



PGS HERITAGE

MITIGATION PERMIT – INTERIM REPORT

Phase 2 archaeological mitigation on site NKMA005 and KNMA007 for the Nkomati Anthracite Mine, Nkomazi Local Municipality, in the Ehlanzeni District Municipality, Mpumalanga Province

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Declaration of Independence



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- I, Wouter Fourie, declare that –
- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting archaeological monitoring, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will take into account, to the extent possible, the matters listed in section 38 and 35 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and

Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

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ACKNOWLEDGEMENT OF RECEIPT

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EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Nkomati Anthracite Mine (Nkomati) to manage the Phase 2 archaeological mitigation work required for mitigation of an identified archaeological site and investigate affected by their mine expansion.

The archaeological site NKMA005 was initially identified by Van Vollenhoven and Radford in their 2011 Heritage Impact Assessment (HIA). PGS updated the HIA in 2020 as part of the expansion application.

PGS submitted a permit application to SAHRA to excavate, document and collect a representative sample of the cultural material associated with the archaeological site at NKMA005. The pre-disturbance excavation permit was issued to PGS on 19 May 2021 with permit number – 3264.

The excavations yielded a large number of ceramic shards that will be cleaned, curated and then analysed for stylistic affinities before delivered to the Lydenburg Museum for curation.

Preliminary stylistic analysis has shown that the decorative motives such as red burnishing, double herring bone banding, as well as single multiple banding below the lip, shows corresponding affinity with Tsonga groupings on the Mozambican/Swaziland/South African border (Ohinata, 2002). The same stylistic similarities were identified by Meyer (1986) and attributed to Tsonga groupings post 1830AD. The same stylistic patterning is also attributed to more recent Tsonga pottery (Lawson, 1965).

Other finds contained in some of the excavated matrix that allude to an archaeo-historic temporality, thus questioning the initial interpretation of an Early Iron Age archaeological site based on a few decorated surface ceramic finds.

We can confirm that a representative sample was recovered for the cultural deposits present on site (NKMA005-007). The material recovered consisted of cultural material consisting of decorated pottery, faunal material and charcoal. This material is currently being processed at the PGS laboratory after which it will be submitted to the Lydenburg Museum for curation.

Due to the extent of post-processing of material this interim report is submitted as backing for the destruction application to be submitted by Nkomati Anthracite Mine to ensure that mining activities can continue. It is our opinion that the destruction process can continue with the backing of a SAHRA permit and the implementation of the recommendation below:

It is recommended that during destruction of these sites (NKMA005 and NKMA007), the archaeologists monitor the earthworks and in the event of significance finds are made the work is stopped until such time as the material can be recovered. The recovered material will then be included in the already bulk samples collected from the excavation and sampling process as reported in this document.

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TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and

- any removal or destruction of trees, or removal of vegetation or topsoil

Early Stone Age

The archaeology of the Stone Age between 700 000 and 3 300 000 years ago.

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa;

Holocene

The most recent geological time period which commenced 10 000 years ago.

Late Stone Age

The archaeology of the last 30 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 years ago, associated with early modern humans.

Table 1 – List of abbreviations used in this report

Abbreviations	Description
AIA	Archaeological Impact Assessment
AMP	Archaeological Monitoring Program
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management

GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
PGS	PGS Heritage Pty Ltd
SAHRA	South African Heritage Resources Agency

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by Nkomati Anthracite Mine (Nkomati) to manage the Phase 2 archaeological mitigation work required for mitigation of an identified archaeological site and investigate affected by their mine expansion.

The archaeological site NKMA005 was initially identified by Van Vollenhoven and Radford in their 2011 Heritage Impact Assessment (HIA). PGS updated the HIA in 2020 as part of the expansion application.

PGS submitted a permit application to SAHRA to excavate, document and collect a representative sample of the cultural material associated with the archaeological site at NKMA005. The pre-disturbance excavation permit was issued to PGS on 19 May 2021 with permit number – 3264.

This document provides a summary of the mitigation work completed with the aim of assisting Nkomati Anthracite to apply for a destruction permit for the archaeological site NKMA005.

2 AIMS AND OBJECTIVES

The aim of the study is to identify the extent of the identified archaeological resources that are in the mining path, and the significance of the archaeological resources.

An adequate sample of material will be retrieved to further observe and analyse the potential anthropogenic activities that occurred within the Nkomati mining area.

2.1 Specialist Qualifications

This interim was compiled by PGS.

The staff at PGS has a combined experience of nearly 90 years in the heritage consulting industry. PGS and its staff have extensive experience in managing mitigation processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

The field team consisted of:

Wouter Fourie, the Project Coordinator and principal archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional

Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

Henk Steyn, senior archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator.

Nicholas Fletcher, archaeologist, he holds a BA(Hon) Archaeology and has submitted his MA in archaeology.

Wynand van Zyl, archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. He holds a BA(Hon) Archaeology.

Xander Fourie, archaeological student and intern.

3 LOCATION

The Nkomati Anthracite Mine (“the Mine”) is situated in the Kangwane coalfield in the far east of the Mpumalanga province of South Africa, approximately 50km south of Komatipoort and 75km east of Barberton **Figure 1** and **Figure 2**.

The Mine can be accessed via the R571 road, which runs south-north through the property and intersects the N4 highway at Komatipoort. The mine is also traversed by several secondary and tarred roads that provide reasonable access from Komatipoort and Malelane, with reasonable gravel roads to the mine. A railway line from Swaziland to Komatipoort traverses the mine lease area from south to north, to the east of the current operations. The mine operates under the Environmental Authorisation as issued by the department of Minerals and Energy on 27 November 2020 (**Document loaded on SAHRIS and available under CASEID 14506**).

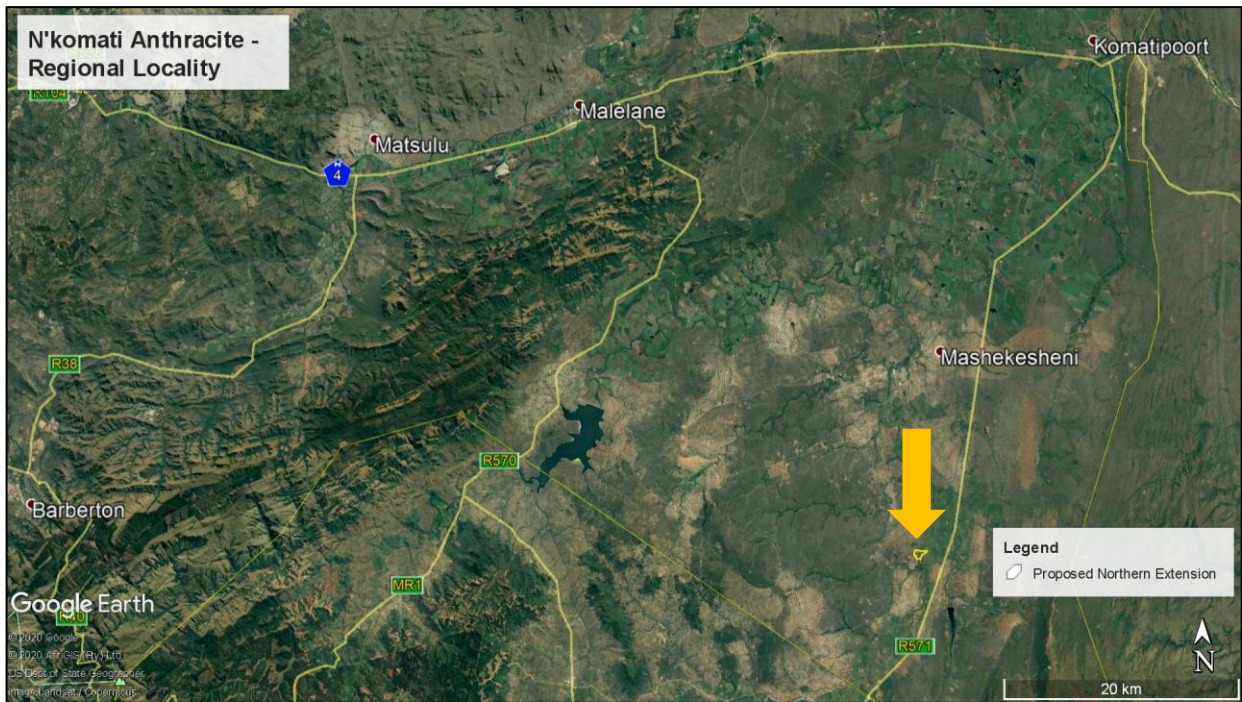


Figure 1 – Regional Locality Map showing the proposed Madadeni Opencast Northern Extension study area (Google Earth image)

