

# HERITAGE IMPACT ASSESSMENT FOR A PROPOSED SAND MINE ALONG THE UMZIMKHULU RIVER, PORT SHEPSTONE, PORT SHEPSTONE MAGISTERIAL DISTRICT, KWAZULU-NATAL

Required under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999).

*Report for:*

**CSIR – Environmental Management Services**  
P.O. Box 320, Stellenbosch, 7599  
Tel: 021 888 2432  
Email: BMqokeli@csir.co.za

*On behalf of:*

**Ms Singh**



**Dr Jayson Orton**  
**ASHA Consulting (Pty) Ltd**

40 Brassie Street, Lakeside, 7945  
Tel: (021) 788 8425 | 083 272 3225  
Email: jayson@asha-consulting.co.za

**Jaco van der Walt**  
**Heritage Contracts & Archaeological  
Consulting**

37 Olienhout Street, Modimolle, 0510  
Tel: 082 373 8491  
Email: jaco.heritage@gmail.com

24 June 2017

## Specialist declaration

I, Jayson Orton, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I have no vested interest in the proposed activity proceeding;
- 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 have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Name of Specialist: Dr Jayson Orton

Signature of the specialist: 

Date: 23 June 2017

## EXECUTIVE SUMMARY

ASHA Consulting (Pty) Ltd was appointed by the Council for Scientific and Industrial Research (CSIR) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of a 5 ha sand mine on Farm Seafield 17474/Remainder and Ambleside 2624/Remainder in Kwa-Zulu-Natal (S30° 43' 07" E30° 25' 57"). It is proposed to mine sand from the Umzimkulu River bed and process it on the river bank.

Because of the proposed location of the mining (i.e. within an active river bed) and the very small area proposed for processing-related activities, no field study was carried out for this project. A desktop palaeontological study was commissioned and its findings included in the heritage impact assessment. The desktop studies revealed that the likelihood of encountering significant heritage resources in the study area is extremely low, while the cultural landscape would suffer a negligible impact.

The potential impacts to heritage resources are deemed to be of very low significance. No mitigation or monitoring are required.

Because no significant impacts to heritage resources are expected, it is recommended that the proposed sand mine should be authorised but subject to the following condition which should be incorporated into the Environmental Authorisation:

- If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

## Glossary

**Early Iron Age:** Period of the Iron Age dating approximately between AD 200-900.

**Early Stone Age:** Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

**Later Stone Age:** Period of the Stone Age extending over the last approximately 20 000 years.

**Middle Iron Age:** Period of the Iron Age dating approximately between AD 900-1300.

**Middle Stone Age:** Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.

**Late Iron Age:** Period of the Iron Age dating approximately between AD 1300-1840.

**Sub-fossil:** An item that has not become fully mineralised (fossilised) either because of poor mineralisation conditions or because the time since the plant or animal died is not sufficient to have allowed the mineralisation process to be completed.

## Abbreviations

**APHP:** Association of Professional Heritage Practitioners

**ASAPA:** Association of Southern African Professional Archaeologists

**BAR:** Basic Assessment Report

**CSIR:** Council for Scientific and Industrial Research

**CRM:** Cultural Resources Management

**DMR:** Department of Mineral Resources

**EAP:** environmental assessment practitioner

**EIA:** Early Iron Age

**ESA:** Early Stone Age

**HIA:** Heritage Impact Assessment

**KZN:** KwaZulu-Natal

**LIA:** Late Iron Age

**LSA:** Later Stone Age

**MSA:** Middle Stone Age

**NEMA:** National Environmental Management Act (No. 107 of 1998)

**NHRA:** National Heritage Resources Act (No. 25) of 1999

**NID:** Notification of Intent to Develop

**PPP:** Public Participation Process

**SAHRA:** South African Heritage Resources Agency

**SAHRIS:** South African Heritage Resources Information System

## Compliance with Appendix 6 of the 2017 EIA Regulations

Requirements of Appendix 6 – GN R326 (7 April 2017)	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	Section 1.4 Appendix 1
a) details of-	
i. the specialist who prepared the report; and	
ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page ii
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3
(cA) an indication of the quality and age of base data used for the specialist report;	Section 3
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 5 & 6
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	n/a (see Section 3.2)
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying alternatives;	Section 1.1.1
g) an identification of any areas to be avoided, including buffers;	n/a
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	n/a
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.5
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Sections 5 & 6
k) any mitigation measures for inclusion in the EMPr;	n/a
l) any conditions for inclusion in the environmental authorisation;	Section 13
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
n) a reasoned opinion-	Sections 12 and 13
i. whether the proposed activity, activities or portions thereof should be authorised;	
(iA) regarding the acceptability of the proposed activity and activities; and	
ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 10
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Section 10
q) any other information requested by the competent authority.	n/a
2. Where a government notice gazetted by the Minister provides for any protocol of minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	n/a

