

HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999))

FOR THE PROPOSED COSMO CITY HOSPITAL DEVELOPMENT, GAUTENG PROVINCE

Type of development:

Hospital Development

Client:

Methale Environmental Consulting

Client info:

Mr T Sekoko

E – mail: info.methale@ymail.com

Developer: TBC



HCAC - Heritage Consultants

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: jaco.heritage@gmail.com

Report Author:

Mr. J. van der Walt

Project Reference:



HCAC Project number 2170409

Report date:

April 2017

APPROVAL PAGE

Project Name	Cosmo City Hospital
Report Title	Heritage Impact Assessment Cosmo City Hospital
Authority Reference Number	TBC
Report Status	Draft Report
Applicant Name	TBC

	Name	Signature	Qualifications and Certifications	Date
Document Compilation	Jaco van der Walt		MA Archaeology ASAPA #159	April 2017
	Marko Hutten		BA Hons Archaeology	April 2017

DOCUMENT PROGRESS**Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
24 April 2017	2170409	To Methale Environmental Consulting	Electronic Copy

Amendments on Document

Date	Report Reference Number	Description of Amendment

INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and HCAC reserves the right to modify aspects of the report including the recommendations if and when new information becomes available from ongoing research or further work in this field, or pertaining to this investigation.

Although HCAC exercises due care and diligence in rendering services and preparing documents, HCAC accepts no liability, and the client, by receiving this document, indemnifies HCAC against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by HCAC and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

COPYRIGHT

Copyright on all documents, drawings and records, whether manually or electronically produced, which form part of the submission and any subsequent report or project document, shall vest in HCAC.

The client, on acceptance of any submission by HCAC and on condition that the client pays to HCAC the full price for the work as agreed, shall be entitled to use for its own benefit:

- The results of the project;
- The technology described in any report; and
- Recommendations delivered to the client.

Should the applicant wish to utilise any part of, or the entire report, for a project other than the subject project, permission must be obtained from HCAC to do so. This will ensure validation of the suitability and relevance of this report on an alternative project.

REPORT OUTLINE

Appendix 6 of GNR 326 EIA Regulations (7 April 2017) provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GNR 326 EIA Regulations (7 April 2017)	Chapter
(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	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 1, 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) 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 site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9 and 10
(l) Conditions for inclusion in the environmental authorisation	Section 9 and 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9 and 10
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or 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	Section 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	TBC
(q) Any other information requested by the competent authority	Section 10


Executive Summary

Methale Environmental Consulting were appointed to conduct an Environmental Basic Assessment for the proposed construction of the Cosmo City Hospital Development on Kya Sand Ext 49 within the City of Johannesburg Metropolitan Municipality's jurisdiction in the Gauteng Province. The proposed construction will cover approximately 1.7 hectares of land. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed project to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.

No archaeological sites or material was recorded during the survey. According to the paleo sensitivity map on SAHRIS the paleontological sensitivity of the project is insignificant and low. It is however recommended that a protocol for finds should be included in the EMPr for the project. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area. In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is surrounded by commercial and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or viewsapes. During the Public Participation process conducted for this project no heritage concerns was raised.

The impact of the proposed project on heritage resources is considered low and it is recommended that from a heritage perspective the proposed project can commence on the condition that the recommendations as made in this report are implemented as part of the EMPr and based on approval from SAHRA. Please refer to Section 9 & 10 for the proposed management measures.

DECLARATION OF INDEPENDENCE

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the independent specialist 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 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 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; • All the particulars furnished by me in this form 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.
Signature	
Date	24/04/2017

