



PGS HERITAGE

MITIGATION PERMIT – INTERIM REPORT

Phase 2 archaeological mitigation on site DUB004 for the Agrizone Phase 2 Development at the Dube Trade Port, King Shaka International Airport, Tongaat, KwaZulu Natal Province

Issue Date: 08 June 2022

Revision No.: 1.0

Project No.: 558HM

Amafa Permit Number: 3477

Amafa Ref Nr: SAH21/18028



+ 27 (0) 12 332 5305



+27 (0) 86 675 8077



contact@pgsheritage.co.za



PO Box 32542, Totiusdal, 0134

Offices in South Africa, Kingdom of Lesotho and Mozambique

Head Office:
906 Bergarend Streets
Waverley, Pretoria,
South Africa

Directors: HS Steyn, PD Birkholtz, W Fourie

Declaration of Independence

- 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;

HERITAGE CONSULTANT:

PGS Heritage (Pty) Ltd

CONTACT PERSON:

Wouter Fourie – Senior Archaeologist



Tel: +27 (0) 12 332 5305

Email: wouter@pgsheritage.com

SIGNATURE:



ACKNOWLEDGEMENT OF RECEIPT

Report Title	MITIGATION PERMIT – INTERIM REPORT Phase 2 archaeological mitigation on site DUB004 for the Agrizone Phase 2 Development at the Dube Trade Port, King Shaka International Airport, Tongaat, KwaZulu Natal Province		
Control	Name	Signature	Designation
Author	Wouter Fourie		Senior Archaeologist Iron Age
Author	Henk Steyn		Senior Archaeologist GPR

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Raubex KZN on behalf of Dube Trade Port to manage the Phase 2 archaeological mitigation work required for the identified archaeological site DUB004 to be affected by the development of the Agrizone 2 Development just west of the King Shaka International Airport, Tongaat in the province of KwaZulu Natal.

The archaeological site DUB004 was identified during monitoring of vegetation clearing at a site with potential unmarked graves. Although no indication of graves or human remains were found it became apparent that subsurface deposits of Early iron Age remains were present.

PGS submitted a permit application to the Kwazulu-Natal Amafa and Research Institute (Amafa) to excavate, document and collect a representative sample of the cultural material associated with the archaeological site at BUD004. The pre-disturbance excavation permit was issue to PGS on 14 April 2022 with permit number – 3477.

The excavations yielded many ceramic shards that will be cleaned, curated, and then analysed for stylistic affinities before delivered to the Natal Museum for curation. Analysis is currently underway at the University of Pretoria's Archaeology Laboratory.

Preliminary analysis of the ceramics has shown that the ceramics excavated in Block 1 represents two EIA phases that of Mzonjani and Msuluzi. The main characteristics include hatching/impressions on the neck, rim punctates, spaced motifs on the shoulder for the Mzonjani ceramics. The Msuluzi ceramics include broad cross-hatching and lines on the rim and neck (Maggs, 1980; Huffman, 2007). Typical pot profile includes everted rims with a prominent angle from the neck. Of interest are various smaller vessels with constricted openings that will require lab analysis.

Block 2 and 5 have a majority of Mzonjani phase ceramic decorations. The site likely dates between 450-600AD.

Of interest is the lack of other cultural material in the excavated matrix. The only additional material recovered are large amounts of charcoal and a small amount of river pebbles. These pebbles show use wear on them.

We can confirm that a representative sample was recovered for the cultural deposits present on site (DUB004). The material recovered consisted of cultural material consisting of decorated ceramics, and charcoal. This material is currently processed by PGS in collaboration with the

University of Pretoria's Archaeology laboratory after which the material will be submitted to the Natal 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 the Dube Trade Port to ensure the construction activities can continue. It is our opinion that the destruction process can continue with the backing of a Amafa permit and the implementation of the recommendation below:

It is recommended that during destruction of these site (DUB004), 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.

The site destruction must be done in a controlled manner utilising, where possible a grader to remove the topsoil in a controlled manner during the monitoring by the archaeologist. Upon the removal of the cultural matrix the construction can continue as required.

TABLE OF CONTENT

1	INTRODUCTION	11
2	AIMS AND OBJECTIVES	11
2.1	Specialist Qualifications	11
3	LOCATION	12
4	BACKGROUND	12
5	EXCAVATION METHODOLOGY	18
5.1	Archaeological excavation methodology	18
5.2	GPR Methodology	18
6	GROUND PENETRATING RADAR	19
6.1.1	GPR Scan of DUB004	20
7	DUB004	26
8	MATERIAL ANALYSIS	44
9	CONCLUSION	44
10	REFERENCES	45

List of Figures

<i>Figure 1 – Locality map</i>	<i>13</i>
<i>Figure 2 – Position of DUB004 in relation to the development footprint</i>	<i>14</i>
<i>Figure 3 – Buffered and demarcated area</i>	<i>15</i>
<i>Figure 4 – Pottery as exposed</i>	<i>15</i>
<i>Figure 5 – Decorated pottery</i>	<i>15</i>
<i>Figure 6 – Various time slices (0-0.6m depth) as collected during the scan of the grid overlaying the site at DUB004</i>	<i>21</i>
<i>Figure 7 – GPR and excavation grid overlay (Red dots indicate test trench corners)</i>	<i>22</i>
<i>Figure 8 – View of a time slice at 0.6m with scan 52 indicated as the red line</i>	<i>23</i>
<i>Figure 9 - Overlay of amplitude map in relation to the identified archaeological site</i>	<i>24</i>
<i>Figure 10 - Profile scan of y-axis 51 with enhancement to indicate the ceramic concentration correlating with the time slice in Figure 9</i>	<i>24</i>
<i>Figure 11 – Profile illustration in cutting of the slope on the western edge edge of the site</i>	<i>25</i>
<i>Figure 12 - Profile of Block 4 indicating layers of sand and clay</i>	<i>25</i>
<i>Figure 13 - Block 4 terminal layer - Note the clay deposit at the base of the excavation</i>	<i>26</i>
<i>Figure 14 – Mechanical removal of material</i>	<i>27</i>
<i>Figure 15 – Further levelling of the site by hand and removal of vegetation remnants</i>	<i>27</i>

Figure 16 - GPR scanning of the site 28
Figure 17 - Block 1 and Block 2 with the original shovel test holes visible..... 28

List of Tables

Table 1 – List of abbreviations used in this report..... ix
Table 2 - Description of site DUB004 15
Table 3 - Block 1 - Layer documentation..... 30
Table 4 - Block 2 - layer documentation..... 34
Table 5 - Block 5 - layer documentation..... 40

List of Appendices

A Amafa Permit
B Project archaeologist CV

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 Raubex KZN on behalf of Dube Trade Port to manage the Phase 2 archaeological mitigation work required for the identified archaeological site DUB004 to be affected by the development of the Dube Trade Port (DTP) AgriZone 2 development just west of the King Shaka International Airport, Tongaat in the province of KwaZulu Natal.