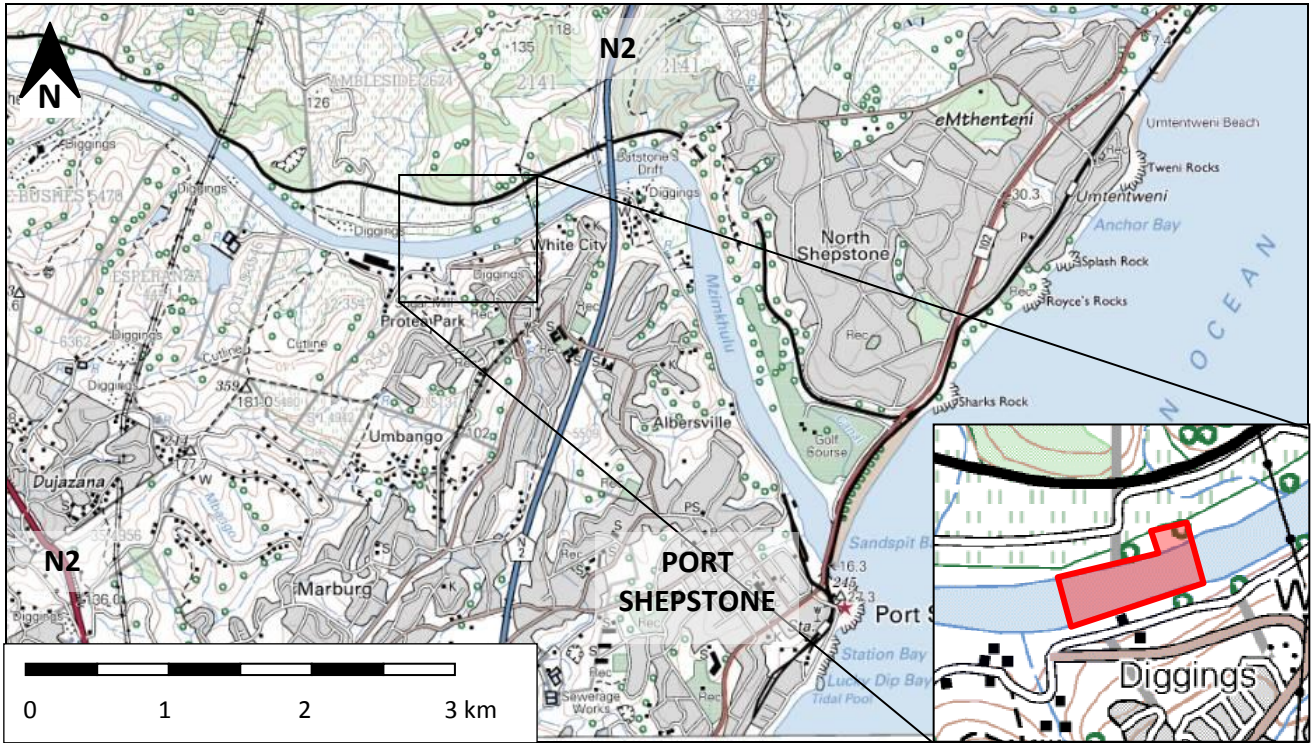
# Contents

Specialist declaration .....	ii
Glossary .....	iv
Abbreviations .....	iv
Compliance with Appendix 6 of the 2017 EIA Regulations .....	v
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1. Project description.....	1
1.1.1. Aspects of the project relevant to the heritage study.....	2
1.2. Terms of reference .....	2
1.3. Scope and purpose of the report .....	2
1.4. The authors.....	3
<b>2. HERITAGE LEGISLATION .....</b>	<b>3</b>
<b>3. METHODS.....</b>	<b>5</b>
3.1. Literature survey and information sources .....	5
3.2. Field survey.....	5
3.3. Grading .....	5
3.4. Impact assessment .....	5
3.5. Assumptions and limitations .....	5
3.6. Consultation processes undertaken .....	6
<b>4. PHYSICAL ENVIRONMENTAL CONTEXT .....</b>	<b>6</b>
4.1. Site context.....	6
4.2. Site description .....	7
<b>5. HERITAGE CONTEXT.....</b>	<b>9</b>
5.1. Archaeological aspects .....	9
5.2. Palaeontological aspects .....	10
5.3. The cultural landscape, historical aspects and the built environment .....	11
5.4. Graves and burial grounds.....	14
5.5. Summary of heritage indicators .....	14
5.6. Statement of significance and provisional grading .....	14
<b>6. IMPACT ASSESSMENT .....</b>	<b>14</b>
<b>7. LEGISLATIVE AND PERMIT REQUIREMENTS .....</b>	<b>15</b>
<b>8. ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS.....</b>	<b>15</b>
<b>9. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS.....</b>	<b>15</b>
<b>10. CONSULTATION .....</b>	<b>15</b>
<b>11. LEGISLATIVE AND PERMIT REQUIREMENTS .....</b>	<b>17</b>
<b>12. ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS.....</b>	<b>17</b>
<b>13. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS.....</b>	<b>17</b>
<b>14. CONSULTATION .....</b>	<b>17</b>

**15. CONCLUSIONS ..... 17**  
**16. RECOMMENDATIONS ..... 18**  
**17. REFERENCES ..... 18**  
**APPENDIX 1 – Curriculum Vitae ..... 20**  
**APPENDIX 2 – Palaeontological study ..... 24**

# 1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by the Council for Scientific and Industrial Research (CSIR) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of a 5 ha sand mine on Farm Seafield 17474/Remainder and Ambleside 2624/Remainder in Kwa-Zulu-Natal (S30° 43' 07" E30° 25' 57").