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

Table of Contents

REPORT OUTLINE.....	4
EXECUTIVE SUMMARY.....	5
A) EXPERTISE OF THE SPECIALIST.....	1
TABLE OF CONTENTS.....	2
LIST OF FIGURES.....	3
LIST OF TABLES.....	3
ABBREVIATIONS.....	4
GLOSSARY.....	4
1 INTRODUCTION AND TERMS OF REFERENCE:.....	5
1.1 TERMS OF REFERENCE.....	5
2 LEGISLATIVE REQUIREMENTS.....	9
3 METHODOLOGY.....	10
3.1 LITERATURE REVIEW.....	10
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS.....	10
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	11
3.4 SITE INVESTIGATION.....	11
3.5 SITE SIGNIFICANCE AND FIELD RATING.....	13
3.6 IMPACT ASSESSMENT METHODOLOGY.....	14
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY.....	15
4 DESCRIPTION OF SOCIO ECONOMIC ENVIRONMENTAL.....	15
5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT:.....	15
6 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	16
7 LITERATURE / BACKGROUND STUDY:.....	16
7.1 LITERATURE REVIEW.....	16
7.2 GENERAL HISTORY OF THE AREA.....	17
7.3 ARCHAEOLOGY OF THE GREATER STUDY AREA.....	19
8 FINDINGS OF THE SURVEY.....	20
9 DESCRIPTION OF IDENTIFIED HERITAGE RESOURCES (NHRA SECTION 34 -36):.....	23
9.1 PALAEOLOGICAL RESOURCES.....	23
9.2 BATTLEFIELDS AND CONCENTRATION CAMPS.....	23
9.3 CULTURAL LANDSCAPES, INTANGIBLE AND LIVING HERITAGE.....	24
9.4 POTENTIAL IMPACT.....	24
9.4.1..... PRE-CONSTRUCTION PHASE:	
24	
9.4.2 CONSTRUCTION PHASE.....	24
9.4.3. OPERATION PHASE:.....	24

10	RECOMMENDATIONS AND CONCLUSION	25
10.1	CHANCE FIND PROCEDURES.....	25
10.2	REASONED OPINION	25
11	REFERENCES	26
12	APPENDICES:	27
	CURRICULUM VITAE OF SPECIALIST	27

List of Figures

FIGURE 1.	PROVINCIAL MAP (1: 250 000 TOPOGRAPHICAL MAP)	7
FIGURE 2:	REGIONAL MAP (1:50 000 TOPOGRAPHICAL MAP).....	8
FIGURE 4:	TRACK LOGS OF THE SURVEY IN BLACK.....	12
FIGURE 6:	1943 ARCHIVAL MAP INDICATING THE STUDY AREA IN BLUE.....	18
FIGURE 12.	GENERAL SITE CONDITIONS.....	20
FIGURE 13.	DUMPING IN THE STUDY AREA.....	20
FIGURE 14.	FOUNDATIONS AND REMAINS IN STUDY AREA.....	21
FIGURE 15.	FOUNDATIONS AND REMAINS IN STUDY AREA.....	21
FIGURE 16.	GENERAL SITE CONDITIONS.....	21
FIGURE 17.	GENERAL SITE CONDITIONS	21
FIGURE 18.	TAR ROAD IN STUDY AREA.....	22
FIGURE 19.	CEMENT FACILITY BORDERING THE SITE.....	22

List of Tables

TABLE 1.	SPECIALIST REPORT REQUIREMENTS.....	4
TABLE 2:	PROJECT DESCRIPTION.....	6
TABLE 3:	INFRASTRUCTURE AND PROJECT ACTIVITIES	6
TABLE 4:	SITE INVESTIGATION DETAILS	11

ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 Introduction and Terms of Reference:

Heritage Contracts and Archaeological Consulting CC (**HCAC**) has been contracted by Methale Environmental Consulting to conduct a heritage impact assessment of the proposed infrastructure for a hospital development that comprises around 1,7 hectares. The report forms part of the Basic Assessment Report (BAR) and Environmental Management Programme Report (EMPR) for the Cosmo City Hospital Development Kya Sands EXT 49 within the City of Johannesburg Metropolitan Municipality's jurisdiction in the Gauteng Province.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The base data is of high quality and relevant dates are included in section 3.4 and 7.1. The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey conducted, no heritage sites were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regs section 40 (1) and (2), to be submitted to SAHRA. As such the Basic Assessment report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development footprint.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

Table 2: Project Description

Size of farm and portions	1,7 hectares located in Kya Sand Ext 49
Magisterial District	Johannesburg Metropolitan Municipality, Gauteng Province.
1: 50 000 map sheet number	2726BB

Table 3: Infrastructure and project activities

Type of development	Hospital Development
Project size	1,7 Hectares
Project Components	The Applicant intends to develop a hospital and associated infrastructure to be known as Cosmo City hospital.