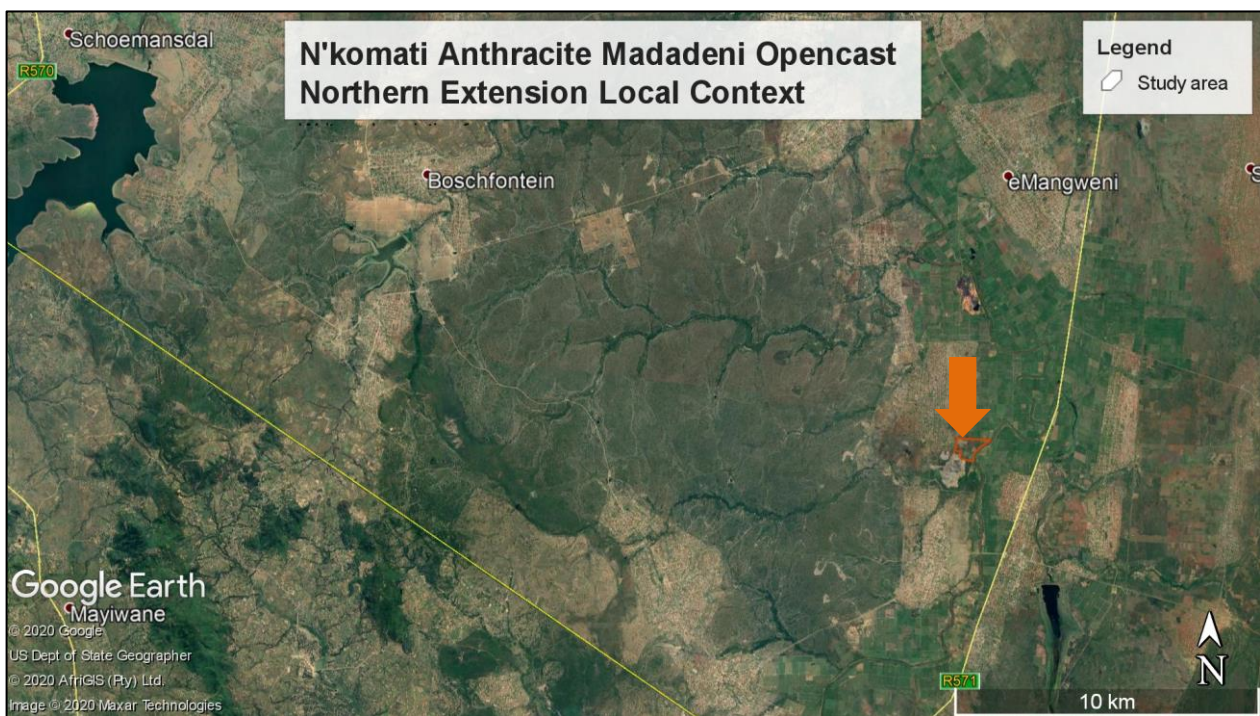


Figure 2 – Google Earth image showing the local context of the proposed Madadeni Opencast Northern Extension study area (orange polygon)

4 BACKGROUND

The HIA (Steyn and Kitto, 2020) recorded six heritage resource sites in total, one of which had been recorded by Van Vollenhoven and Radford in 2011. The five newly recorded sites included one Stone Age site/findspot (NKM-A 001), three grave or possible gravesites (NKM-A 003, NKM-A 004 and NKM-A 006) and the foundations of a recent/modern structure (NKM-A 002).

The archaeologist also revisited and identified five sites that had been recorded in the HIA study undertaken in 2011 by Van Vollenhoven and Radford as part of an extensive multi-phase site containing Iron Age and historical components (NKM-A 005a – NKM-A 005e).

The large multi-phase site NKM-A-005 (with points NKM-A-005a to NKM-A-005e as described in the HIA (Steyn& Kitto, 2020) contains several components of different periods including possible Mid-to -Late Iron Age. The site has a medium heritage significance rating. As part of the HIA, the impact assessment concluded that expanding the open cast mine will destroy the site. An evaluation of the site has identified at least three large middens containing a mix of decorated and undecorated potsherds. Also identified is bone (butchered, burnt and unburnt), primarily associated with bovids.



Figure 3 – Examples of decorated pottery on site

Structures identified during the field assessment were possible hut floors and grain bin platforms; this will be confirmed during the excavations (**Figure 4**).



Figure 4 – Google Earth image showing the position of the various middens/byres within the archaeological site NKM-A-005



Figure 5 – View of the midden at point NKM-A 005c



Figure 6 - View of two potsherds at KNM-A-005e



Figure 7 – View of several decorated potsherds at KNM-A-005e

The HIA recommended the documentation and excavation of the identified archaeological site before expanding the opencast.

5 EXCAVATION METHODOLOGY

5.1 Archaeological excavation

The following methodology was followed during the excavation of all the trenches apart from trenches KMNA 7 and 7A where the deposit was just removed using a shovel and sieved.

- Photos were then taken prior to the excavation of the trench and after each locus had been excavated.
- The trenches were excavated according to loci which followed the varying contexts of the site.
- All the loci had an allocated locus form which was used to record the excavation process.
- The depth of each locus within the trench was recorded using a line level and a tape measure.
- A combination of a shovel and trowel was used to excavate the deposits. While brushes, scoops and buckets were used to remove the deposit from the trenches.
- The excavated material was then sieved and artifacts were removed.

- All the artifacts were put in bags with tags corresponding to the site name, location, locus, context, and artifact type.
- All the trenches were spatially recorded using a differential GPS.
- All the trench co-ordinates were taken from the southeast corner of the trenches.

5.2 GPR Methodology for Site NKMA 5A

The aim of the GPR survey was to detect any anomalies consistent with subsurface structures in the surrounding soil matrix.

- The area that was scanned was cleared of any vegetation that might obstruct the use of the GPR equipment.
- A survey grid was laid out over the area to be scanned. The area was as large as possible to cover the majority of the deposit.
- The grid was geolocated with the differential GPS attached to the GPR.
- Radargrams were collected every 25cm on the X-axis of the grid.
- The data was processed to see if any anomalies were present. Additional to the vertical radargrams, the post-processing software also produced horizontal slices every 5cm.

6 GROUND PENETRATING RADAR

GPR is frequently used in several fields: civil, military, archaeological and forensic. The detection of utilities (buried infrastructure) is currently the most common use of GPR, and it is also this industry that predominantly drives the development of GPR systems. During the last three decades, GPR has been increasingly used in the detection of clandestine graves and unmarked cemetery graves.

GPR generates a data set of reflections of specific materials along with the interfaces between units in the ground. Radar travel time is measured precisely, and the measurement can be converted to depth, yielding an often-complex three-dimensional data set of reflection amplitudes over a surveyed area (Conyers, 2016). It is therefore essential that the GPR data be collected in a controlled and well-documented manner. A grid system is used for collection and ample notes and photographs must be taken to ensure that the images can be correctly interpreted in post-processing. GPR is not an ideal “real-time” technique for the archaeological, cemetery and forensic surveys since GPR field data are inherently full of external interference and soil-related issues (Leach, 2021).