The archaeological site DUB004 was identified during monitoring of vegetation clearing at a site with potential unmarked graves. Although no indication of graves or human remains were found it became apparent that subsurface deposits of Early iron Age remains were present.

PGS submitted a permit application to the Kwazulu-Natal Amafa and Research Institute (Amafa) to excavate, document and collect a representative sample of the cultural material associated with the archaeological site at BUD004. The pre-disturbance excavation permit was issued to PGS on 14 April 2022 with permit number – 3477.

This document provides a summary of the mitigation work completed with the aim of assisting the DTP to apply for a destruction permit for the archaeological site DUB004 and facilitating the continuation of construction activities.

2 AIMS AND OBJECTIVES

The aim of the study is:

- to identify the extent of the identified archaeological resources that are in the construction path, and the significance of the archaeological resources.
- to collect a representative sample of the archaeological material on-site for analysis to determine temporal localisation, cultural affiliation and possible social structure and layout of the settlement.

2.1 Specialist Qualifications

This interim report 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.

Nicole Mann, archaeologist, she holds a MSc in Archaeology.

Xander Fourie, archaeological student and intern.

3 LOCATION

The DTP AgriZone 2 is situated on the western border of the King Shaka International Airport, some 5 kilometres south of Tongaat town (**Figure 1**). The approximate midpoint of the project is at S29.61043 E31.10014.

4 BACKGROUND

Raubex KZN appointed PGS in 2021 to undertake a Phase II Heritage Assessment of three heritage resources previously identified during the Heritage Impact Assessment (HIA (Anderson, 2013) conducted for the development of the Dube Trade Port (DTP) AgriZone 2 development close to King Shaka International Airport in the Province of KwaZulu Natal.

During the second evaluation the three sites:

- **DUB01** – the remnants of a possible early farming community associated with the Late Iron Age;
- **DUB02** – a low density scatter of stone tools on the side of a hill; and,
- **DUB03** – a multi-component site consisting of possible Early farming community remains associated with the Earlier Iron Age and a more recent occupation dating to the early part of the 20th century up to recent times.



Figure 1 – Locality map

It was found that the sites **DUB01** and **DUB02** were of low archaeological significance and a recommendation for their destruction with a permit issued by Amafa was endorsed. **DUB01** and **DUB02** were destroyed during monitoring by an archaeologist on 3 February 2022 under permit PermitID: 3380 REF: SAH21/17306.

The recent assessment of site **DUB03** observed very-low-density occurrences of Iron Age ceramics. The large concrete building rubble on-site is most probably associated with the chicken broiler coups constructed in the late 1960s and not the farmsteads from the 1930s. The fieldwork conducted by PGS at **DUB03** has not identified any burials or graves in the cleared areas. The thick vegetation cover and rubble in other sections of the site also made visibility of the surface difficult. Therefore, the location at **DUB03** is only rated as having a low to moderate heritage significance due to the possibility of burials associated with the Iron Age and the original farmsteads of the 1930s.

Monitoring during the vegetation clearing and topsoil stripping at **DUB03** as conducted by PGS staff has confirmed that there are no graves or human remains present at **DUB03**. The monitoring has however identified a subsurface deposit, at site **DUB004** (Table 2), of Early Iron Age (EIA) ceramics on the periphery of the development area that was exposed during the site clearing. The

bulk of this low to medium significance archaeological site is however outside of the development area (Figure 2).