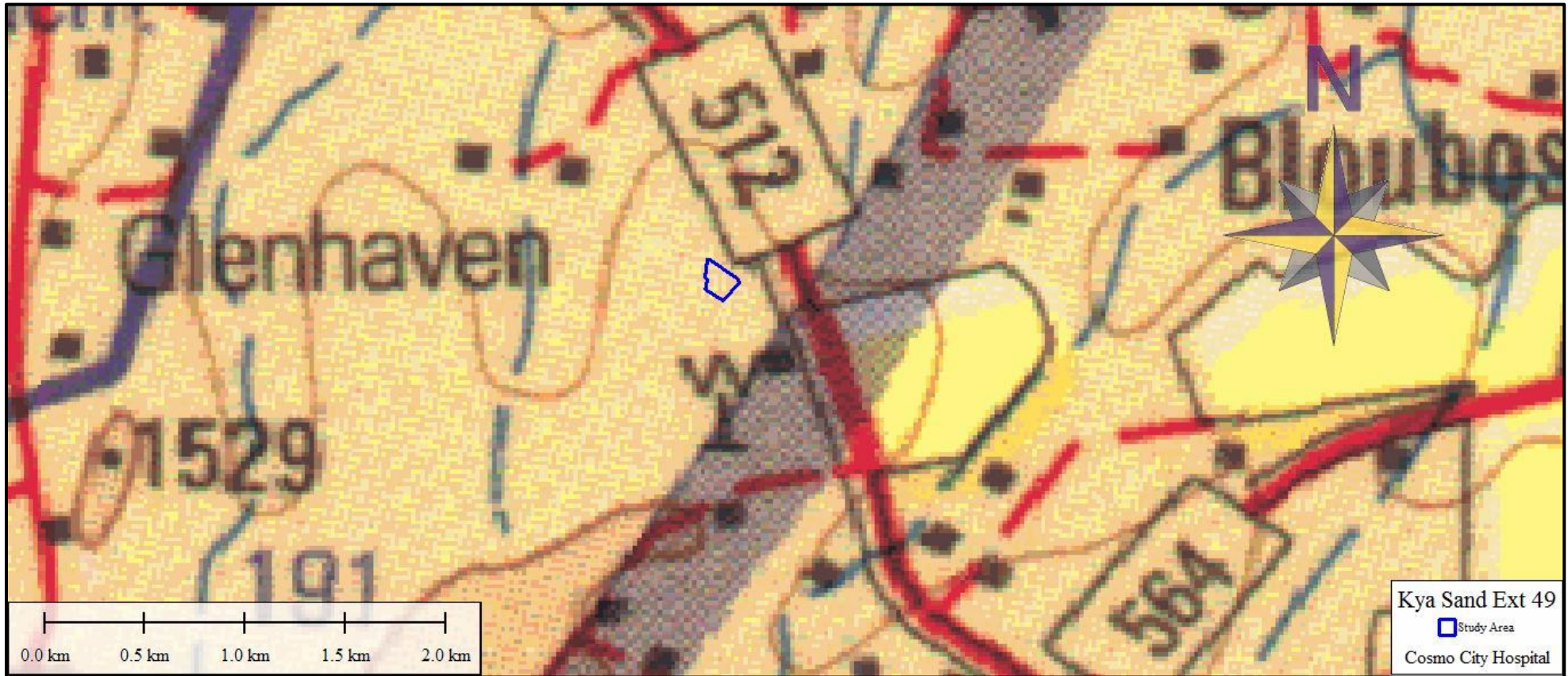


Figure 1. Provincial map (1: 250 000 topographical map)



Figure 2: Regional map (1:50 000 topographical map).

