegetation cover. According to Webley (2007), in 1997 Dr Jeanette Deacon (of the then National

Monuments Council), in commenting on the above report, called for mandatory archaeological surveys for each proposed development activity in the Coega IDZ, as part of the EIA process.

A few flaked tools and quartzite stone cores were documented in a disturbed context during a survey for a proposed biomass plant in Zone 3 in Coega IDZ but were rated as having low local significance (Wadley 2006).

Thirteen LSA shell middens were documented to the east of the Coega River Mouth during the course of a specialist AIA study. Six of the middens were later sampled and excavated by Binneman (1999) before the deep water harbour was constructed. Binneman (1999:8) noted that the 'Coega River Mouth shell middens were poor in size, depth of deposit, quality and quantity of food waste and cultural material'. Remnants of some of these middens were later documented by Kaplan (2007) during a survey for a proposed gas-fired combined cycle gas turbine power plant located near the port of Ngqura.

Relatively large numbers of shell middens with pottery and scatters of stone artefacts were also documented about 3 km east of the Coega River mouth during the course of a AIA for a proposed Chlor-alkali and salt plant (Webley and Gess 2007), while LSA middens were documented at Schelmhoek and Hougham Park, about 2 km inland from the coast, north of the above proposed salt plant (Binneman 1994).

Binneman (2006 and pers. comm. 2007) also reports that large numbers of shell middens, ceramic pot sherds and other archaeological material, are situated between the Coega and Sundays River Mouths. According to Binneman (pers. comm. 2007), unmarked human remains have also been found in the dunes along the coast.

Binneman (2006) also reported that fragments of decorated porcelain were recovered from near the mouth of the Coega River mouth, which may have washed up from a nearby 19th century shipwreck.

5 LEGISLATIVE REQUIREMENTS

The following section provides a brief overview of the relevant legislation with regard to the archaeology of the proposed project.

5.1 The National Heritage Resources Act (Act No. 25 of 1999)

The National Heritage Resources (NHR) Act requires that "...any development or other activity which will change the character of a site exceeding 5 000m², or the rezoning or change of land use of a site exceeding 10 000 m², requires an archaeological impact assessment"

The relevant sections of the Act are briefly outlined below.

5.2 Archaeology (Section 35 (4))

Section 35 (4) of the NHR stipulates that no person may, without a permit issued by HWC, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.

5.3 Burial grounds and graves (Section 36 (3))

Section 36 (3) of the HHR stipulates that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

6 FINDINGS

As with previous studies undertaken in the Coega IDZ (in Zones 3, 6 and 13 specifically), low density scatters of stone tools were documented during the specialist archaeological study, but these are spread very thinly and unevenly over the surrounding landscape.

The bulk of the tools comprise Middle Stone Age (MSA) and Early Stone Age (ESA) flake tools and cores, but a few Later Stone Age (LSA) artefacts were also documented.

Figures 25-29 illustrate a collection of tools counted and documented during the study.

Most of the tools were found in old gravel farm roads that intersect the property and comprise at the most two or three or four tools scattered among quartzite cobbles and pebbles. The artefacts comprise a range of tool types and sizes, including both large and smaller (prepared) cores, unmodified and miscellaneous retouched flakes (including triangular-shaped and prepared flakes), a medium sized scraper, retouched and utilized flake blades, large side-struck ESA flakes, snapped flakes, a few ESA cleavers/choppers, several possible incomplete (ESA) handaxes, and relatively large numbers of broken and flaked cobbles. One or two very weathered flakes were also counted.

The majority of the tools are in locally available quartzite, but several silcrete flakes and at least one indurated shale/hornfels flake and one small quartz flake were also counted.

Apart from one very small, low-density, scatter of MSA and a few ESA tools (including retouched and broken flakes, several cores, a retouched blade, a hammerstone, chunks and broken cobbles) documented among a scatter of rounded quartzite cobbles on compact red sands in a farm road in the south eastern portion of the site (Figures 30 and 31), there is no evidence of any factory or workshop site, or the result of sustained human settlement on the proposed Kalagadi Manganese site. A GPS reading for this site is S 33° 44 00.2 E 25° 42 37.9.