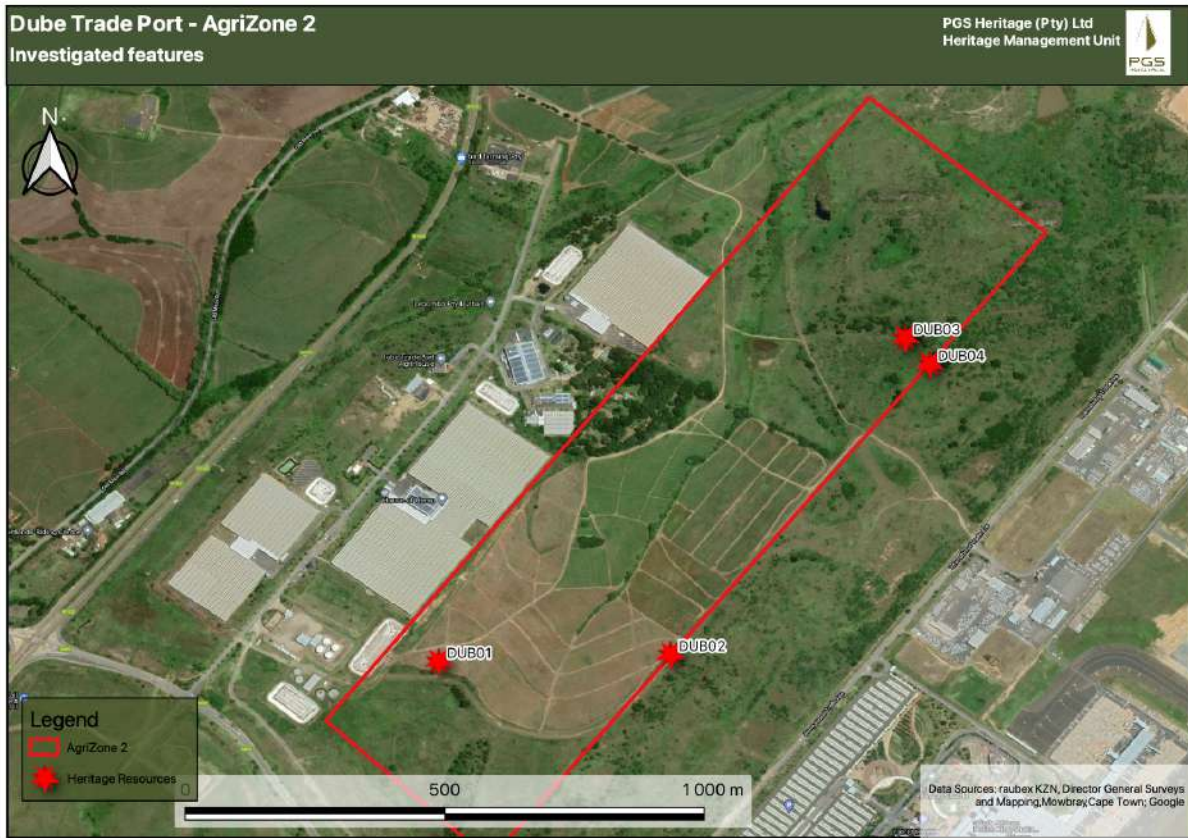


Figure 2 – Position of DUB004 in relation to the development footprint

Table 2 - Description of site DUB004

Site no.	Lat	Lon	Resources description	Grading	Mitigation measures and findings
DUB004	-29.6093	31.10328	<p>During monitoring of the site clearing at DUB03 a small subsurface deposit of ceramics was uncovered on the edge of the construction area. The area was immediately demarcated and barricaded with mesh and construction activity was halted and diverted from the area.</p> <p>The site of consisting of Early Iron Age pottery is located 350m away from a small stream and is situated on a slope on the western side of a hill/dune close to the summit. The ceramics found on the site seem to be Mzonjani ceramics dating to between AD450-AD750 (Huffman 2007). No other material culture was identified within the area of the site. The site is approximately 10m x 20m in size but could extent further east while the deposit seems to be at a depth of between 30cm-50cm.</p> <p>Indications are that the archaeological deposit extend eastwards outside of the development area.</p>	Low to Medium	Although the sites will not be impacted in its entirety it was damaged by the construction activity and as such it is recommended that a mitigation activity must entail archaeological test excavations to determine the extent of the site and collect a representative sample of material to determine the temporal and cultural association of the site.



Figure 3 – Buffered and demarcated area



Figure 4 – Pottery as exposed



Figure 5 – Decorated pottery

Images of site DUB004 and ceramics





5 EXCAVATION METHODOLOGY

The aim is to collect a representative sample of the archaeological material on-site for analysis to determine temporal localisation, cultural affiliation and possible social structure and layout of the settlement. The following will be done:

5.1 Archaeological excavation methodology

1. vegetation will be cleared to expose the extent of the settlement;
2. a ground-penetrating radar (GPR) survey of the site will be conducted in selected areas to determine the presence of subsurface structures such as hut structures and grain pits – Refer to GPR Methodology in section 5.2;
3. such structures will be investigated through excavations conforming to archaeological techniques as described in the *ASAPA Constitution – Appendix C Minimum Standards for Practice*;
4. a minimum of three excavation squares will be set out and excavated on the identified middens. It is, however, possible that further investigative excavations will be done depending on the finds after vegetation clearing;
5. All excavations and test pits will be surveyed and geolocated with a differential GPS system;
6. All excavations will be backfilled after completion of the fieldwork;
7. where possible samples for C14 dating will be collected and on completion of the excavations sent for C14 dating at a South African Facility
8. all artefacts and material collected will be marked and labelled and packed for transportation to our laboratory at our office in Pretoria
9. **an interim excavation report will then be drafted in support of a destruction permit for the site, to facilitate the continuation of construction work.**
10. the material will be cleaned, analysed and finally accessioned for storage;
11. the material will then be submitted to the KZN Museum for curation after completion of the field report (Refer to Museum Letter as loaded on SAHRIS)
12. PGS will submit a final excavation report on the SAHRIS case for the closing of the permit.

5.2 GPR Methodology

The following methodology will be followed during the GPR survey:

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

- 1) The areas to be scanned will be cleared of any vegetation that might obstruct the use of

the GPR equipment.

- 2) A survey grid will be laid out over the area to be scanned. The area will be as large as possible to cover middens other structures identified on the surface.
- 3) These grids will be geolocated with the differential GPS attached to the GPR.
- 4) Radargrams will be collected every 25cm on both the X and Y-axis of the grid.
- 5) The data will be processed to see if any anomalies are present. Additional to the vertical radargrams, the post-processing software will also produce 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)

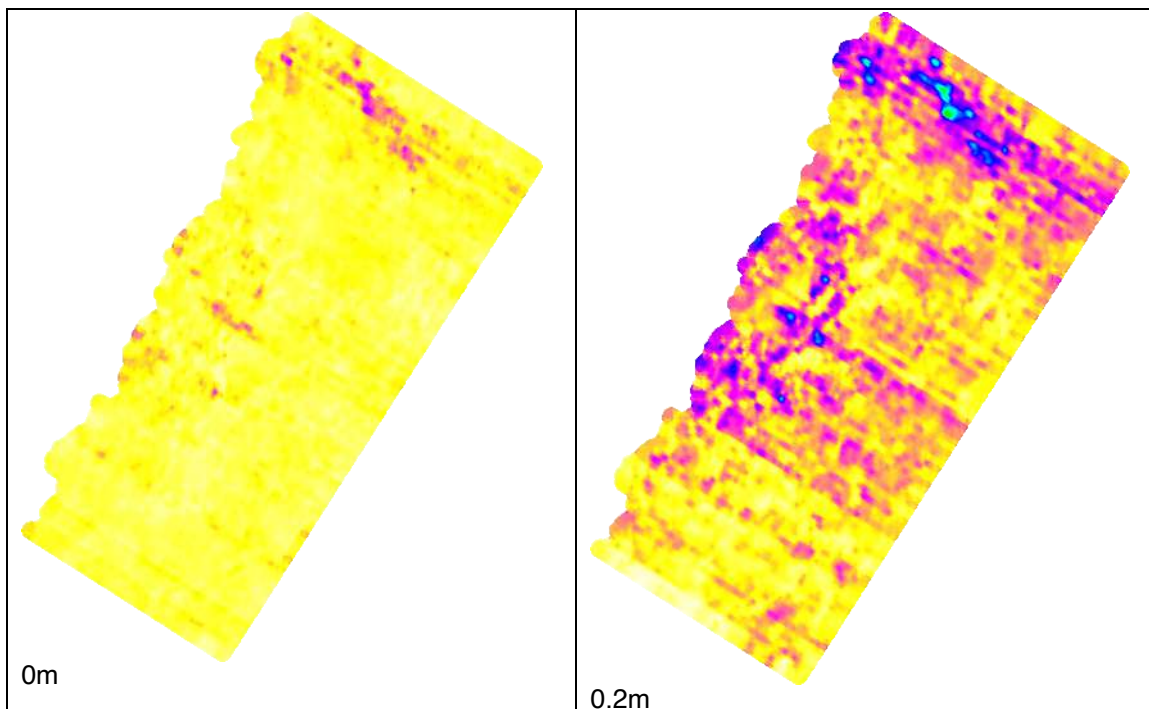
After a GPR data set is collected and ready to be processed, all the above factors must be considered, even if it is not completely understood. In addition, one must have knowledge of the chosen post-processing software and map-making.