2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999 is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3 METHODOLOGY

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question the provide 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).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any BAR process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder, land owner, village and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation
- The compilation of a Basic Assessment Report (BAR).
- The compilation of a Comments and Response Report (CRR).

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	22 April 2017
Season	Summer –vegetation in the study area is low and archaeological visibility is high. The impact area was sufficiently covered (Figure 4) to adequately record the presence of heritage resources.



Figure 3: Track logs of the survey in black.

3.5 Site Significance and Field Rating

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Sites of significance relating to the history of slavery in South Africa.

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
 - * medium-term (5-15 years), assigned a score of 3;
 - * long term (> 15 years), assigned a score of 4; or
 - * permanent, assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this impact assessment.

4 Description of Socio Economic Environmental

Cosmo City is the region C of Johannesburg major development. In stark contrast to previous residential efforts, the housing project is mixed-use and mixed-income. (<https://joburg.org.za>)

The city consists of 12 000 units, with mixed typologies that range from subsidised houses to bonded houses and rental units. It is a thriving city, complete with schools, shopping malls, health facilities, police stations, a community centre with a hall, parks and recreational areas, a library, a cemetery and several churches (<http://city-press.news24.com/Voices/cosmo-city-a-beacon-of-urbanisation-20160520>).

In 2007, the following statistics were recorded for Region C:

- Of the region's mature population of 225 000, 65 percent are economically active and about 24 percent are of school-going age.
- The majority of the adult population is in the middle to high-income bracket, with many young working individuals and small families.
- Around 32 percent of the population has a post-matric qualification (<https://joburg.org.za>).

The continuing development of Cosmo City will contribute to creating job opportunities and change the community profile for the better.

5 Description of the Physical Environment:

The proposed development will be situated on parts of the Sandpark Agricultural Holdings. The property is situated directly north of Kaya Sands and to the east of Cosmo City in the City of Johannesburg Metropolitan Municipality within the Gauteng Province.

The Cosmo City Development was a government driven initiative for a housing requirement to the north of Johannesburg. The initiative was launched during the early 2000's and has been expanding ever since. The previously owned farm properties were converted into residential suburbs to develop the now known Cosmo City. The study area is situated on the eastern fringes of the newly developed Cosmo City and the proposed development will form part of this new city.

The study area measures approximately 2ha in size and is situated in between the residential suburbs of Cosmo City Extension 5 to the west and south and the Sandpark Agricultural Holdings to the north and east. The site is bordered by houses on the western and southern sides and by Pronto Cement Suppliers on the northern side. Open veld is situated on the eastern extent of the proposed site.

The site is walled off on all sides except for the southern side which has open veld. An entrance gate is situated at the northern extent of the site and a tar road runs along the northern boundary of the site. Dumped material such as rocks, soil, building rubble and rubbish were also identified across the site.

6 Results of Public Consultation and Stakeholder Engagement:

Adjacent landowners and the public at large were informed of the proposed activity as part of the BA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

7 Literature / Background Study:

7.1 Literature Review

Wits Archaeological Data Bases

32 Previously recorded sites are on record for the 2627 BB 1: 50 000 sheet at the Wits database. These sites consist of Stone Age (ESA & LSA), Late Iron Age, Anglo Boer War remains and Historic mining remains. None of these sites are located within or close to the project area but provide a background to the history of the area.

SAHRA Report Mapping Project

Several previous CRM projects were conducted within a radius of 3km of the study area. Among these are studies by van Schalkwyk (2007) who did not record any sites of significance (2008) that recorded cemeteries. Coetzee (2008) recorded graves and the remains of modern structures, but no other sites of heritage significance. Matakoma (2001) conducted a survey for the township development of Cosmo City and recorded numerous graves (250), Ndebele initiation sites as well as possible Late Iron Age and Boer war sites. Van der Walt (2016) conducted a study across the road from the study area and did not record any sites.

Genealogical Society and Google Earth Monuments

Neither the Genealogical Society nor the monuments database at Google Earth (Google Earth also include some archaeological sites and historical battlefields) have any recorded sites in the study area.