Many factors are affecting GPR interpretation (after Conyers, 2016):

- Soil change and type (pedology)
- Soil chemistry (usually the greatest unknown on most GPR studies)

- Stratigraphy of different depositional environments (near-surface geology and geomorphology)
- How energy is propagated, reflected, refracted, and attenuated in the ground (physics and chemistry)
- The types of cultural features that might be present and their geometry, distribution and origin (archaeology)
- How water is distributed and retained in the ground (hydrology)
- The nature and distribution of other materials in the ground, such as tree roots and animal burrows (biology)
- An understanding of GPR equipment components, how they are powered, and how electronics affect the type of data collected (electrical engineering)

After a GPR data set is collected and ready to be processed, all the above factors must be considered, even if it is not completely understood. In addition, one must have knowledge of the chosen post-processing software and map-making.

6.1 Detecting graves with the use of GPR

Broadly speaking, two types of reflections are visible for interpretation on a radargram: point origin reflections (visible as a hyperbola) and the reflection of dielectric boundaries in the soil (visible as planar reflections). There are of course other reflections and noise such as radio wave interference and airwaves from surrounding and overhead structures that one must be cognisant of during the collecting and post-processing of data.

When searching for burials, it rarely, if ever, happens that the GPR picks up a reflection of the human remains (in archaeology, these normally consists only of skeletal material, if any). The dielectric value of the skeletonised remains is normally too close to that of the soil and therefore no reflection is visible. What one would normally look for are therefore evidence of the burial pit itself or remnants of the coffin, especially if it contains some sort of metal. When a grave is dug through well-defined sub-surface strata, the break in stratigraphy may be visible on the radargram, provided that the dielectric value of the strata is significantly different from that of the surrounding soil (**Figure 8**).

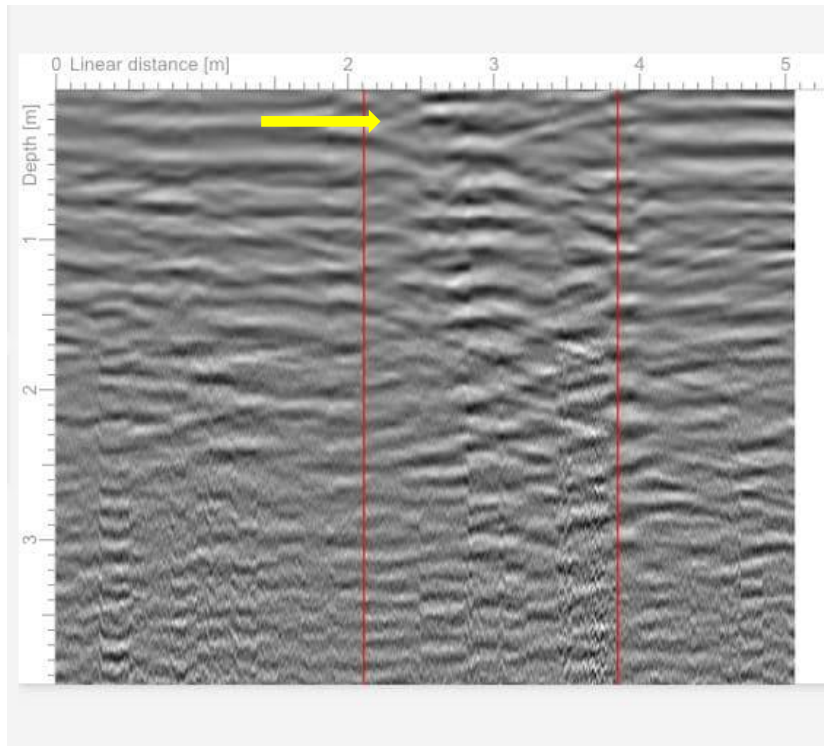


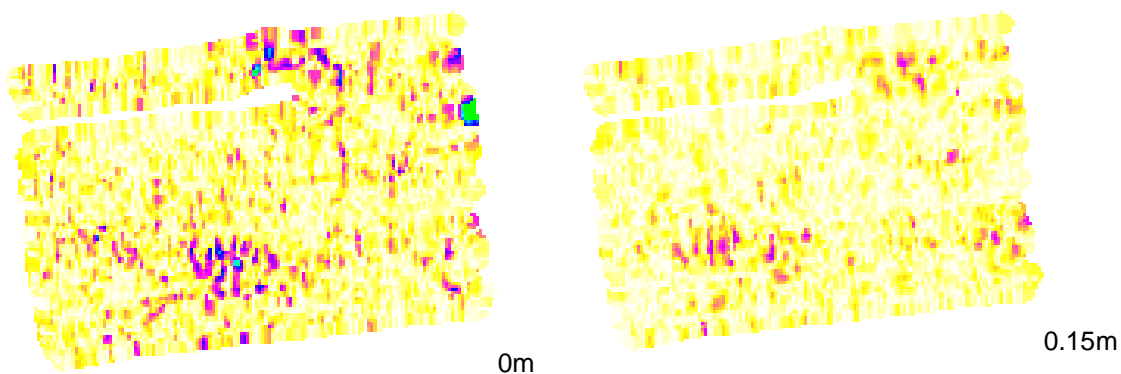
Figure 8 – Example of grave found at NKM MTD1-1 (indicated at yellow arrow)

6.1.1 GPR Scan of NKMA 5A

The survey was conducted with a GSSI Utilityscan with a 350 MHz high stacking antenna. During post-processing, the dielectric constant was calculated at 6,4 (0,118 m/ns). This was done with the help of the software (Geolix).

Thirty-four (34) parallel radargrams were collected over the midden area. A few complex reflections were noted (most probably normal reflections consistent with animal burrows, roots, and buried debris). No definitive indications of burials were noted.

Definitive burial pits in an ashy matrix as is the case with the burial found during excavation in trench B1 will not be readily identifiable with the scan analysis as shown below in **Figure 9**.



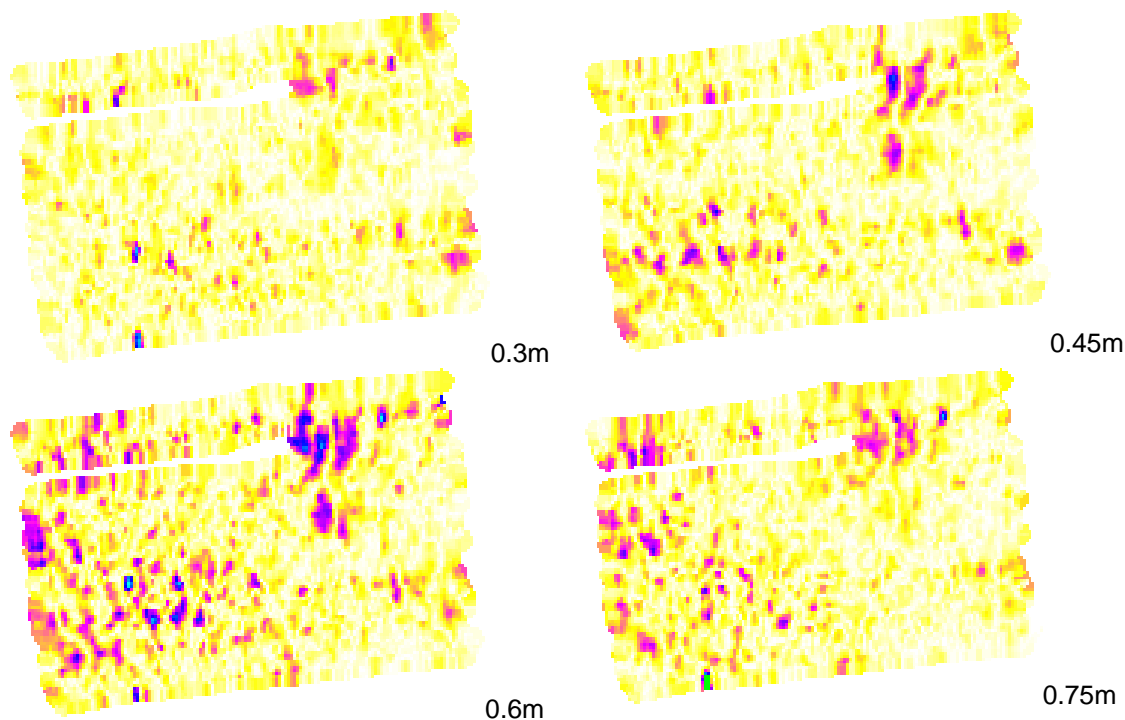


Figure 9 – Various time slices (0-0.75m depth) as collected during the scan of the grid overlaying the kraal-midden at NKMA005A