6.1.1 GPR Scan of DUB004

The survey was conducted with a GSSI Utilityscan with a 350 MHz high stacking antenna. During post-processing, the dielectric constant was calculated at 5 (0,118 m/ns). This was done with the help of the software (Geolitic).

A total of sixty-seven (67) (*forty-eight (48) on the Y-axis and nineteen (19) on the X-axis*), parallel radargrams were collected over the extent of the site. A few complex reflections were noted for investigation during the test excavations

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 6**.



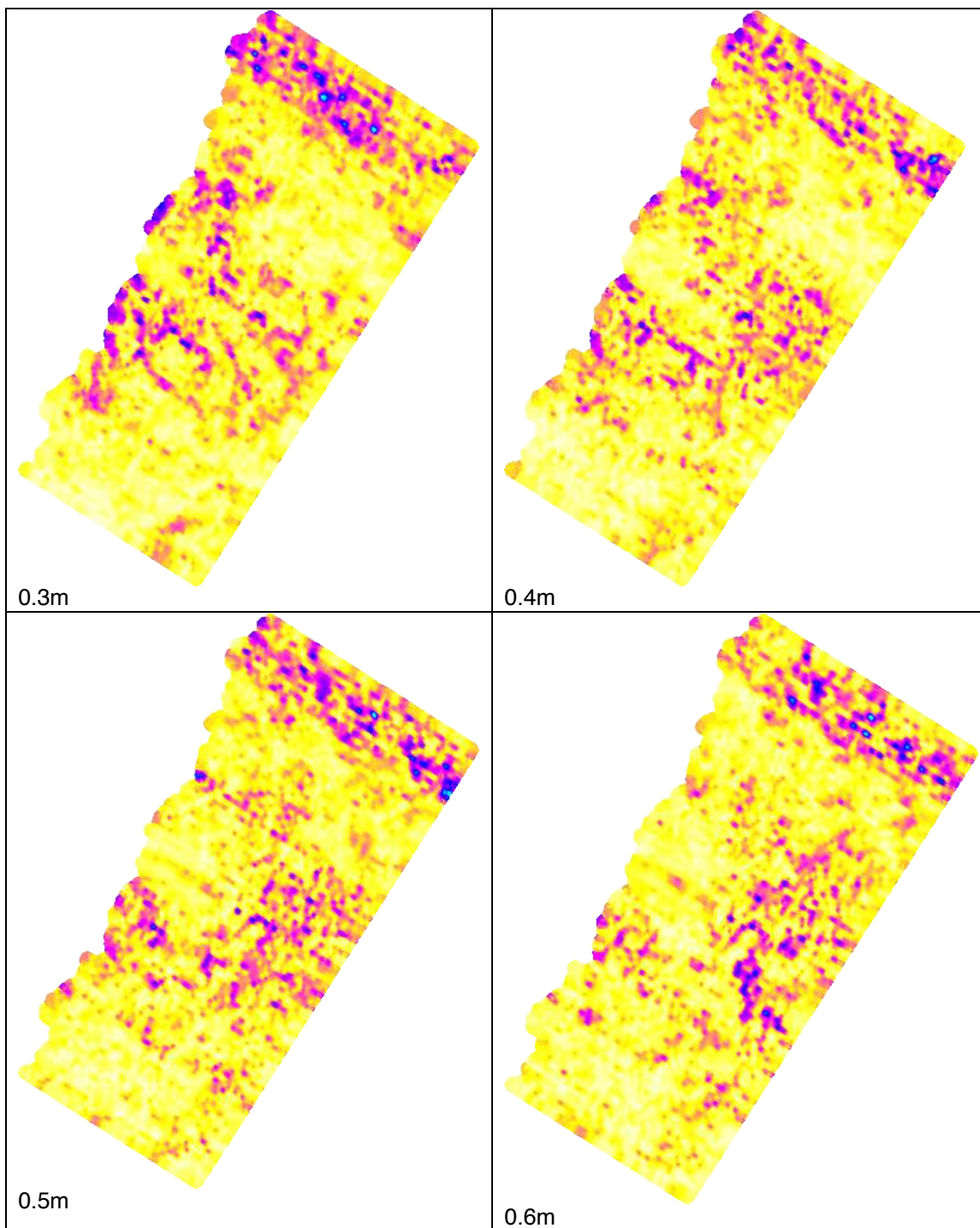


Figure 6 – Various time slices (0-0.6m depth) as collected during the scan of the grid overlaying the site at DUB004

The excavation and GPR scan grids were overlain to enable the fieldwork to target areas of possible interest. Shovel test pits were done in targeted areas to determine to determine and correlate targets and subsurface archaeological finds (**Figure 7**).



Figure 7 – GPR and excavation grid overlay (Red dots indicate test trench corners)

During these shovel tests a definitive area of interest for the test excavation trenches were identified over the Y-axis scan number 52 (**Figure 8**). As note – various were identified for shovel testing, but none produced any definitive subsurface cultural deposits.