7.2 General History of the area

J. S. Bergh's historical atlas of the four northern provinces of South Africa provides local and regional history. An important heritage site in the greater Johannesburg area is the Melville Koppies, which is a Middle Stone Age (MSA) site. (Bergh 1999: 4) This area was also important to Iron Age communities, these people smelted and worked iron ore at the Melville Koppies site since the year 1060, by approximation. (Bergh 1999: 7, 87)

The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. (Bergh 1999: 10) It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. (Bergh 1999: 14; 116-119) It seems that, in 1827, Mzilikazi's Ndebele started moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence. (Bergh 1999: 11)

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers went on expeditions to the northern areas in South Africa, some already as early as the 1720's. It was however only by the late 1820's that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39) By 1939 to 1940, farm boundaries were drawn up in an area that includes the present-day Johannesburg and Krugersdorp (Bergh 1999: 15).



Figure 4: 1943 Archival map indicating the study area in blue.

7.3 Archaeology of the greater study area

Although there are no well-known Stone Age sites located on or around the study area there is evidence of the use of the larger area by Stone Age communities for example along the Kliprivier where ESA and MSA tools were recorded. LSA material is recorded along ridges to the south of the current study area (Huffman 2008). Petroglyphs (also called rock engravings) occur at Redan as well as along the Vaal River (Berg 1999).

Regarding the Iron Age, the well-known Smelting Site at Melville Koppies requires further mention. The site was excavated by Professor Mason from the Department of Archaeology of Wits in the 1980's. Extensive stone walled sites are also recorded at Klipriviers Berg Nature reserve belonging to the LIA period. A large body of research is available on this area. These sites (Taylor's Type N, Mason's Class 2 & 5) are now collectively referred to as Klipriviersberg (Huffman 2007). These settlements are complex in that aggregated settlements are common, the outer wall sometimes includes scallops to mark back courtyards, there are more small stock kraals, and straight walls separate households in the residential zone. These sites date to the 18th and 19th centuries and were built by people in the Fokeng cluster.

In this area, the Klipriviersberg walling would have ended in about AD 1823, when Mzilikazi entered the area (Rasmussen 1978). This settlement type may have lasted longer in other areas because of the positive interaction between Fokeng and Mzilikazi.

8 Findings of the Survey

It is important to note that only the development footprint was surveyed. The study area measures less than 2ha in size and is situated in between the residential suburbs of Cosmo City Extension 5 to the west and south and the Sandpark Agricultural Holdings to the north and east. The site is bordered by houses on the western and southern sides and by Pronto Cement Suppliers on the northern side. Open veld is situated on the eastern extent of the proposed site.

The site is walled off on all sides except for the southern side which has open veld. An entrance gate is situated at the northern extent of the site and a tar road runs along the northern boundary of the site. Dumped material such as rocks, soil, building rubble and rubbish were also identified across the site.

The foundations and remains of three structures were identified amongst the central parts of the study area. These foundations and remains consist of brick, cement and tiles and indicated the possible remains of a farmstead and its associated structures. The foundations and remains of these three structures are not older than sixty years and does not have any heritage value or significance. A few big trees are located near the foundations and remains of the identified structures.

The proposed site is relatively flat and was disturbed to some extent by the surrounding housing and other construction developments. The site is also overgrown with lush grass and other vegetation after the recent spate of good rains.

No sites or finds of any heritage value or significance was identified within the proposed study area.



Figure 5. General site conditions



Figure 6. Dumping in the study area.



Figure 7. Foundations and remains in study area



Figure 8. Foundations and remains in study area



Figure 9. General site conditions



Figure 10. General Site conditions



Figure 11. Tar road in study area



Figure 12. Cement facility bordering the site.

Draft

9 Description of Identified Heritage Resources (NHRA Section 34 -36):

No sites or finds of any heritage value or significance were identified within the proposed study area.

9.1 Palaeontological Resources

Based on the SAHRA Paleontological sensitivity map the area is insignificant and low. It is recommended that a protocol for finds should be included in the EMPR.