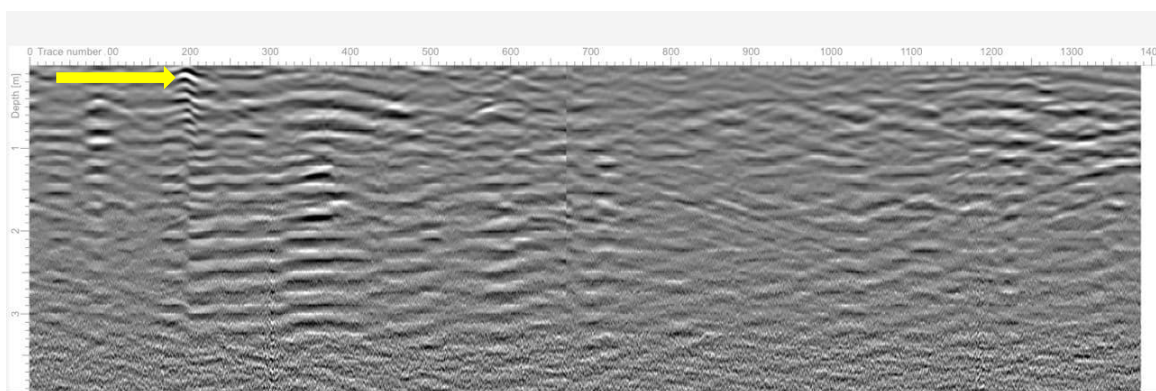


Figure 10 – The backfilled excavation can be seen between 2 and 3 meters (horizontally) with the edge of the excavation clearly visible just below the surface at 2meter

An overlay of the excavation grid at NMKA005a with the 0,15m slices on the amplitude map show some of the excavated trenches as red/pink reflections. Note that most trenches were only excavated up to 0,2m, deeper reflections are a combination of geological features and animal burrowing activities (**Figure 12**). The prevalence of the animal burrows makes the detection of burials virtually impossible as it clutters the images with background “noise”.



Figure 11 - Overlay of amplitude map in relation to the identified archaeological site

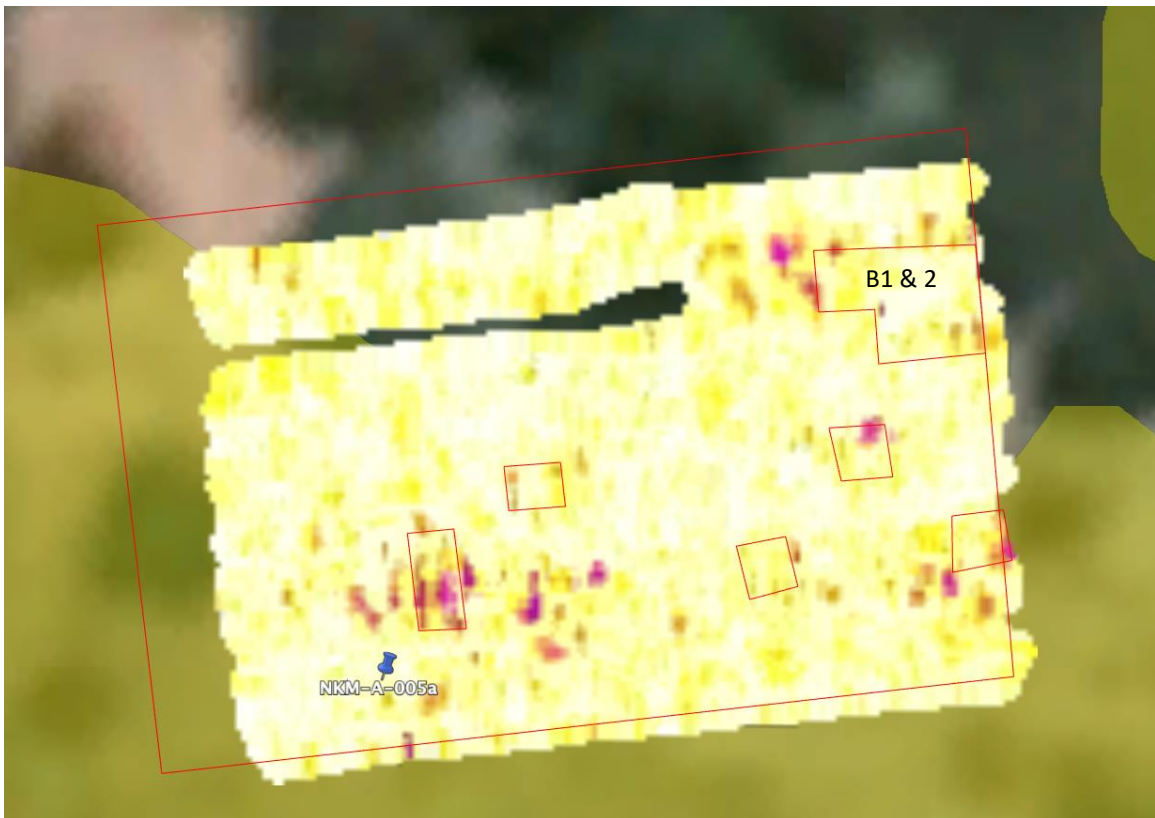


Figure 12 - Overlay of excavation grid with an amplitude map.

7 EXCAVATION

Excavations and mitigation were conducted between 29 July and 15 July 2021.

7.1 NKMA005A

Site NKMA 005A was previously identified as a series of middens and possible kraals. This was investigated by setting up a 0,5x0,5m trench (1B) on a slightly elevated area. During excavation a significant amount of material was present, and the decision was made to expand the trench into a 2x2m trench. After expanding the trench, a consolidated prepared dung surface was identified in the north-western corner of the trench. As the excavation progressed, an infant burial was discovered in the centre of the trench at a depth of 15cm below the surface. The skeleton was then exposed and recorded. After the recording had been completed, the trench along with the burial was covered up and an application for the removal of the skeleton was made. Trench 1B was extended to the west by opening a 1x1m trench (Ba2) alongside the north-western corner of trench 1B to see if the prepared dung surface continued to the west which it did. Excavations were halted until the permit application for the removal of the skeleton was granted.

After the permit for the removal of the skeleton was obtained, the excavations resumed. The decision was made to set up a 12x12m grid over the site with 2x2m cells. An auger sample was taken from the south-eastern corner of all the squares considered for excavation. Six 2x2m cells were chosen for excavation of which a 1x1m trench was excavated within each one of the chosen cells.