It is likely that all the tools documented during the study are not in primary context, or in-situ, but have been moved around as a result of past fluvial (or river) activity. Some of the broken/smashed chunks are probably also the result of river activity and abrasion.

The archaeological remains have therefore been rated as having low local significance.

It should be noted that a 'few isolated stone tools' of MSA and LSA origin were documented by Binneman (2006) during an archaeological survey of the proposed peaking power plant in Zone 13 situated north west of Zone 6, while Webley (2007) also documented only a few cores and pieces of flaked quartzite stone (probably MSA) randomly distributed during a survey for a proposed steel recycling plant in Zone 6 – immediately south west of the proposed Kalagadi Manganese smelter. No retouched stone flakes were observed by Wadley (2007). The above finds were also located in a disturbed and secondary context and rated by the writers as being low priority sites.

Some fossil shell (White Sand Mussel and small Venus clams) were also found by the writer embedded in small chunks of weathered calcrete on the site. These finds have been communicated to consulting palaeontologist Dr John Pether.



Figure 25. Collection of stone tools. Scale is in cm



Figure 26. Collection of stone tools. Scale is in cm



Figure 27. Collection of stone tools. Scale is in cm



Figure 28. Collection of stone tools. Scale is in cm



Figure 30. Scatter of tools in road

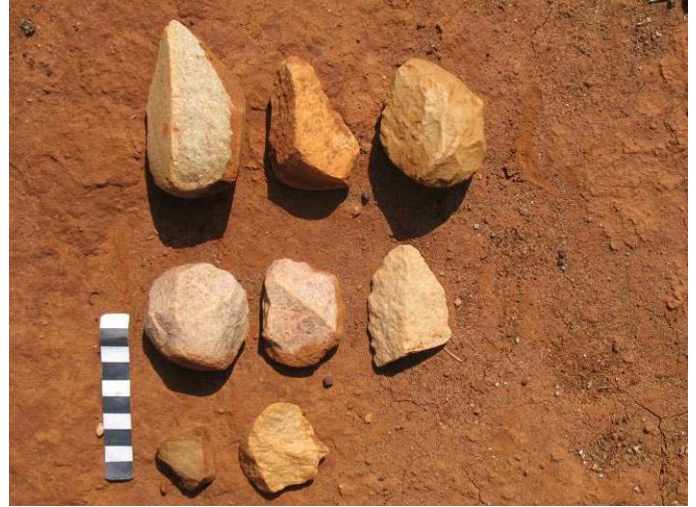


Figure 31. Collection of tools from gravel road. Scale is in cm



Figure 29. Collection of stone tools. Scale is in cm

7 IMPACT STATEMENT

The Phase 1 Archaeological Impact Assessment has identified no significant impacts to important pre-colonial archaeological material that will need to be mitigated prior to proposed development activities.

Previous specialist studies undertaken in Zones 3, 6 and 13 at Coega have shown that stone tools do occur, but that these are spread quite thinly and unevenly over the surrounding landscape and occur mostly in a disturbed and degraded context.

Unmarked human burials may, however, be uncovered or exposed during earthmoving operations.

Table 1 presents an assessment of the archaeological impacts of the proposed project.

Nature of the project	Intensity	Extent	Duration	Probability	Significance (no mitigation)	Significance (with mitigation)
Impact on archaeological heritage	High	Local	Short	Probable	Low	Low

Table 1. Assessment of the archaeological impacts of the proposed project

8 RECOMMENDATIONS

With regard to the proposed Kalagadi Manganese Smelter in Zone 6 at Coega, the following recommendations are made -

- Should any layers of sub-surface archaeological remains be exposed or uncovered during earthworks, these should immediately be reported to the archaeologist or the South African Heritage Resources Agency (Dr A. Jerardino - 021 462 4502).
- Should any unmarked human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to the South African Heritage Resources Agency (Dr A. Jerardino, or Ms C. Scheermeyer - 021 462 4502).

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