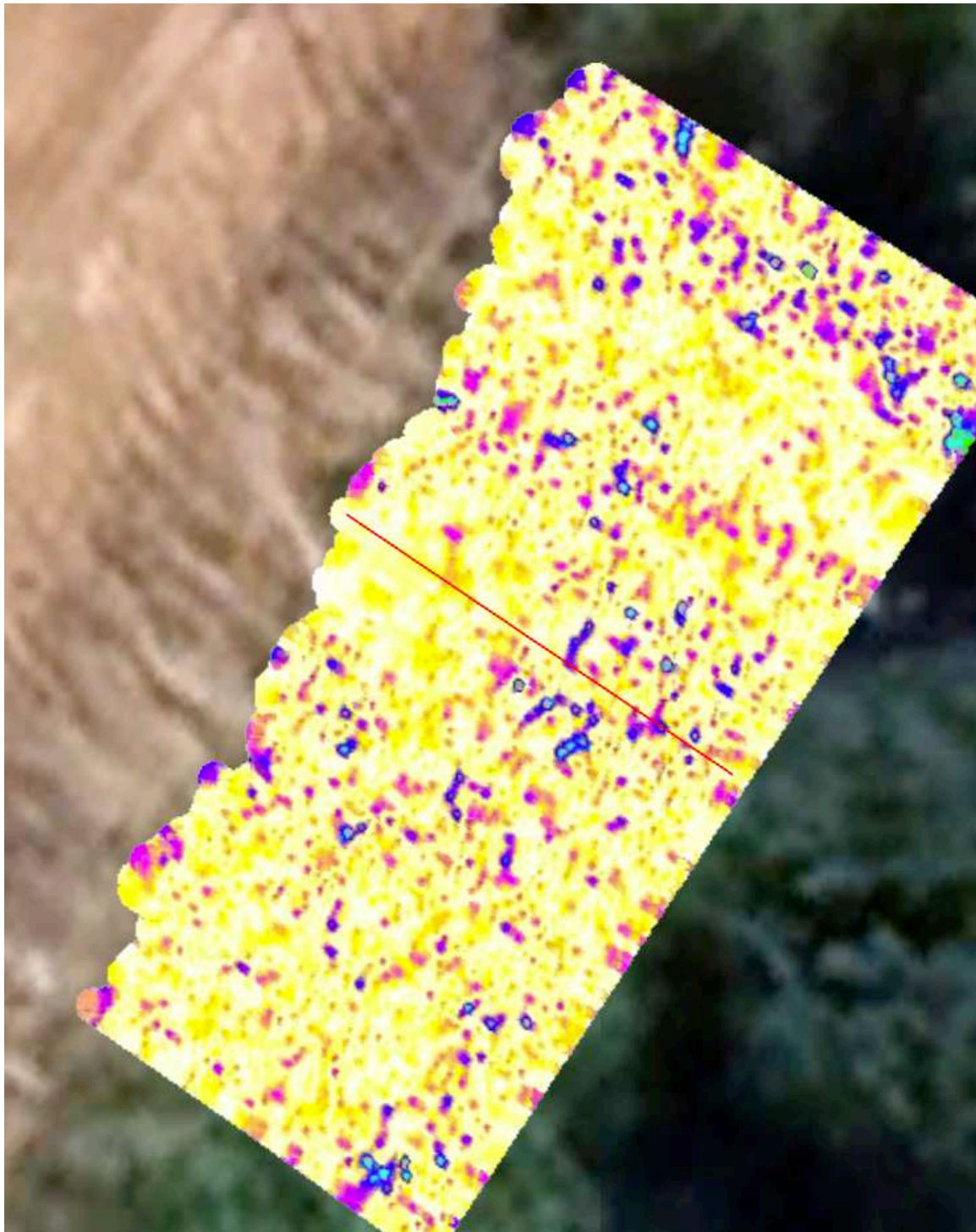


Figure 8 – View of a time slice at 0.6m with scan 52 indicated as the red line

An overlay of the excavation grid at DUB004 with the 0,10m slices on the amplitude map show confirmed clusters of subsurface pottery as pink highlighted areas on the 0.6m time slice (**Figure 9**). The prevalence of clay and sand layers correlates with some of the darker purple and blue targets on the time slices. This was confirmed through profiles documentation of the sand and clay deposits on the site (**Figure 11**).

This was also confirmed in the profile between excavated in Block 4 (**Figure 12** and **Figure 13**).

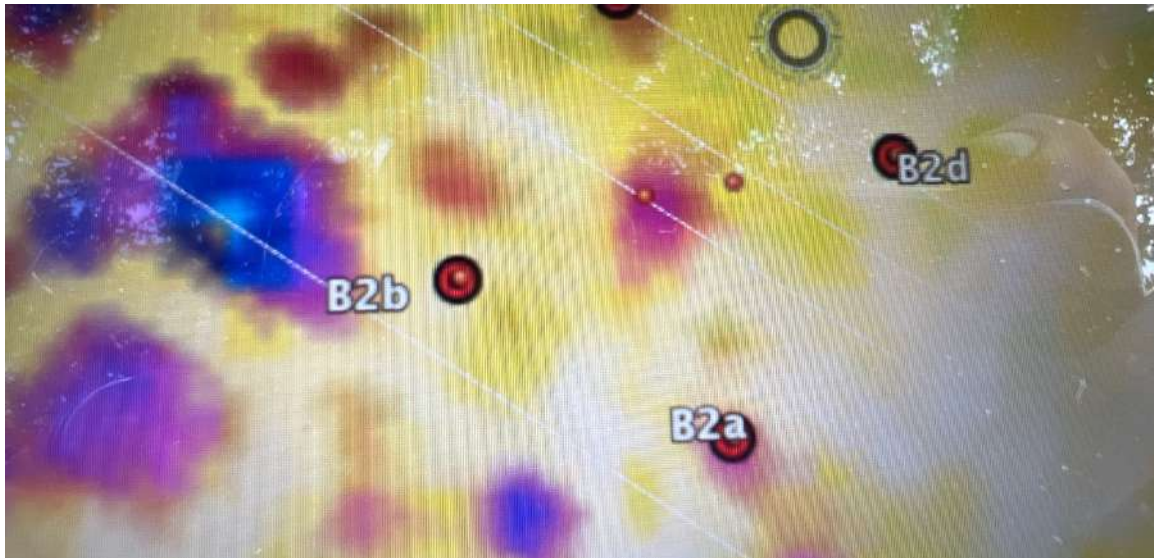


Figure 9 - Overlay of amplitude map in relation to the identified archaeological site