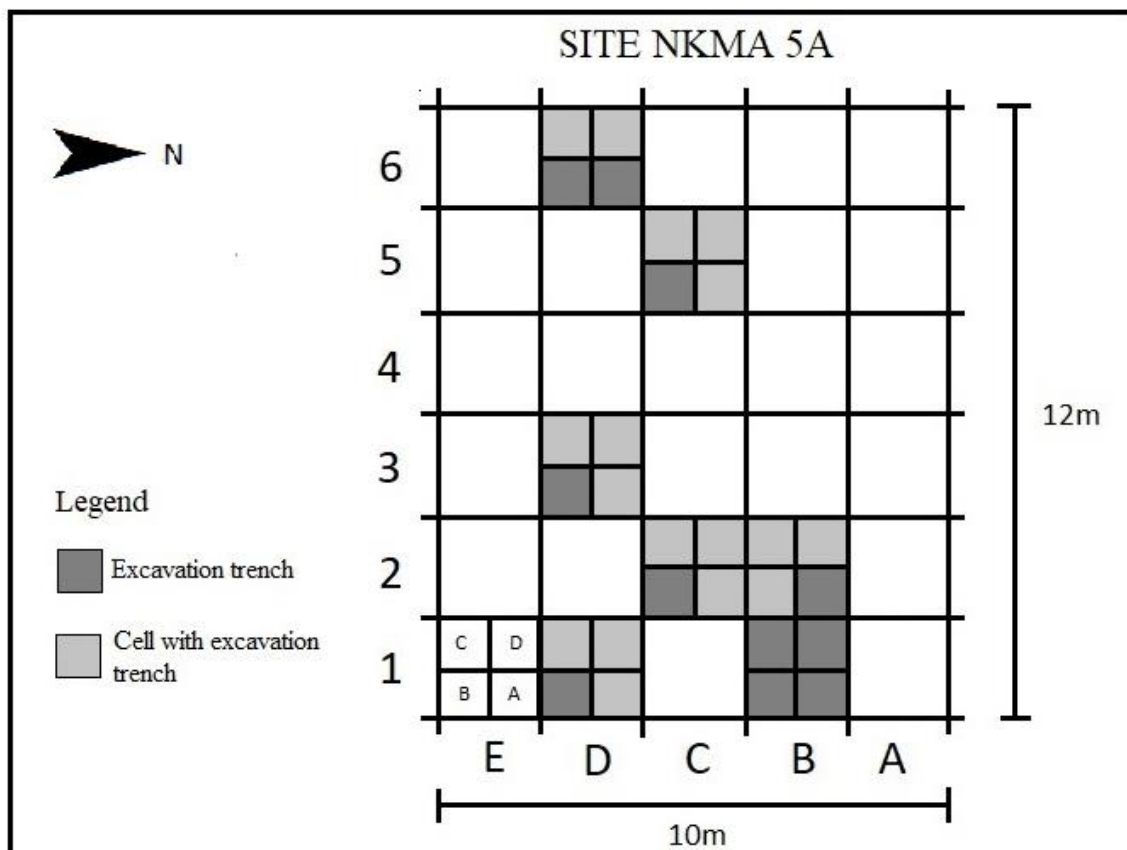


Figure 13 - Trench layout for Site KMNA 5A

7.1.1 Trench no: B1 (-25.826365, 31.801322)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). The deposit was removed using a trowel. The deposit contained artifacts consisting of ceramics and bone along with an infant burial.
- The infant burial was relocated under SAHRA burial grounds and grave permit 3230 and buried by the associated family in the family graveyard.



Figure 14 - NKMA 5A trench 1B Infant burial

- C03: The layer is a prepared dung surface and has an average width of 4cm

7.1.2 Trench no: Ba2 (-25.826395, 31.801305)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). A spade was used to clear the surface while a trowel was used to remove the deposit. Artifacts consist of ceramics, bone, metal and one bone bead.
- C03: The layer is a prepared dung surface



Figure 15 - NKMA 5A trench Ba2 with prepared dung surface

7.1.3 Trench no: Db1 (-25.826428, 31.801329)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). Artifacts consist of bone and ceramics.
- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it had no artifacts.



Figure 16 - NKMA 5A trench Db1

7.1.4 Trench no: Cb2 (-25.826422, 31.801309)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). Artifacts consist of some bone and ceramics.
- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it has no artifacts.



Figure 17 - NKMA 5A trench Cb2

7.1.5 Trench no: Db3 (-25.826441, 31.801291)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). A spade was used to clear the surface and remove the deposit while a trowel was used to define the interface between context C01 and C04. Artifacts consist of some bone and ceramics.

- C04: The layer is a light ashy deposit, light loam in texture with sand grain inclusions (2%) and dung inclusions (15%). The deposit was removed using a trowel. Artifacts consist of some bone and ceramics.

- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it has no artifacts.



Figure 18 - NKMA 5A trench Db3

7.1.6 Trench no: Cb5 (-25.826427, 31.801249)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). A spade was used to clear the surface and remove the deposit while a trowel was used to define the interface between context C01 and C05. Artifacts consist of some bone, ceramics and an iron nail.
- C005: The locus is a light grey compressed dung layer. Artifacts consist of some bone and ceramics.



Figure 19 - NKMA 5A trench Cb5

- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it has no artifacts.

7.1.7 Trench no: Db6 and Da6 (-25.826448, 31.801230)

- C01: soil has a light loam texture with 2% inclusions. A spade was used to clear the surface of the trench and a trowel was used to remove the deposit. Artifacts consisted of ceramics and bone
- C05: The locus is a light grey compressed dung layer and is approximately 10-15cm in width. Artifacts consist of some bone, ceramics and an iron nail.
- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it has no artifacts.



Figure 20 - NKMA 5A trench Db1

7.2 Site: NKMA 5B

A 0,5x0,5m trench was set up in this location due to ashy soil suspected to be a midden. Once sterile soil had been reached, it was decided not to carry on excavating in the area as there was little cultural material within in the deposit

7.2.1 Trench no: 1 (-25.826332, 31.801386)

- C01: The layer is a light ashy deposit with a light loam texture and minimal inclusions (2%). A spade was used to clear the surface of the trench and trowels were used to remove the deposit. Artifacts consisted of bone, ceramics and an iron nail.



Figure 21 - NKMA 5B trench 1

- C02: The layer is a dark compact deposit with a heavy loam texture and minimal inclusions (2%). This context marks the end of the archaeological deposit as it has no artifacts.

7.3 Site: NKMA 5C

A 1x1m trench was set up in this location due to its elevated area and ashy soil. Once sterile soil had been reached, it was decided not to carry on excavating in the area as there was little cultural material within in the deposit

7.3.1 Trench no: 1 (-25.826551, 31.801595)

- C01: The deposit is slightly ashy with a heavy loam texture and minimal inclusions (5%). A spade was used to clear the surface and trowels were used to remove the deposit. Artifacts consisted of bone, ceramics and a glass bead.
- C02: The layer has a heavy loam texture with 2% inclusion. This context marks the end of the archaeological deposit as there are no artifacts within it.



Figure 22 - NKMA 5C trench 1

7.4 Site: NKMA 5E

Six trenches were set up within the area of site NKMA 5E. This was done as the ceramics located here are different to other ceramics within the area. Site NKMA 5E is highly disturbed with only a small stretch of deposit situated along the western edge of the road which cuts through the centre of the site. There is also dumping occurring at the south eastern section of the site. Trench 1, a 2x2m trench was set up in its location due to the ashy grey soil occurring there. Trench 1B was opened 1m south of trench one and was also a 2x2m trench, this was done as a large quantity of ceramics were visible in the deposit. This trench was then extended to the east with another 1x1m square and named Trench 1C. Trench 2 was 1x1m in size and was set up on an elevated area. Trench 3 and 3B were set up in an ashy deposit with visible ceramics and faunal material suggesting a midden.