**Figure 1:** Extract from the 1:50 000 topographic map 3030CBMap showing the location of the site (red shaded polygon). (Mapping information supplied by Chief Directorate: National Geo-Spatial Information. Website: [www.ngi.gov.za](http://www.ngi.gov.za))

## 1.1. Project description

- A Mining Permit is required for the proposed establishment of a small scale 5 hectare sand mining operation.
- The existing access road from Batstones Drift will be used to access the site. An existing farm road leads to the mining area. No new roads will be required.
- Approximately 100 m<sup>3</sup> of river sand will be mined per day from the riverbed using a mechanical pump.
- The sand will then be left to dry in a pit about 20 metres from the riverbank while the water drains off and flows back into the river. Disturbance of the Riparian zone will be avoided to ensure that the river bank is not disturbed and the river is not diverted.
- Site infrastructure will include a chemical toilet and waste bin No buildings will be erected on site.
- Equipment and/or plant will include a front end loader and truck for the transportation of sand away from the site, and a vehicle for staff transport. No permanent infrastructure will be erected on the mining site.



- The areas used for facilities or equipment will be rehabilitated by maintaining the general topography of the area and removing all equipment and facilities from the site. At the end of the project life cycle, a thick soil layer of approximately 333 mm will be spread across the disturbed areas then ripped, fertilised and re-vegetated. Post-closure monitoring will assist in determining the success of the rehabilitation and also identify whether any additional measures need to be taken to ensure the area is restored to a reasonable and acceptable condition. The area within the river where sand was mined will be rehabilitated naturally during the rainy season where flood waters will deposit more sand across the mined area.

#### 1.1.1. Aspects of the project relevant to the heritage study

The mining will not have any effect on heritage since it will be below water in an active river. The presence of equipment on the river bank and the drying pit may result in archaeological impacts or visual contextual impacts to heritage resources and it is thus only this component that is relevant to the heritage study.

### 1.2. Terms of reference

ASHA Consulting, in association with HCAC, was asked to prepare a Heritage Impact Assessment (HIA) that would meet the requirements of Amafa/Heritage KwaZulu Natal (Amafa).

On being notified about the proposed project, Amafa requested that a HIA be submitted. The HIA should cover:

- Identification of all heritage resources in the development area and its surroundings -50m
- Assessment of the impact of the development on such heritage
- Evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development
- Results of consultation with communities affected by the proposed development and other interested and affected parties regarding the impact of the development on heritage resources.
- Consideration of alternatives if heritage resources are affected by the development
- Mitigation plans for any adverse effects during and after completion of the project
- Table of all heritage resources identified. This should show Heritage resource type, description, location, significance and reasons for this rating.

It should also be noted, however, that following S.38(3) of the National Heritage Resources Act (No. 25 of 1999), even though certain specialist studies may be specifically requested, all heritage resources should be identified and assessed.

### 1.3. Scope and purpose of the report

A heritage impact assessment (HIA) is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued for consideration by the Department of Mineral Resources (DMR) who will review the Basic Assessment Report (BAR) and grant or withhold authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a

heritage point of view and that should be included in the conditions of authorisation should this be granted.

#### **1.4. The authors**

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in the Western Cape and Northern Cape provinces of South Africa since 2004 (Please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

Jaco van der Walt provided Iron Age expertise for the project. He has an MA in Archaeology (Wits, 2012) and has worked in the heritage field since 2001 across much of southern Africa (Please see curriculum vitae included in Appendix 1). He has carried out and published research on Iron Age sites and is an accredited heritage practitioner with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #159) as follows:

- Field Director: Iron Age, Shell Middens & Grave Relocation; and
- Field Supervisor: Colonial Period, Stone Age & Grave Relocation.

## **2. HERITAGE LEGISLATION**

There is one national and one provincial act relevant to this project.

At the national level the National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: palaeontological, prehistoric and historical material (including ruins) more than 100 years old;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;
- Palaeontological material: “any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace”;
- Archaeological material: a) “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”; b) “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”; c) “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 respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), 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”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;

- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value; some of these speak directly to cultural landscapes.

Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report fulfils that requirement.

At the provincial level the KwaZulu-Natal Heritage Act (No. 4 of 2008) protects heritage resources as follows:

- Section 33: structures older than 60 years;
- Section 34: graves of victims of conflict;
- Section 35: traditional burial places; and
- Section 36]: battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.

Unlike the NHRA, the KwaZulu-Natal Heritage Act also protects intangible heritage.

Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to a BAR. Heritage KwaZulu-Natal is required to provide comment on the proposed project in order to facilitate final decision making by the DMR.

## **3. METHODS**

### **3.1. Literature survey and information sources**

A survey of available literature was carried out to assess the general heritage context into which the development would be set. This literature included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). The 1:50 000 map and historical aerial images were sourced from the Chief Directorate: National Geo-Spatial Information.

### **3.2. Field survey**

Because the mining area is under water in an active river channel and the related activities will be on the river bank very close (in archaeological terms) to the river, no heritage resources are anticipated and hence no field survey was carried out.

### **3.3. Grading**

Section 7 of the NHRA provides for the grading of heritage resources into those of National (Grade 1), Provincial (Grade 2) and Local (Grade 3) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade 1 and 2 resources are intended to be managed by the national and provincial heritage resources authorities, while Grade 3 resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system<sup>1</sup> for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' and rated with an A (high/medium significance, requires mitigation), B (medium significance, requires recording) or C (low significance, requires no further action).

### **3.4. Impact assessment**

For consistency, the impact assessment was conducted through application of a scale supplied by the CSIR.

### **3.5. Assumptions and limitations**

It is assumed that the expected pattern of not finding any archaeological resources within active river channels or very close to the channel will hold true.