9.2 Battlefields and Concentration Camps

There are no battlefields or related concentration camp sites located in the study area.

Draft

9.3 Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of a densely-developed zone. Visual impacts to scenic routes and sense of place are also considered to be low due to the extensive developments in the area.

9.4 Potential Impact

The site has been extensively impacted on by surrounding developments and illegal dumping. From a heritage point of view the site has been extensively impacted and the level of additional impacts by the development is considered to be acceptable as there are no surface indicators of heritage resources in the study area.

9.4.1 Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of road infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.4.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.4.3 Operation Phase:

No impact is envisaged to heritage resources during this phase.

Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the Cosmo City Hospital, the project will, with the recommended mitigation measures and management actions, not impact any heritage resources directly. However, this and other projects in the area could have an indirect impact on the heritage landscape. The lack of any heritage resources in the immediate area minimises additional impact on the landscape.

10 Recommendations and conclusion

No archaeological sites or material was recorded during the survey. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area. In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is surrounded by commercial and road infrastructure developments and the proposed development will not impact negatively on significant cultural landscapes or views. Public Participation conducted for this project also highlighted no heritage concerns.

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

10.1 Chance Find Procedures

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or rock engraving, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.

The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

10.2 Reasoned Opinion

The impact of the proposed project on heritage resources is considered low and no further pre-construction mitigation is required. Furthermore, the socio-economic benefits of a new hospital and employment opportunities also outweigh the possible impacts to heritage resources.

11 References

Bergh, J.S., (ed.) *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Pretoria: J. L. van Schaik Uitgewers. 1999.

Coetzee, F. 2008. Cultural Heritage Survey of the Proposed Residential Development of Phase 2 of Cosmo City, City of Johannesburg Metropolitan Municipality

Hocking, A., 1986: *Randfontein Estates: The First Hundred Years*, Hollards, Bethulie.

Huffman, T.N. 2007. Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa. University of KwaZulu-Natal Press, Scottsville.

Rasmussen, R.K. 1978 Migrant kingdom: Mzilikaqzi's Ndebele in South Africa. London: Rex Collings

Ross, R. A concise history of South Africa. Cambridge University Press. Cambridge. 1999.

SAHRA Report Mapping Project Version 1.0, 2009

SAHRIS (Cited 4 May 2015)

Van Schalkwyk, J. 2007. Heritage Survey Of A Portion Of The Farm Zandspruit 191JQ, Krugersdorp Magisterial District, Gauteng Province

Van Schalkwyk, J. 2008.. Heritage impact survey report for the Proposed Development On Portions Of The Farm Zandspruit 191JQ, Krugersdorp Magisterial District, Gauteng Province

Van Schalkwyk, J. 2013. Basic Cultural Heritage Assessment For The Proposed Bulk Water Supply Pipeline Between Lanseria And Cosmos City, Gauteng Province

Van der Walt, J. 2016. Archaeological Impact Assessment For The Proposed Kya Sands Extension 104 Project, Gauteng

Electronic Sources

https://joburg.org.za/index.php?option=com_content&Itemid=118&task=view&id=173&limitstart=1

www.news24.com

12 Appendices:**Curriculum Vitae of Specialist**

Jaco van der Walt
Archaeologist

jaco.heritage@gmail.com
+27 82 373 8491
+27 86 691 6461

Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution: University of Pretoria
Degree obtained : BA Heritage Tourism & Archaeology
Year of graduation : 2001

Name of University or Institution: University of the Witwatersrand
Degree obtained : BA Hons Archaeology
Year of graduation : 2002

Name of University or Institution : University of the Witwatersrand
Degree Obtained : MA (Archaeology)
Year of Graduation : 2012

Name of University or Institution : University of Johannesburg
Degree : PhD
Year : Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present: **Owner – HCAC (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.

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chlookop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booyensdal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

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

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
 - J van der Walt, A Meyer, WC Nienaber
 - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
 - WC Nienaber, M Hutten, S Gaigher, J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
 - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
 - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
 - J van der Walt, P Birkholtz, W. Fourie
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
 - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
 - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
 - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

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