SITE NKMA 5E

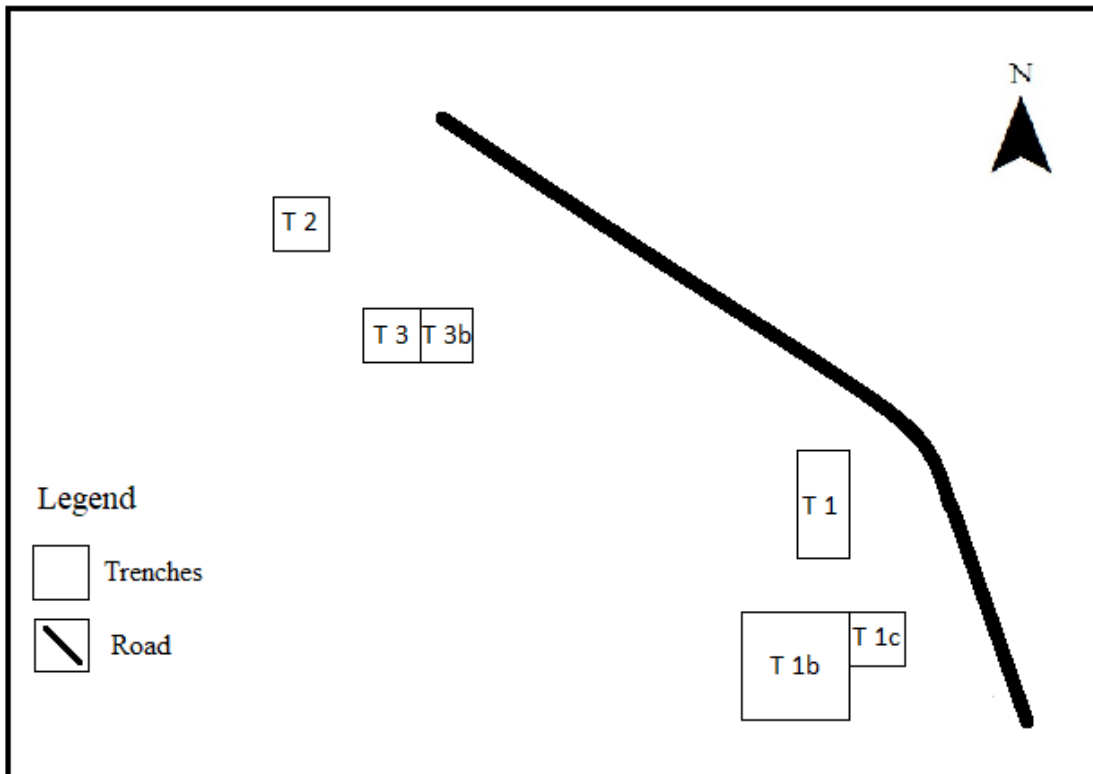


Figure 23 - Trench layout of site NKMA 5E

7.4.1 Trench no: 1 (-25.826036, 31.801508)

- C01: The deposit is a light grey ashy layer with a light loam texture and minimal inclusions (2%). The surface of the deposit was cleared with a spade while the deposit was removed with a trowel. Artifacts consist of bone and ceramics.
- C02: The layer is a light grey ashy deposit which has a loam texture with minimal inclusions (2%). There is also a thin dung layer on the western side of the trench. Artifacts consist of faunal material and ceramics.



Figure 24 - NKMA 5E trench 1

- C03: The layer is light brown with a loam texture and 5% inclusions. The deposit was removed with a shovel. Artifact density decreases towards the bottom of the trench till no more artifacts are present, marking the end of the archaeological deposit. Artifacts consist of faunal material and ceramics.

7.4.2 Trench no: 1B (-25.826061, 31.801512)

- C01: The deposit is a light grey ashy layer with a light loam texture and Minimal inclusions (2%). The deposit was removed with a trowel. Artifacts consist of bone and ceramics.
- C02: The deposit consists of a light grey ashy layer and has a loam texture with minimal inclusions (2%). The deposit was removed using a trowel. Artifacts consist of faunal material and ceramics.



Figure 25 - NKMA 5E trench 1B



Figure 26 - NKMA 5E trench 1B with ceramics in the north easter section of the trench

- C03: The layer is light brown with a loam texture with minimal inclusions (2%). The deposit was removed with a shovel. Artifact density decreases towards the bottom of the trench until no more artifacts are present, marking the end of the archaeological deposit. Artifacts consist of faunal material and ceramics.
- C04: C04 is a small 20x20cm ash pocket located within sterile soil beneath context C03. The deposit was removed with a trowel. Artifacts consist of a few ceramics.

7.4.3 Trench no: 1C (-25.826051, 31.801518)

- C01: The deposit is a light grey ashy layer with a light loam texture and minimal inclusions (2%). The deposit was removed with a shovel. Artifacts consist of bone and ceramics.
- C02: The deposit consists of a light grey ashy layer and has a loam texture and minimal inclusions (2%). The deposit was removed using a shovel. Artifacts consist of faunal material and ceramics.
- C03: The layer is light brown with a loam texture and minimal inclusions (2%). The deposit was removed with a shovel. Artifact density decreases towards the bottom of the trench till no more artifacts are present, marking the end of the archaeological deposit. Artifacts consist of faunal material and ceramics

7.4.4 Trench no: 2 (-25.8225768, 31.801384)

- C06: The deposit is light brown with a loam texture and minimal inclusions (5%). The deposit was removed with a trowel. Artifact consist of faunal material ceramics and a piece of a cast iron pot.
- C02: The deposit is light brown and is very compact. It has a loam texture with minimal inclusions (5%).



Figure 27 - NKMA 5E trench 2

7.4.5 Trench no: 3 and 3B (-25.826002, 31.801408)

- C05: The deposit is a light grey ashy layer with a loam texture and minimal inclusions (2%). The deposit was removed with a shovel. Artifacts consist of bone and ceramics.
- C03: The layer is light brown with a loam texture and minimal inclusions (2%). Sterile soil marks the end of the archaeological deposit



Figure 28 - NKMA 5E trench 3

7.5 **Site: KMNA 7**

7.5.1 Site NKMA 7 (-25.825405, 31.801815)

The site is a disturbed area where surface material has been scraped and deposited in a 3x12m soil heap. Sections of the soil heap were excavated with a spade and sieved as there was cultural material within the soil heap.

7.5.2 Site NKMA 7b (-25.825605, 31.801468)

The site is a large midden situated 300m east of the soil heaps that was exposed during clearing of the area. The midden was significantly disturbed. A sample of the midden was removed with a shovel and sieved.

8 MATERIAL ANALYSIS

The excavations yielded a large number of ceramic shards that will be cleaned, curated and then analysed for stylistic affinities before delivered to the Lydenburg Museum for curation.

Preliminary stylistic analysis has shown that the decorative motives such as red burnishing, double herring bone banding, as well as single multiple banding below the lip, shows corresponding affinity with Tsonga groupings on the Mozambican/Swaziland/South African border (Ohinata, 2002). The same stylistic similarities were identified by Meyer (1986) and attributed to Tsonga groupings post 1830AD. The same stylistic patterning is also attributed to more recent Tsonga pottery (Lawson, 1965).

Other finds contained in some of the excavated matrix that allude to an archaeo-historic temporality, thus questioning the initial interpretation of an Early Iron Age archaeological site based on a few decorated surface ceramic finds.

9 CONCLUSION

PGS obtained an excavation permit from the SAHRA to collect a representative sample of the archaeological material associated with the site NKMA005 for analysis to determine temporal localisation, cultural affiliation and possible social structure and layout of the settlement.

We can confirm that a representative sample was recovered for the cultural deposits present on site (NKMA005-007). The material recovered consisted of cultural material consisting of decorated pottery, faunal material and charcoal. This material is currently processed at the PGS laboratory after which it will be submitted to the Lydenburg Museum for curation.

Due to the extent of post-processing of material this interim report is submitted as backing for the destruction application to be submitted by Nkomati Anthracite Mine to ensure that mining activities can continue. It is our opinion that the destruction process can continue with the backing of a SAHRA permit and the implementation of the recommendation below:

It is recommended that during destruction of these site (NKMA005 and NKM007)s, the archaeologists monitor the earthworks and in the event of significance finds are made the work is stopped until such time as the material can be recovered. The recovered material will then be included in the already bulk samples collected from the excavation and sampling process as reported in this document.

10 REFERENCES

CONYERS, L.B. 2016 *Interpreting Ground Penetrating Radar for Archaeology*. Published by Routledge, New York, USA.