---

<sup>1</sup> The system is intended for use on archaeological and palaeontological sites only.

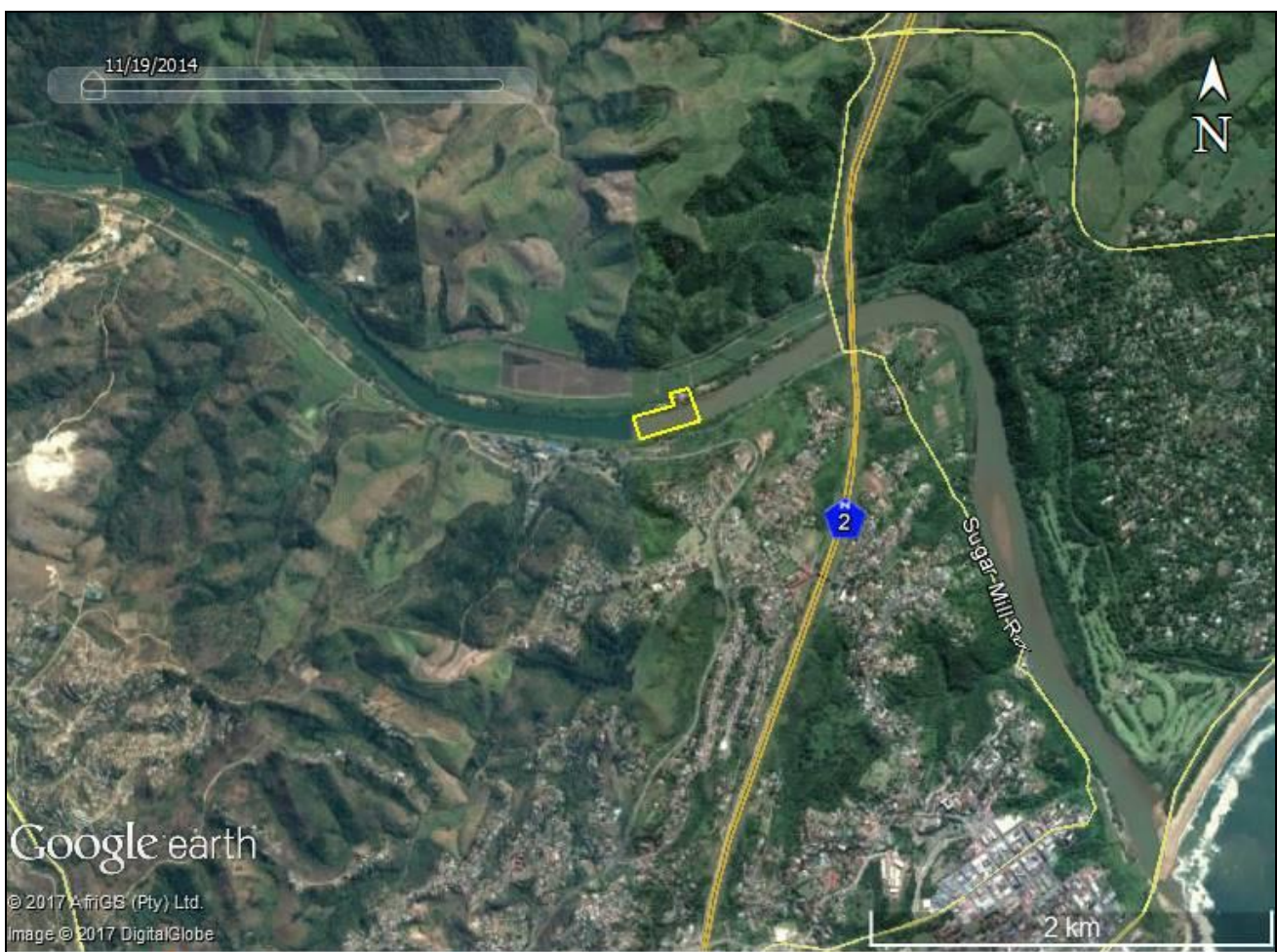
### 3.6. Consultation processes undertaken

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP. Comments will be dealt with in Section 10 below.

## 4. PHYSICAL ENVIRONMENTAL CONTEXT

### 4.1. Site context

The site lies within a largely rural area focused on the growing of sugar cane (Figure 2). However, a residential suburb lies across the river 350 m to the south. This suburb forms the approximate inland edge of port Shepstone. A large sugar mill provides an industrial component to the landscape some 500 m to the west, also on the opposite side of the river. Slightly further afield some 3 km to the west of the study area, and again to the south of the river, there is a mine producing various building materials.



**Figure 2:** Aerial view of the broader context of the study area (yellow polygon) showing the agricultural lands, the mining area in the west and Port Shepstone and the N2 freeway to the east.

## 4.2. Site description

The majority of the proposed site (and all of the proposed mining area) is within the Umzimkulu River bed and is comprised of recently deposited river sand. The small section on the river bank where processing, drying and storage of sand will occur is a largely open and already disturbed area surrounded by dense grass and riparian vegetation (Figure 3). This section extends to a maximum of 60 m from the water's edge. Figures 4 to 7 show a series of views across the site taken in February 2016 by the environmental assessment practitioner (EAP).



**Figure 3:** Aerial view of the immediate context of the study area (yellow polygon) showing the existing road to be used for access (black line) and the sugar cane and riparian vegetation along the river.