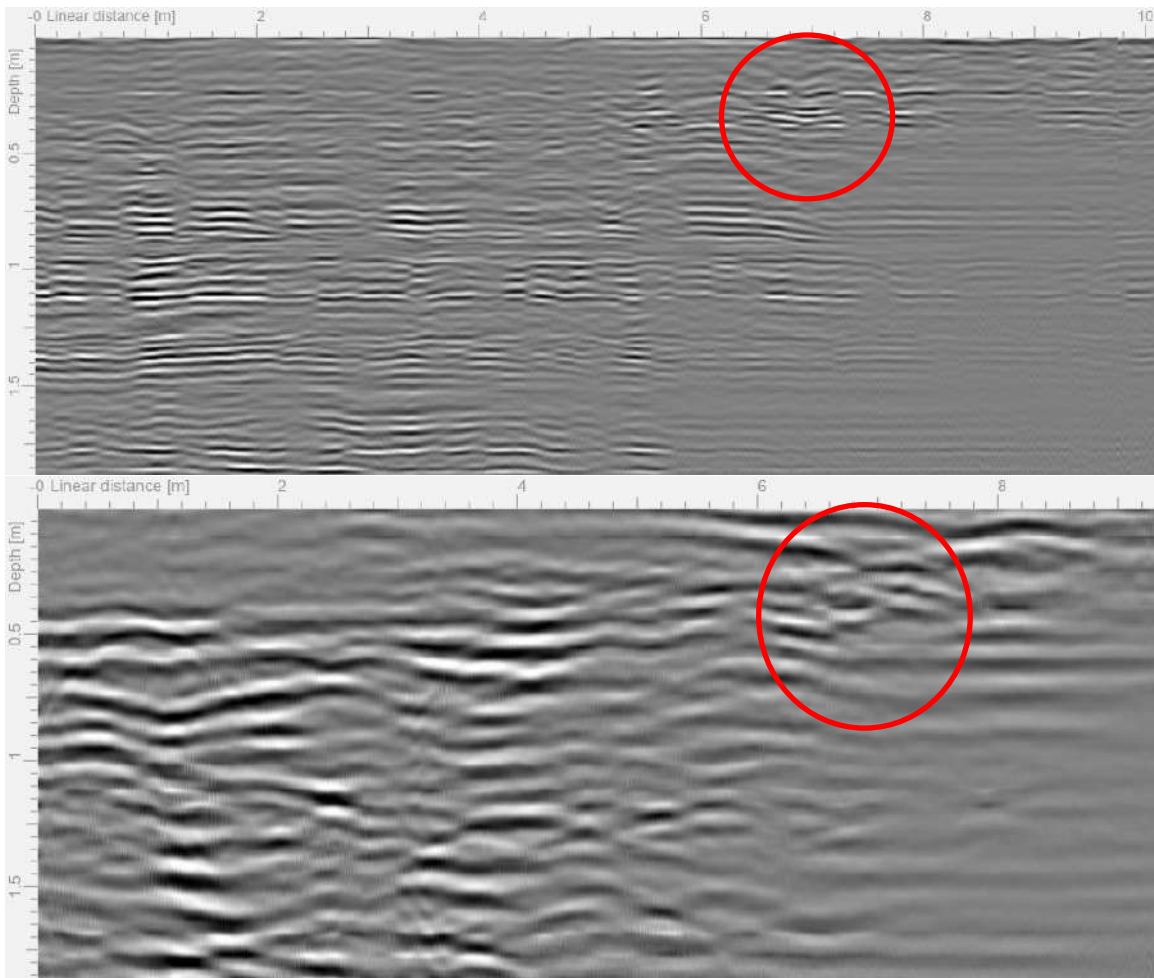


Figure 10 - Profile scan of y-axis 51 with enhancement to indicate the ceramic concentration correlating with the time slice in Figure 9



Figure 11 – Profile illustration in cutting of the slope on the western edge of the site

(Not to scale; West-facing profile illustration from field notes is edited and superimposed over photo via Inkscape)*The clay layers lie at approximately between 15cm-22cm below surface level and 30cm-36cm below surface level. Thickness is no more than 4-6cm at the thickest parts.

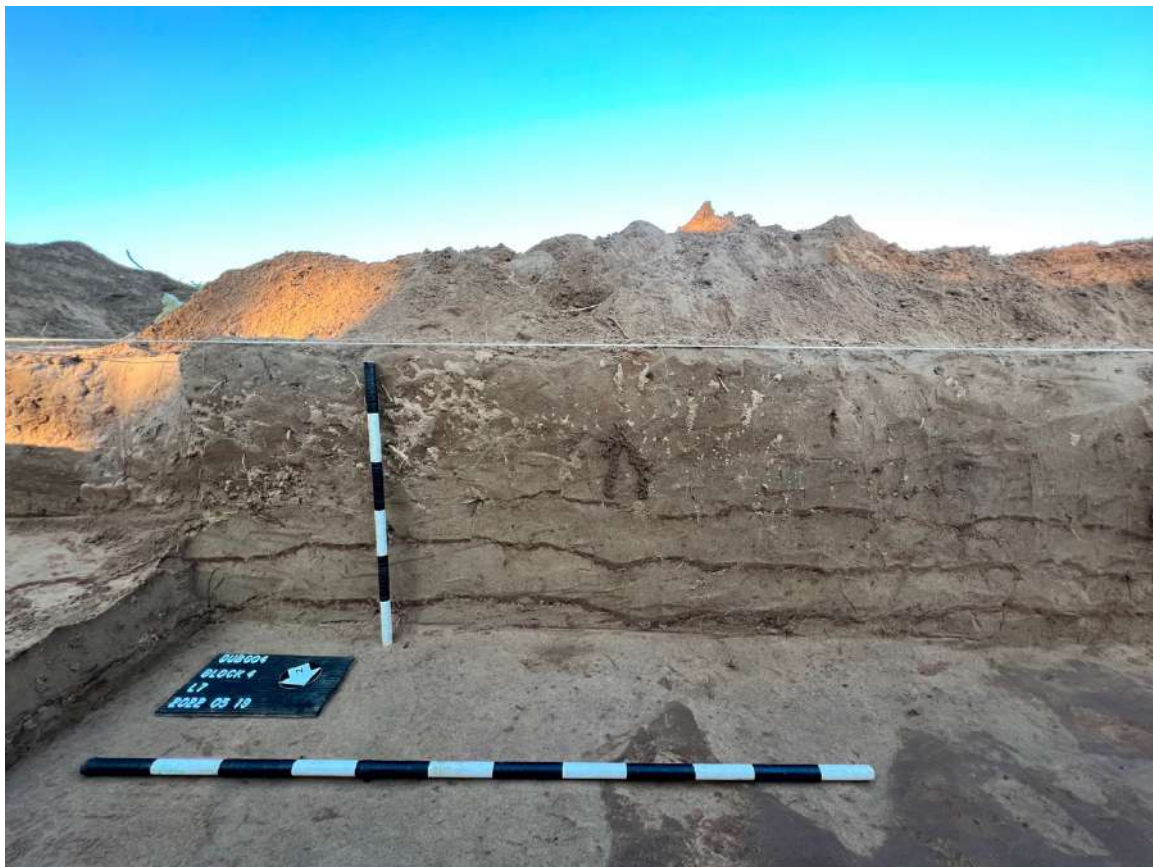


Figure 12 - Profile of Block 4 indicating layers of sand and clay



Figure 13 - Block 4 terminal layer - Note the clay deposit at the base of the excavation

7 DUB004

Excavations and mitigation were conducted between 17 and 20 May 2022.