LAWTON, A.C., 1965. *Bantu pottery of southern Africa* (Master's thesis, University of Cape Town)

LEACH, P. 2021 *A Theory primer and Field Guide for Archaeological, Cemetery, and Forensic Surveys with Ground-Penetrating Radar*. Geophysical Survey Systems Inc. Nashua, New Hampshire, USA.

MEYER, Andrie, 1986. 'n *Kultuurhistoriese interpretasie van die ystertydperk in die Nasionale Krugerwildtuin* (Doctoral dissertation, Universiteit van Pretoria).

OHINATA, FUMIKO. 2002. The beginning of 'Tsonga' archaeology: excavations at Simunye, north-eastern Swaziland. *Southern African Humanities* Vol. 14 Pages 23–50 Pietermaritzburg December, 2002

STEYN, H.S. AND KITTO, J.A. 2020. *Heritage Impact Assessment for the Nkomati Anthracite Mine, Nkomazi Local Municipality, in the Ehlanzeni District Municipality, Mpumalanga Province*

VAN VOLLENHOVEN AC AND A RADFORD. 2011. *A Report on a Heritage Impact Assessment for the Nkomati Anthracite Mine in the Magisterial District of Barberton, Mpumalanga Province. For: Sentula Mining. By Archaetnos.*

Appendix A
SAHRA Permit

Phase 2 archaeological mitigation for site NKM-A-005, Nkomati Anthracite Mine

Our Ref:



an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Elijah Dumisani Katsetse
Tel: 0214624502
Email: ekatsetse@sahra.org.za
CaseID: 16286

Date: Wednesday May 19, 2021
Page No: 1

PermitID: 3264

PERMIT: Pre-disturbance survey

In terms of Section 35(4) of the National Heritage Resources Act (Act 25 of 1999)

Permit Holder: Mr Wouter Fourie
PGS Heritage (Pty) Ltd
PO Box 32542
Totiusdal
0134

Site: Nkomati Anthracite - NKM-A005 (NKM-A005)

This permit is issued to Wouter Fourie (PGS Heritage) for a Phase 2 archaeological mitigation for the Nkomati Anthracite Mine, Nkomazi Local Municipality, in the Ehlanzeni District Municipality, Mpumalanga Province.

1. If the permit holder is not to be present on the site at all times then SAHRA must be provided with the names and qualifications of the authorised representatives.
2. Excavation activities will include systematic excavations, detailed recording and mapping. A site map must be created and a total station must be used to record the finds.
3. Adequate recording methods as specified in the Regulations and Guidelines pertaining to the National Heritage Resources Act must be employed. Note that the position of all excavations and objects collected must be marked on a plan of the site. Materials will be bagged per quadrant and labeled carefully.
4. A standard site record form must be lodged with the Lydenburg Museum, Mpumalanga Province.
5. This permit covers the previously identified site complex **NKM-A005** and any new sites discovered under this permit.
6. All material collected and excavated, as well as field notes and records, will be curated by the Lydenburg Museum, who will be responsible for the permanent curation and safekeeping of all artefactual material in a condition that allows ongoing research.
7. A permit reports on the results of the excavations and analyses must be emailed to apmpermitreports@sahra.org.za on or before 30 May 2022 and 2023 with a final permit report emailed on



an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
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www.sahra.org.za

or before 30 May 2024 using the template in the following link: <https://sahris.sahra.org.za/content/apmpermitreports>. SAHRA reserves the right to withhold further permits if progress is not deemed satisfactory. Permit reports can be made available to researchers on request within three years of the lapsing of this permit.

8. Reprints of all published papers or copies of theses and/or reports resulting from this work must be lodged with SAHRA.

9. It is the responsibility of the permit holder to obtain permission from the landowner for each visit, and the excavator is responsible for ensuring that he or she has an understanding with the landowner concerning: the number of visitors and workers; conditions for camping on the property; speed limits on access roads; possible prohibitions on off-road driving; size, type and number of vehicles permitted; possible prohibitions on trespassing beyond the site; disturbing fauna, flora or substrate; erection and demolition of structures on the site; appropriate hours of visiting and working on the site; use of firewood, electricity and water; lighting fires and the prevention of uncontrolled fires and any fencing necessary to protect livestock. Conditions of access imposed by the landowner must be observed.

10. The permitted excavator shall be responsible for the activities and impacts of all colleagues, students and employees under his or her supervision.

11. Excavators must take measures to ensure the safety of any person who may enter the excavation site as part of their excavation team or as their visitor.

12. It is the responsibility of the permit holder to protect sites during and after excavation and to ensure that, where appropriate, excavations are filled in or stabilised with adequate materials (e.g. Loffelstein blocks or army bags in geotextile) to the satisfaction of SAHRA and the landowner.

13. SAHRA shall not be liable for any losses, damages or injuries to persons or properties as a result of any activities in connection with this permit.

14. SAHRA reserves the right to cancel this permit by notice to the permit holder.

15. This permit is subject to a general appeal and may be suspended should an appeal against the decisions be received by SAHRA within 14 days from the date of the permit. SAHRA may not be held responsible for any costs or losses incurred in the event of the suspension or retraction of this permit.

Phase 2 archaeological mitigation for site NKM-A-005, Nkomati Anthracite Mine

Our Ref:



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Enquiries: Elijah Dumisani Katsitse
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Email: ekatsitse@sahra.org.za
CaseID: 16286

Date: Wednesday May 19, 2021
Page No: 3

PermitID: 3264

16. Request to renew permits must be done at least two months prior to the expiry of the existing permit.

Appendix B
Project archaeologist CV

PROFESSIONAL CURRICULUM FOR WOUTER FOURIE

Name: Wouter Fourie
Profession: Archaeologist
Date of birth: 1974-04-30
Parent Firm: PGS Heritage (Pty) Ltd
Position at Firm: Director
Years with firm: 17
Years of experience: 23
Nationality: South African
HDI Status: White

EDUCATION:

Name of University or Institution : University of Pretoria
Degree obtained : BA
Major subjects : Archaeology, Geography and Anthropology
Year : 1996

Name of University or Institution : University of Pretoria
Degree obtained : BA [Hons] (Cum laude)
Major subjects : Archaeology and Geography
Year : 1997

Name of University or Institution : National Nuclear Regulator
Certificate obtained : Radiation Protection Officer Certificate
Year : 1999

Name of University or Institution : University of Cape Town
Certificate obtained : Project Management Foundations short
course
Year : 2015

Name of University or Institution : University of Cape Town
Certificate obtained : MPhil – Conservation of Built
Environment
Year : 2016-Current

Professional Qualifications:

Professional Heritage Practitioner – Association of Professional Heritage Practitioners (APHP)
Professional Archaeologist - Association of Southern African Professional Archaeologists -
Professional Member – No 043

CRM Accreditation

Principal Investigator - Grave Relocations
Field Director – Iron Age
Field Supervisor – Colonial Period and Stone Age
Accredited with Amafa KZN

Languages:

Afrikaans
English – Speaking (Good) Reading (Good), Writing (Good)

KEY QUALIFICATIONS

- More than 20 consecutive years of work in the heritage consulting field;
- In depth knowledge of heritage management principles;
- 18 years working experience in the protection of cultural heritage sites and archaeological excavations;
- Proven experience in report writing and report deliverables;
- 18 years experience in management of the cultural heritage consultancy teams;

- 10 years of experience in institutional, multinational company interaction and project implementation;
- Proven experience in project scheduling and programming;
- Experience in development and implementation of quality, environmental and environmental health management systems for projects and companies;
- Experience in the development of policies and guidelines related to heritage management.
- Experience in planning and implementation of workshops and conferences.