**Figure 4:** View towards the south across the mining area (i.e. the river).



**Figure 5:** View towards the south across the sand storage area with the mining area (i.e. the river) in the background.



**Figure 6:** View towards the west across the sand storage area with the access road coming in to the site on the right hand side. The shed has been removed since the photograph was taken.



*Figure 7: View towards the northwest across the sand storage area with the access road coming in to the site on the right hand side. The shed has been removed since the photograph was taken.*

## **5. HERITAGE CONTEXT**

This section of the report contains the desktop study and establishes what is already known about heritage resources in the vicinity of the study area. Because no fieldwork was undertaken for this assessment, the desktop study will form the basis of the impact assessment. The study focuses most strongly on archaeological and palaeontological heritage since it is those two aspects that Amafa was most concerned about.

### **5.1. Archaeological aspects**

The mining area is located within an active river channel and is generally underwater. As such, no archaeology will be present there. The river bank section is largely disturbed by previous activities on the site and, being so close to the river, is unlikely to have allowed for human habitation in the past. Figure 4 shows that where indigenous riparian vegetation has not been disturbed by farming activities, as is the case on the present site, the vegetation is incredibly dense making settlement and active use of the river bank virtually impossible.

In general, all types of archaeological material may be expected in the broader area. These include Early Stone Age (ESA), Middle Stone Age (MSA), Later Stone Age (LSA), Early and Late Iron Age (EIA & LIA) and historical period sites. Later Stone Age people would have made use of the riverine areas for hunting with game trails providing access through the dense vegetation. Habitation sites are likely to have been somewhat further from the river where the vegetation was less dense. ESA and MSA sites, by contrast, date from much further back in time and may be more widely encountered due to differences in vegetation cover through time.



One of the better known archaeological phenomena of the KwaZulu-Natal (KZN) coastline is the abundant Early and Middle Stone Age artefacts that can be found in places in the Berea Formation coastal dunes. While the area around Xolobeni just south of Port Edward and within the Eastern Cape is perhaps the best documented (Fisher *et al.* 2013; Kuman 2006; Van Schalkwyk & Wahl 2007), similar material has been found on the KZN south coast (Davies 1982). These resources tend to be located within about 1-2 km of the coastline.

Iron Age people arrived in the area some 1500 years ago. Their settlement pattern in the southern KZN area was guided by the following environmental features:

- Iron Age people favoured areas of Eastern Valley Bushveld for settlement. This vegetation type generally occurs in river valleys away from the coast at elevations of between 100 and 1000 m above sea level (Rutherford *et al.* 2006). The spoils of this vegetation type are arable and the vegetation includes a sweetveld understory (G. Whitelaw pers. comm. 2015); and
- Iron Age settlements are most likely to be found in river valleys with alluvial terraces and gently sloping terrain seeming to have been most popular. Very few sites are found on steeper slopes or hilltops.

Further north in KZN Iron Age sites are also known from the Berea Dunes (G. Whitelaw pers. comm. 2015).

In his large-scale survey of the area south of Port Edward – 50 km southwest of the study area – Derricourt (1977) found Iron Age sites to be rare in contrast to Stone Age sites. This may have been because of the elevation criterion noted above. The area is however known to contain sites from the Blackburn Branch of the Urewe ceramic tradition, dating to AD 1050 to 1500 (Huffman 2007). Approximately 60 km to the north at Scottburgh 2 km inland rescue excavations at the hilltop site of Mpambanyoni recorded a Late Iron Age site dating to the beginning of the second millennium A.D., suggesting a similarity with the site of Blackburn (Robey 1980).

The present study area is located at just 10 m above sea level and thus does not host Eastern Valley Bushveld. Being in an incised river valley it is also located in an area away from the coastal dunes of the Berea Formation. It may be concluded that Iron Age sites are unlikely to be found in the the study area.

Only a small number of cases are lodged on SAHRIS for this area. One of these examined three areas in the hills to the northwest of the study area and found no heritage resources (Wahl & Van Schalkwyk 2014), while another to the west recorded only recent graves (Van Schalkwyk 2016).

## **5.2. Palaeontological aspects**

The SAHRIS Palaeosensitivity Map indicates the site to be within an area of moderate palaeontological sensitivity (Figure 8). For this reason Dr John Almond of Natura Viva cc was commissioned to produce a desktop study.

Almond (2017) notes that the bedrocks of the area belong to the Pietermaritzburg Formation (Ecca Group and Karoo Supergroup) which, in turn, overlie Dwyka Group glacial deposits to the south. The Ecca rocks are intensely intruded by Karoo Dolerite. Above these bedrocks is a thick layer (up to 38 m is on record for this area) of late Cenozoic alluvial deposits that fills the river valleys,

especially close to the coast. While the older alluvium is likely to be tertiary or Quaternary in age, the less consolidated sands at the top of the sequence are all likely Holocene or recent in age.



**Figure 8:** Extract from the SAHRIS Palaeosensitivity Map indicating the site (yellow polygon) to be of medium sensitivity (green shading).

The palaeontology of the Pietermaritzburg Formation is not well understood, partly due to poor surface exposures and extensive weathering. However, these rocks will not be impacted at all by the proposed sand mine and are thus not of further relevance. The older and deeper-lying alluvial sediments along the Umzimkhulu River might contain palaeontologically important fossils (e.g. mammalian bones and teeth, fish, freshwater molluscs and crustaceans, and transported terrestrial plant material like wood and leaves). Such material is not yet known from the area but it is likely that these older alluvial deposits will not be impacted by the proposed superficial sand mining. The younger sandy alluvial deposits on the Umzimkhulu River bed and banks are expected to contain, at most, subfossil material of little or no palaeontological interest (Almond 2017).

### 5.3. The cultural landscape, historical aspects and the built environment

The simplest way to examine the local historical environment is via historical aerial photography. Three series were available. Going back 41 years to 1976 one finds that the site looked little different to what it looks like today (Figure 9). Sugar cane farming was well-entrenched on the north bank of the river and the sugar mill and residential suburb to the southwest and southeast of the site respectively were in place. The small stream to the northeast of the study area was meandering far more which suggests it may have been artificially straightened to increase the amount of land available for sugar cane cultivation. Although not shown in this view, the N2 freeway had yet to be built to the east of the study area, but a river crossing was available at Sugar Mill Road just west of the current N2 bridge location.



**Figure 9:** Comparative 1976 (Job 766, strip 8, photograph 140) and modern aerial photographs.

Stepping back further to 1963 we see a similar picture except that another river crossing was available to the west, opposite the sugar mill, and a small patch of land had not yet been cultivated just northwest of the site (Figure 10). Its uniformly dark colour suggests natural vegetation. The suburb to the southeast of the study area was beginning to be laid out but was still low density.



**Figure 10:** Comparative 1963 (Job 467, strip 3, photograph 010) and modern aerial photographs.

The earliest available image was from 1955 (Figures 11 & 12). While the sugar mill was already there, along with the adjacent river crossing, the Sugar Mill Road crossing had not yet been constructed. The area to the southeast was far more rural with very few buildings visible. Of most interest is that there are two small light patches within the area of undisturbed vegetation to the northwest of the site. These may either represent small structures or else clearings. They would

have been located some 130-150 m away from the edge of the proposed mining area. There is very obviously no sign of these patches today with the area being completely cultivated and planted to sugar cane.



**Figure 11:** Comparative 1955 (Job 358, strip 13, photograph 6634) and modern aerial photographs.



**Figure 12:** Comparative 1955 (Job 358, strip 13, photograph 6634) and modern aerial photographs showing a close up view of the site.

This series of images shows that the area has long been a rural one dominated by the cultivation of sugar cane and, as evidenced by the sugar mill, the production of sugar. Port Shepstone gradually grew and infrastructure (like the N2 freeway) was added as the population of the area became larger. At the site level it actually looks as though cultivation occurred even closer to the river in the past but that there has likely never been any sort of development on the site itself. The nature of

this rural cultural landscape with scattered industrial activities (sugar mill and mining) and the small scale of the proposed activities are such that no significant changes are likely to come about. It is also notable that the site lies in the bottom of a river valley which means that its visual exposure is extremely limited.

#### **5.4. Graves and burial grounds**

Iron Age graves tend to be located within homestead settings and, because occupation of this area is unlikely to have occurred, the chances of such graves being present are negligible. It is unlikely that Stone Age graves would be located so close to the river in an area that was likely to have been very densely vegetated in the distant past. Nevertheless, a very small possibility does exist that unmarked pre-colonial graves could be uncovered during excavation of the sand storage pit.

Modern graves are also most commonly located within active or abandoned homesteads. No homesteads occur within close proximity of the study area. A recent survey some 3 km to the southwest of the present study area demonstrated this pattern very strongly (Van Schalkwyk 2016).

2.2 Km to the north of the study area is a grave site, simply referred to as Ndongeni's Grave. Ndongeni was a 16 year old servant for Dick King, a 29-year-old wagon driver. They left Durban on horseback for Grahamstown to seek reinforcements for the British garrison under siege by Voortrekkers at Durban. Ndungeni never made it to Grahamstown but was later awarded a piece of land for his efforts, he was still alive in 1911 and buried here (Couzens 2004).

#### **5.5. Summary of heritage indicators**

It is unlikely that there will be any heritage indicators of concern in or close to the study area. The only heritage material that could possibly be impacted would be relatively recent isolated sub-fossils trapped in the Holocene and younger surficial sands targeted for mining. This material is of very low significance. Visual disturbance of the cultural landscape will be negligible because of the small scale of the proposed project.

#### **5.6. Statement of significance and provisional grading**

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), "cultural significance" means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

There are no specific heritage resources worthy of grading in or close to the study area. The broader cultural landscape around the study area has low-medium significance at the local level for its aesthetic and historical value (i.e. Grade III).

### **6. IMPACT ASSESSMENT**

The only possible impacts to heritage that might occur are to isolated sub-fossils and to the cultural landscape. However, as noted above, the very low significance of the palaeontological material and the small scale of the proposed activity means that the impacts will not have any significance. These impacts would occur during the construction and operation phases, while decommissioning would

result in a return to the status quo with no new impacts possible. Table 1 provides an impact assessment for the direct impacts. Because there are no significant heritage resources in the area, indirect impacts will not occur. All potential impacts are deemed to be of very low significance and, from a heritage point of view, the site can easily absorb the activity. Because any palaeontological material in the area would be very isolated, relatively recent and likely in poor context, and because the landscape impacts are essentially zero, no cumulative impacts are expected to occur. There are no heritage-related mitigation requirements.

## **7. LEGISLATIVE AND PERMIT REQUIREMENTS**

Once Amafa has issued a final comment on this proposed project, there will be no further legal or permitting requirements in terms of the NHRA.

## **8. ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS**

The Environmental Management Programme (EMPr) should include a note on what to do in the event that any heritage resource is uncovered during the proposed project. Although considered extremely unlikely, such finds may include buried foundations, a grave, or a dense concentration of fossils or artefacts. If any heritage resource is uncovered it should be protected in place and reported to an archaeologist or heritage practitioner or to Amafa as the responsible provincial heritage resources authority.

Because of the extremely low likelihood of any heritage resources being encountered, there is no requirement for monitoring.

## **9. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS**

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development. This project will result in a small number of jobs that will last for several years. Because no heritage resources are expected to be significantly impacted, the provision of a few employment opportunities far outweighs any potential heritage impacts.

## **10. CONSULTATION**

As noted above, this heritage impact assessment is to be included within the BAR which will be circulated to I&APs for comment.

**Table 1: Impact assessment summary table – Construction and Operation Phase direct impacts.**

Aspect/ Impact pathway	Nature of potential impact/risk	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Potential mitigation measures	Significance of impact/risk = consequence x probability		Ranking of impact/risk	Confidence level
										Without mitigation /management	With mitigation /management (residual risk/impact)		
<b>CONSTRUCTION AND OPERATION PHASES</b>													
Clearing of site and dredging and storage of sand.	Destruction of isolated fossils	Negative	Site	Permanent	Slight	Very unlikely	Non-reversible	High	Plant search and rescue (EMPr)	Very low	Very low	5	Medium
	Alteration to the cultural landscape	Negative	Site	Medium-term	Slight	Likely	High (with rehabilitation)	Low	Erosion Management Plan (EMPr)	Very low	Very low	5	High

## **11. LEGISLATIVE AND PERMIT REQUIREMENTS**

Once Amafa has issued a final comment on this proposed project, there will be no further legal or permitting requirements in terms of the NHRA.

## **12. ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS**

The Environmental Management Programme (EMPr) should include a note on what to do in the event that any heritage resource is uncovered during the proposed project. Although considered extremely unlikely, such finds may include buried foundations, a grave, or a dense concentration of fossils or artefacts. If any heritage resource is uncovered it should be protected in place and reported to an archaeologist or heritage practitioner or to Amafa as the responsible provincial heritage resources authority.

Because of the extremely low likelihood of any heritage resources being encountered, there is no requirement for monitoring.

## **13. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS**

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development. This project will result in a small number of jobs that will last for several years. Because no heritage resources are expected to be significantly impacted, the provision of a few employment opportunities far outweighs any potential heritage impacts.

## **14. CONSULTATION**

As noted above, this heritage impact assessment is to be included within the BAR which will be circulated to I&APs for comment.

## **15. CONCLUSIONS**

It is highly unlikely that any significant impacts to heritage resources would occur through implementation of the proposed project.



## 16. RECOMMENDATIONS

Because no significant impacts to heritage resources are expected, it is recommended that the proposed sand mine should be authorised but subject to the following condition which should be incorporated into the Environmental Authorisation:

- If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

## 17. REFERENCES

- Almond, J.E. 2017. RECOMMENDED EXEMPTION FROM FURTHER PALAEOLOGICAL STUDIES: Proposed sand mine along the Umzimkhulu River, Port Shepstone, Port Shepstone Magisterial District, Kwazulu-Natal. Unpublished report prepared for ASHA Consulting (Pty) Ltd. Cape Town: Natura Viva cc.
- Couzens, T., 2004. Battles of South Africa. New Africa Books.
- Davies, O. 1982. The Palaeolithic sequence at Umgababa Ilmenite Diggings. *Annals of the Natal Museum* 25: 41-59.
- Fisher, E.C., Albert, R-M., Botha, G., Cawthra, H.C., Esteban, I., Harris, J., Jacobs, Z., Jerardino, A., Marean, C.W., Neumann, F.H., Pargeter, J., Poupart, M. & Venter, J. Archaeological reconnaissance for Middle Stone Age sites along the Pondoland coast, South Africa. *Palaeoanthropology* 2013: 104-137.
- Kuman, K. 2006. The red sands. Eastern Cape Coastal Archaeological Sites Pondoland, Transkei Wild Coast: Report on Research 13 to 22 August 2006. Unpublished report to SAHRA. University of the Witwatersrand: GAES-Archaeology.
- Robey, T. 1980. Mpambanyoni: a Late Iron Age site on the Natal south coast. *Annals of the Natal Museum* 24 (1): 147-64
- Rutherford, M.C., Mucina, L., Lötter, M.C., Bredenkamp, G.J., Smit, J.H.L., Scott-Shaw, C.R., Hoare, D.B., Goodman, P.S.m Bezuidenhout, H., Scott, L., Ellis, F., Powrie, L.W., Siebert, F., Mostert, T.H., Henning, B.J., Venter, C.E., Camp, K.G.T., Siebert, S.J., Matthews, W.S., Burrows, J.E., Dobson, L., Van Rooyen, N., Schmidt, E., Winter, P.J.D., Du Preez, P.J., Ward, R.A., Williamson, S. & Hurter, P.J.H. 2006. Savanna Biome. In: Mucina, L. & Rutherford, M.C. (eds) *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia* 19: 439-538. Pretoria: South African National Biodiversity Institute.

- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.
- Wahl, E. & Van Schalkwyk, L. 2014. Phase 1 Heritage Impact Assessment Report: Proposed St. Faiths 400/132 kV Sub-Station and Associated Power Lines, Port Shepstone, uMzumbe, Hibiscus Coast and Ezingoleni Local Municipalities, Ugu District, KwaZulu-Natal. Unpublished report prepared for ACER (Africa) Environmental Management Consultants. Pietermaritzburg: eThembeni Cultural Heritage.
- Van Schalkwyk, L. 2016. Heritage Scoping Report Proposed Land Use Change and Subdivision of the Remainder of Lot 35 Marburg No. 4956, Ugu District Municipality, KwaZulu-Natal. Unpublished report prepared for unknown client. Pietermaritzburg: eThembeni Cultural Heritage.
- Van Schalkwyk, L. & Wahl, B. 2007. Heritage impact assessment of Xolobeni Mineral Sands Project, Eastern Cape Province, South Africa. Unpublished report prepared for GSC (Pty) Ltd. Pietermaritzburg: eThembeni Cultural Heritage.

## APPENDIX 1 – Curriculum Vitae



### *Curriculum Vitae*

**Jayson David John Orton**

ARCHAEOLOGIST AND HERITAGE CONSULTANT

#### Contact Details and personal information:

**Address:** 40 Brassie Street, Lakeside, 7945  
**Telephone:** (021) 788 8425  
**Cell Phone:** 083 272 3225  
**Email:** jayson@asha-consulting.co.za

**Birth date and place:** 22 June 1976, Cape Town, South Africa  
**Citizenship:** South African  
**ID no:** 760622 522 4085  
**Driver's License:** Code 08  
**Marital Status:** Married to Carol Orton  
**Languages spoken:** English and Afrikaans

#### Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science)	1997
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

\*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

#### Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

#### Memberships and affiliations:

South African Archaeological Society Council member	2004 –
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
ASAPA Cultural Resources Management Section member	2007 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –

### **Professional Accreditation:**

**ASAPA membership number: 233, CRM Section member**

Principal Investigator: Coastal shell middens (awarded 2007)  
Stone Age archaeology (awarded 2007)  
Grave relocation (awarded 2014)

Field Director: Rock art (awarded 2007)  
Colonial period archaeology (awarded 2007)

### **Fieldwork and project experience:**

Extensive fieldwork as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

#### Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

#### Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

## CV Jaco van der Walt

---

### PERSONAL PARTICULARS:

---

**NAME:** Jaco van der Walt  
**MARITAL STATUS:** Married with two dependants  
**DATE OF BIRTH:** 1977-11-04  
**Work Address** 37 Olienhout Street, Modimolle, 0510  
**E-MAIL:** jaco.heritage@gmail.com  
**MOBILE:** +27 82 373 8491  
**FAX:** +27 86 691 6461

---

### SYNOPSIS

---

Jaco has been actively involved as a professional archaeologist within the heritage management field in southern Africa for the past 15 years. Jaco acted as council member for the Association of Southern African Professional Archaeologist (ASAPA Member #159) in the Cultural Resource Management (CRM) portfolio for two years (2011 – 2012). Jaco was also a Research Associate with the University of Johannesburg from 2011 – 2013. He is well respected in his field and published in peer reviewed journals and presented his findings on various national and international conferences.

---

### ACADEMIC QUALIFICATIONS:

---

**Date of matriculation:** 1995  
**Particulars of degrees/diplomas and/or other qualifications:**  
**Name of University or Institution:** University of Pretoria  
**Degree obtained** : BA  
**Major subjects** : Archaeology  
Cultural Heritage Tourism  
**Year of graduation** : 2001

**Name of University or Institution:** University of the Witwatersrand  
**Degree obtained** : BA [Honours]  
**Major subjects** : Archaeology  
**Year of graduation** : 2002

**Name of University or Institution** : University of the Witwatersrand  
**Degree Obtained** :BA [Masters]  
**Major subject** :Archaeology  
**Year of Graduation** :2012

---

### EMPLOYMENT HISTORY:

---

2011 – Present: **Owner - Heritage Contracts and Archaeological Consulting CC.**  
2007 – 2010 : **CRM Archaeologist**, Managed the Heritage Contracts Unit at the  
University of the Witwatersrand.  
2005 - 2007: **CRM Archaeologist**, Director of Matakoma Heritage Consultants  
2004: **Technical Assistant**, Department of Anatomy University of Pretoria  
2003: **Archaeologist**, Mapungubwe World Heritage Site  
2001 - 2002: **CRM Archaeologists**, For R & R Cultural Resource Consultants,  
Polokwane  
2000: **Museum Assistant**, Fort Klapperkop.

### Countries of work experience include:

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

---

**MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:**

---

- o Association of Southern African Professional Archaeologists. Member number 159
- o Association of Southern African Professional Archaeologists Cultural Resource Management Section  
Accreditation: Field Director Iron Age Archaeology  
Field Supervisor – Colonial Period  
Archaeology, Stone Age Archaeology and Grave  
Relocation
- o Accredited CRM Archaeologist with SAHRA
- o Accredited CRM Archaeologist with AMAFA
- o Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

---

**REFERENCES:**

---

1. Prof Marlize Lombard Senior Lecturer, University of Johannesburg, South Africa  
E-mail: mlombard@uj.ac.za
2. Prof TN Huffman Department of Archaeology Tel: (011) 717 6040  
University of the Witwatersrand
3. Alex Schoeman University of the Witwatersrand E-mail: Alex.Schoeman@wits.ac.za

**APPENDIX 2 – Palaeontological study**