Site DUB004 is situated on a slight rise some 250 meters to the northeast of a small tributary in the upper reaches of the Tongaat river. The site would have been part of a dune vegetation biome but the area was transformed over the past 100 years as part of extensive sugar cane farming activity.

The site and surrounds were part of farm labour housing as well as well as chicken farm infrastructure at some stage. This resulted in surface disturbance of the area during the removal of all the buildings and site clearing of building rubble. Due to the excessive rain received during the summer months of 2022 the vegetation cover of the site was dense and PGS requested the client to assist with site clearing.

The vegetation was stiped and a thin layer (10-20cm) of topsoil removed to enable the GPR scanning of the site (**Figure 14** and **Figure 15**).



Figure 14 – Mechanical removal of material



Figure 15 – Further levelling of the site by hand and removal of vegetation remnants

A grid was then placed over the entire site and GPR scanning commenced after which analysis of the scans was completed (**Figure 16**). On day two the scans were utilised to identify areas of possible subsurface cultural remains. Shovel test pits (30cmx30cm) were conducted to a depth of 50 cm and areas where ceramics were encountered marked for test excavations. Auger sampling was also conducted in other areas where subsurface targets were identified at more than 60 cm below surface to enable sampling as shovel testing was not possible deeper than 60 cm due to the dimension constraints of such holes.



Figure 16 - GPR scanning of the site

It was decided to start test excavations at two areas of interest that produced subsurface ceramics and keeping with the site grid two excavations squares of 1mx1m were set out (Figure 17).






Figure 17 - Block 1 and Block 2 with the original shovel test holes visible

A total of 5 test trenches (1mx1m) were dug during the investigation into the archaeological deposits at DFUB004. Only 3 of the 5 test trenches produced cultural material. Block 3 and 4 was excavated to the same depth as the other three trenches but produced no cultural material. Table

3 to Table 5 provide a breakdown of the excavated layers for **Block 1, 2, and 5**. It further includes a layer-by-layer visual representation for the pertinent finds for each block.

Table 3 - Block 1 - Layer documentation

Layer	Depth	Layer documentation	Ceramic sequence
<p>Block 1 consist of a 1mx1m test trench. The excavation was done in 10 cm spits keeping where possible to cultural layers when identified. The first cultural layer was identified at the bottom of layer 1 at a depth of 20cm. It must be noted that the excavation matrix consisted of light sandy soil separated by a darker clay matrix no more than 2-3 cm in thickness. The ceramics were concentrated in a 30 cm radius with various decorated pieces retrieved. This concentration of ceramic continued down to layer 4 (40cm) where the archaeological deposit terminated. Indications are that the deposit was part of a small pit feature. The only other material retrieved with the ceramics was charcoal that will be utilised for dating of the deposit and site</p>			
0	surface		

Layer	Depth	Layer documentation	Ceramic sequence
1	20cm		

Layer	Depth	Layer documentation	Ceramic sequence
2	40cm		



Layer	Depth	Layer documentation	Ceramic sequence
			

Table 4 - Block 2 - layer documentation

Layer	Depth	Layer documentation	Ceramic sequence
<p>Block 2 consist of a 1mx1m test trench. The excavation was done in 10 cm spits keeping where possible to cultural layers when identified. The first cultural layer was identified at the bottom of layer 2 at a depth of 10cm. It must be noted that the excavation matrix consisted of light sandy soil separated by a darker clay matrix no more than 2-3 cm in thickness. As the excavation proceeded the concentration of ceramics reduced in surface are up to where it stopped at a depth of 60cm (layer 7). Indications are that the deposit was part of a pit feature. The only other material retrieved with the ceramics was charcoal that will be utilised for dating of the deposit and site. The number of ceramics retried had the highest density in Block 2. It was decided to extend Block 2 westwards and open Block 5 as indications were that the ceramic deposit continued into the matrix of Block 5.</p>			
1	surface		

Layer	Depth	Layer documentation	Ceramic sequence
2	10cm		

Layer	Depth	Layer documentation	Ceramic sequence
3	20cm		
4	30cm		

Layer	Depth	Layer documentation	Ceramic sequence
5	40cm		

Layer	Depth	Layer documentation	Ceramic sequence
6	50cm		









Layer	Depth	Layer documentation	Ceramic sequence
7	60cm (terminal)		

Table 5 - Block 5 - layer documentation

Layer	Depth	Layer documentation	Finds
<p>Block 5 consist of a 1mx1m test trench. This block was extended from Block 2 as it seemed that the ceramic deposit continued into the matrix of Block 5. It must be noted that the excavation matrix consisted of light sandy soil separated by a darker clay matrix no more than 2-3 cm in thickness. The excavation was done in 10 cm spits keeping where possible to cultural layers when identified. The first cultural layer was identified at the bottom of layer 2 at a depth of 10cm.</p> <p>The excavation determined that the ceramic layer in Block 2 did continue in to Block 5 and the continuance of this layer was tranced in layer 3 at a depth of 30 cm. Of interest was the retrieval a multi-facetted rubbing stone and chunks of iron ore. The excavation terminated at layer 4 at a depth of 40 cm with the final ceramics found in a clay matrix. This concentration of ceramics is potentially the third pit found during the excavations.</p>			
Surface	Surface		

Layer	Depth	Layer documentation	Finds
2	10cm		

Layer	Depth	Layer documentation	Finds
3	30cm		

Layer	Depth	Layer documentation	Finds
4	40 cm terminal		

8 MATERIAL ANALYSIS

The excavations yielded many ceramic shards that will be cleaned, curated, and then analysed for stylistic affinities before delivered to the Natal Museum for curation. Analysis is currently underway at the University of Pretoria's Archaeology Laboratory.

Preliminary analysis of the ceramics has shown that the ceramics excavated in Block 1 represents two EIA phases that of Mzonjani and Msuluzi. The main characteristics include hatching/impressions on the neck, rim punctates, spaced motifs on the shoulder for the Mzonjani ceramics. The Msuluzi ceramics include broad cross-hatching and lines on the rim and neck (Maggs, 1980; Huffman, 2007). Typical pot profile includes everted rims with a prominent angle from the neck. Of interest are various smaller vessels with constricted openings that will require lab analysis.

Block 2 and 5 have a majority of Mzonjani phase ceramic decorations.

The site likely dates between 450-600AD.

Of interest is the lack of other cultural material in the excavated matrix. The only additional material recovered are large amounts of charcoal and a small amount of river pebbles. These pebbles show use wear on them.

9 CONCLUSION

PGS obtained an excavation permit from the Amafa to collect a representative sample of the archaeological material associated with the site DUB004 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 (DUB004). The material recovered consisted of cultural material consisting of decorated ceramics, and charcoal. This material is currently processed by PGS in collaboration with the University of Pretoria's Archaeology laboratory after which the material will be submitted to the Natal 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 the Dube Trade Port to ensure the construction activities can continue. It is our opinion that the destruction process can continue with the backing of a Amafa permit and the implementation of the recommendation below:

It is recommended that during destruction of these site (DUB004), 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.

The site destruction must be done in a controlled manner utilising, where possible a grader to remove the topsoil in a controlled manner during the monitoring by the archaeologist. Upon the removal of the cultural matrix the construction can continue as required.

10 REFERENCES

ANDERSON, GAVIN. 2013. Heritage Survey of the Dube Trade Port Agrizone 2. Umlando

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

FOURIE, W. 2021. Phase II Heritage Assessment for the archaeological sites identified during the initial HIA.

HUFFMAN, T.N., 2007. Handbook to the Iron Age. University of KwaZulu-Natal Press.

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.

MAGGS, T., 1980. Mzonjani and the beginning of the Iron Age in Natal. Annals of the Natal Museum, 24(1), pp.71-96.

Appendix A Amafa Permit



HERITAGE IDENTIFICATION, MANAGEMENT & PROTECTION

Enquiries: John Pakwe

Email: john.pakwe@amafainstitute.org.za

Tel: 0333946543

Date: Thursday April 14, 2022

CaseID: 18028

Ref No.: SAH21/18028

Application for Archaeological Mitigation for site DUB004

PermitID: 3477 REF: SAH21/18028

Issued under section 40(4) of the KwaZulu Natal Amafa and Research Institute Act (Act 05 of 2018) and 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

Approval is hereby given to **Mr Wouter Fourie of PGS Heritage (Pty) Ltd, of PGS Heritage and Grave Relocation Consultants, of Matakoma Heritage Consultants (Pty) Ltd in accordance with the application received on 28/02/2022, for Excavation, Use equipment on site on the site/s: DUB004.**

Permit Application for the Phase 2 Archaeological Mitigation for the site DUB004 at the Agrizone 2 Development, Dube Trade Port, Development Close to King Shaka International Airport in the Province of KwaZulu Natal

Conditions: *This permit is issued subject to the following conditions:-*

1. That the permit is issued *strictly* for the purpose/s as set out in the application;
2. That in the event of any contemplated deviation, the prior **written approval** of KwaZulu Natal Amafa and Research Institute must be obtained;
3. In such event, a **written motivation** in support of such deviation must be submitted to KwaZulu Natal Amafa and Research Institute for consideration and;
4. No deviation will be permitted without the **prior written approval** of KwaZulu Natal Amafa and Research Institute.
5. Where applicable, KwaZulu Natal Amafa and Research Institute shall have the right to inspect the site at any time;
6. Monthly reports are to be submitted to KwaZulu Natal Amafa and Research Institute on the work being conducted and the findings;
7. Monthly reports are to be accompanied by the relevant National Site Record forms;
8. A final report on the work conducted and the findings must be submitted to KwaZulu Natal Amafa and Research Institute not later than thirty three (33) days from the date of expiration of this permit, extensions are negotiable;
9. Copies of any papers compiled or published as a result of the work conducted or the findings made must be provided to KwaZulu Natal Amafa and Research Institute;
10. KwaZulu Natal Amafa and Research Institute shall not be liable for any loss, damage or injuries to any person/s or property caused by any of the activities conducted by the Applicant;

195 Langalibalele St, Pietermaritzburg, 3201
033 394 6543
www.amafainstitute.org.za



Application for Archaeological Mitigation for site DUB004

11. Where artefacts located at the site are, in terms of this permit, exported for research or other purposes, same must be returned immediately upon completion of the research or other activity to KwaZulu Natal Amafa and Research Institute.
12. All archaeological and paleontological Material become, on discovery, the property of the Province of KwaZulu Natal and must be lodged at the repository of KwaZulu Natal Amafa and Research Institute.
13. It is the responsibility of the Applicant to ensure that artefacts are preserved in its original state while in his/her possession;
14. The Applicant shall be liable for any damage or destruction caused at any site or to any artefact.
15. **FAILURE TO COMPLY WITH THESE CONDITIONS WILL RENDER ANY ACTIVITY CONDUCTED UNLAWFUL, AND KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE RESERVES THE RIGHT TO CANCEL THIS PERMIT AND TO INSTITUTE CRIMINAL AND/OR CIVIL ACTION AGAINST THE PERSON/S RESPONSIBLE.**
16. The issuing of this permit does not exempt the Applicant from compliance with any other law, where applicable.

This permit is valid from **14/04/2022 to 14/04/2025 AND IS NOT TRANSFERABLE.**



John Pakwe
Heritage Officer
KwaZulu-Natal Amafa and Research Institute



Mxolisi Dlamuka
Head of Secretariat and Administration
KwaZulu-Natal Amafa and Research Institute

Additional Info:

- Ground Penetrating Radar(GPR) survey.
- Excavations of a minimum of 3 excavation squares.



HERITAGE IDENTIFICATION, MANAGEMENT & PROTECTION

Enquiries: John Pakwe

Email: john.pakwe@amafainstitute.org.za

Tel: 0333946543

Date: Thursday April 14, 2022

CaseID: 18028

Ref No.: SAH21/18028

Application for Archaeological Mitigation for site DUB004

Please note that this permit may be suspended should an appeal against the decisions be received by the KwaZulu Natal Amafa and Research Institute within 14 days from the date of the permit. The KwaZulu Natal Amafa and Research Institute may not be held responsible for any costs or losses incurred in the event of the suspension or retraction of this permit.

ADMIN: Direct URL to case: <https://sahris.sahra.org.za/node/593154>

195 Langalibalele St, Pietermaritzburg, 3201
033 394 6543
www.amafainstitute.org.za


@KZNAMAFA

Page No: 3

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