CONFERENCE PAPERS AND PUBLICATIONS

- 2016 - Implementing Responsible Grave Relocation – The case for Comprehensive Grave Relocation Action Plan for Integrated Project Management. *21st annual IAIA conference, Port Elizabeth, Eastern Cape.*
- 2012 - Heritage management: compliance or just a nuisance during the Environmental Management Programme implementation. *17th annual IAIA conference, Somerset West, Western Cape.*
- 2011 – POSTER – W. Fourie and J. van der Walt. Sterkspruit: Micro-layout of Late Iron Age stone walling, Lydenburg, Mpumalanga. . *Association of Southern African Professional Archaeologists – Conference, Swazi Land*
- 2011 – POSTER – P.D. Birkholtz, W. Fourie and W.C. Nienaber. Onverwacht: Archaeological and Historical Analysis of Swazi settlement layout. *Association of Southern African Professional Archaeologists – Conference, Swazi Land*
- 2011 – POSTER – H.S. Steyn, W. Fourie and M. Hutten. Kappa Omega Transmission Line: Findings from an Archaeological Walk Down. *Association of Southern African Professional Archaeologists – Conference, Swazi Land*
- 2011 - Archaeology, Physical Anthropology and DNA analysis – The case of Queen Thomo Jezangani Ndwandwe. *Association of Southern African Professional Archaeologists – Conference, Swaziland*
- 2008 – Probabilistic Modeling of archaeological sites, Pilanesberg National Park. Paper delivered at the *Association of Southern African Professional Archaeologists – Conference, Cape Town*
- 2008 - Archaeological Impact Assessments within South African legislation. *South African Archaeological Bulletin 63 (187): 77–85, 2008*
- 2006 - Paper delivered at ASAPA conference, Pretoria. Tavistock: Good grave relocation practice.
- 2005 - Paper delivered at the Three Universities Seminar, University of Pretoria: The repatriation of King Michael Tjiseseta.
- 2005 - 'The Return of a King' - The repatriation of King Michael Tjiseseta, *Paper delivered at the conference of the Pan-African Archaeological Association for Prehistory and Related Studies in Gaborone, Botswana, in July 2005.*
- 2004 - Research poster, Probabilistic Modeling of Archaeological Sites, Pilanesberg National Park. *South African Association of Archaeologist Conference, Kimberley*

INTERNATIONAL PROJECTS

- 2017 – current: **Position:** Heritage Specialist and Project Director – Lesotho Highland Development Authority – Polihali Dam Project - Heritage Management Plan development and Implementation. **Mokhotlong, Kingdom of Lesotho – Project Value:** €1,800,000.00
- 2016 – current – **Position:** Heritage Specialist and Project Director - Total – Grave Relocation Action Plan and implementation for the Mozambique Liquid Natural Gas Project, **Palma, Northern Mozambique – Project Value:** €1,800,000.00
- 2018 – **Position:** Heritage Specialist and Project Manager – Sovereign Metals – Malingunde Graphite Project, **Malawi – Heritage Impact Assessment – Project Value:** €25 000.00
- 2017 - **Position:** Heritage Specialist and Project Manager – Aurcon Singapore for the Government for Mauritius – Heritage Assessment for the proposed Rapid Rail Link, **Port Louis, Mauritius – Project Value:** €6,200.00
- 2013 – 2016 - **Position:** Heritage Specialist and Project Manager - SLR Consulting - Heritage Impact Assessment, Manica Gold Project, **Manica Province, Mozambique - Project Value:** €5,000.00

- 2012 - **Position:** Heritage Specialist and Project Manager - SLR Consulting - Heritage Impact Assessment, Namoya SALR – Gold Mine, Maniema Province in the eastern **Democratic Republic of Congo (DRC)** - **Project Value:** €5,500.00
- 2012 - **Position:** Heritage Specialist and Project Manager - Consolidated Contractors Group S.A.L. - Mitigation and Grave Relocation at Site 37-A3-16 on the Mahalpye to Kudumatse Road Construction Project. **Central District, Botswana** - **Project Value:** €7,500.00
- 2010 - **Position:** Heritage Specialist and Project Manager - Digby Wells & Associates - Grave Relocation Procedures and Consultation – RAP Process, Kibali Gold Mine, Watsa, Oriental Province, **Democratic Republic of the Congo** - **Project Value:** €5,500.00
- 2010 - **Position:** Heritage Specialist and Project Manager - Digby Wells & Associates - Archaeological Study, Kibali Gold Mine, Watsa, Oriental Province, Democratic Republic of the Congo - **Project Value:** €5,500.00
- 2008 - **Position:** Heritage Specialist and Project Manager - Digby Wells & Associates - Mmamabula Mining Project CIC, **Botswana** - **Project Value:** €5,000.00

MITIGATION WORK

1. 2017 – Current - Lesotho Highland Development Authority – Polihali Dam Project - Heritage Management Plan development and Implementation. Mokhotlong, Kingdom of Lesotho **Project Manager**
2. 2014-2017 - Raising of the Clanwilliam Dam – Heritage Mitigation, Clanwilliam, Western Cape. **Project Manager**
3. 2013 - Kappa Gamma, MSA Mitigation, Touws Rivier, Western Cape. **Field Director, Dr M.M. van der Ryst, PI**
4. 2012 - Misgund N1 Interchange upgrade, Iron Age Phase 2 excavation, Johannesburg, Gauteng Province. **Field Director, under Prof. JCA Boeyens, PI**
5. 2011 – Eskom 400kV – Dinaledi Spitskop – Phase 2 Historical Site, Mitigation - **Field Director, J.P Behrens, PI**
6. 2011 – Eskom 400 kV – Dinaledi Marang – Phase 2 Middel Stone Age Site, Mitigation **Field Director, Dr M.M. van der Ryst, PI**
7. 2011 – Eskom 400 kV – Dinaledi Marang – Phase 2 Late Iron Age, Mitigation - **Field Director, under Prof. JCA Boeyens, PI**
8. 2011 – Eskom 400 kV – Dinaledi Marang – Phase 2 Early Stone Age Site, Mitigation - **Field Director, under Dr K. Kumann, PI**
9. 2011 - Eskom 400kV – Dinaledi-Spitskop – Phase 2 Middel Stone Age Site, Mitigation - **Field Director, under Dr M.M van der Ryst, PI**
10. 2009 - Nkomati Mine, Onverwacht Phase 2 excavations, Badplaas, Mpumalanga. **Field Director, under Prof. TN Huffman, PI**
11. 2008 - TWP, Wesizwe Platinum Phase 2 excavations, Pilanesberg, North West Province. **Field Director, under Prof. TN Huffman, PI**
12. 2008 - The Heads Trust, Heritage Assessment and phase 2 documentation, and monitoring for Lydenburg Ext 38 housing development, Lydenburg, Mpumalanga. **Field Director, under Prof. JCA Boeyens, PI**
13. 2008 - Stonehenge x16, Phase 2 test excavations, Nelspruit, Mpumalanga. **Field Director, under Prof. TN Huffman, PI**
14. 2007 - Phase 2 mitigation of archaeological terrain. Hammanskraal West Proper. Ditsala Construction. Hammanskraal, Gauteng Province. **Field Director, under Prof. JCA Boeyens, PI**
15. 2007 - Phase 2 mitigation of archaeological terrain. Bokfontein Mining Project. Henric Ferrochrome, Brits North West Province. **Field Director, under Prof. JCA Boeyens, PI**
16. 2006 - Phase 2 mitigation of archaeological terrain. Gardener Ross Golf and Country Estate. **Field Director, under Prof. JCA Boeyens, PI**

POSITIONS HELD

- **2018 – current:** Director - PGS Heritage Mozambique Lda
- **2017 – current:** Director - PGS Heritage (Pty) Ltd Lesotho
- **2003 – current:** Director - PGS Heritage (Pty) Ltd
- **2006 – 2008:** Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the

Witwatersrand

- **2005-2007:** Director – Matakoma Heritage Consultants (Pty) Ltd
- **2000-2004:** CEO– Matakoma Consultants
- **1998-2000:** Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng
- **1997-1998:** Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng