

**HERITAGE SCOPING ASSESSMENT FOR THE  
AMENDMENT OF THE EXISTING CITY DEEP EMP  
FOR THE INCLUSION OF DUMP 4/L/2**

**CROWN GOLD RECOVERIES (PTY) LTD**

**A WHOLLY OWNED SUBSIDIARY OF DRD GOLD SOUTH AFRICA**

**27 MAY 2011**

*Prepared by*

*Digby Wells Environmental  
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## 1 INTRODUCTION

Digby Wells Environmental (Digby Wells) was appointed by Crown Gold Recoveries (Pty) Ltd (Crown) as independent environmental consultants to assess the physical, biological and social environment associated with the amendment of the City Deep Environmental Management Programme (EMP) to include the proposed reclamation of Dump 4/L/2 for authorisation by the Department of Mineral Resources (DMR). In compliance with the relevant legislative requirements, this archaeological and cultural heritage investigation forms part of the environmental assessments for the project.

### 1.1 Project introduction

Crown proposes to apply for a Section 102 Amendment to the existing City Deep EMP. This process requires conducting a limited Public Participation Process (PPP) and the submission of an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Amendment Report to the DMR. To ensure archaeological and heritage aspects are considered in the amendment of the existing City Deep EMP for the reclamation of Dump 4/L/2 for, this heritage scoping assessment report was compiled. The main aim of this heritage scoping assessment is to notify the South African Heritage Resources Agency (SAHRA) and Provincial Heritage Resource Agency (PHRA) of the amendment of the City Deep EMP to include the proposed reclamation of Dump 4/L/2 for authorisation by the DMR. Dump 4/L/2 was previously used as a tailings deposition site and the soil and surrounding surface has therefore already been disturbed by development. The project area is located in an industrial development zone.

### 1.2 Client overview

Crown is a wholly owned subsidiary of DRD Gold South African Operations. The company reclaims sand dumps and slime dams that were deposited as tailings by mines that once operated in the greater Witwatersrand area. Crown has been responsible for the successful reclamation of 23 sand dumps and slimes dams, most of which have been situated around the City of Johannesburg and Ekurhuleni Metropolitan area. The effective removal of slimes dams and sand dumps has allowed for the removal of a source of environmental pollution, the rehabilitation of disturbed areas, and the unlocking of key urban land for development. Through the treatment of dumps in these areas, Crown has unlocked over 205 ha of land for urban economic development, which makes the redevelopment of these properties highly valuable.

CLIENT DETAILS	
CONTACT PERSON/S	H. Gouws and L. Kleynhans
TELEPHONE & FAX	Phone: (011) 248 9000 and Fax: (011) 835 2922
ADDRESS	Private Bag X9, Crown Mines, 2025, South Africa; Crown Mines, Johannesburg

### 1.3 Project details

Crown is reclaiming a number of sand dumps and slimes dams in the Witwatersrand area. Slimes are either mechanically or hydraulically reclaimed and transported to one of Crown's three processing plants. The reclamation of Dump 4/L/2 will involve converting the sand into slurry, which will be pumped via pipelines to the City Deep plant for processing and placed on the Brakpan-Withok tailings storage facility via the pipeline.

## 2 METHODOLOGY AND OBJECTIVES

### 2.1 Methodology

This heritage scoping assessment process started with information gathering and literature reviews (desktop study). Information was obtained from various sources, including journals, articles, previous reports and internet websites. Thereafter, general site conditions and potential sites of heritage significance were documented and integrated, followed by report writing, mapping and constructive recommendations. A site visit was undertaken by environmental consultants from Digby Wells to assess the general environment and relevant biophysical and social aspects of Dump 4/L/2. As part of the project, a Public Participation Process (PPP) was also undertaken in compliance with the relevant laws and regulations. The photographic data was integrated into the Heritage Scoping Report. Once the report was compiled, it was submitted to SAHRA and/or PHRA for their perusal.

### 2.2 Aims and objectives of study

This heritage scoping assessment forms part of the amendment of the existing City Deep EMP for the reclamation of Dump 4/L/2. The objectives of the heritage scoping assessment were to notify SAHRA and PHRA of the proposed dump reclamation. The heritage scoping assessment was conducted in accordance with the legislative requirements of the NHRA (no 25 of 1999), National Environmental Management Act (NEMA) (107 of 1998) and the MPRDA (28 of 2002). This heritage scoping assessment study aims to:

- Notify SAHRA and PHRA of the proposed reclamation project and furnish it with details regarding the location, nature and extent of the proposed project.
- Identify, record and document potential archaeological, cultural and historic sites of significance within the proposed development area, if present;
- Evaluate whether the proposed mining activity will have adverse impacts on relevant archaeological or cultural resources during construction, operation and decommissioning phases; and
- Recommend mitigation and management measures.

### 2.3 CV and Declaration

The Curriculum Vitae and declaration of experience of the specialists involved in the compilation of this heritage scoping report is attached in Appendix 1.

### 2.4 Legislative Requirements

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that “...no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”. The amended EMP report will be submitted to the DMR in order to obtain environmental authorisation for the proposed project. In compliance with applicable legislative requirements, the National Heritage Resources Act (No. 25 of 1999) (NHRA) was also considered for this project.

## 3 FINDINGS

### 3.1 Regional overview

Since the discovery of gold in the Witwatersrand area in the 1880s, the gold rush attracted large numbers of prospectors and immigrants to Johannesburg and surrounding areas. The early years of mining saw primitive mining methods with shallow mining occurring along the Main Reef outcrop. This mining was situated in the area of the current M2 highway running east-west along the south of central Johannesburg. The development of improved mining methods saw the start of deep mining by means of vertical shafts to access the deeper Main Reef seam dipping to the south (Matakoma Heritage Consultants, 2006).

The introduction of deep mining saw the development of larger mine infrastructure such as stores, living quarters, crushers and metallurgical plants. This led to increased production and subsequently, increased waste production. The aerial photo in Figure 3-1 indicates the extent of the mining activities and its relics during the early part of the 1940's. Some consider slimes dams and sand dumps in the Johannesburg area as unique man-made structures that have given Johannesburg its character and familiar skyline; others consider them as sources of water and air pollution. The past twenty years have seen a reworking and mining of the old slimes dams and sand dumps situated to the south of the Central Business District. These sand dumps and slimes dams were deposited as tailings during past gold mining operations. The removal of mine dumps have resulted in a major change to the cultural landscape and skyline of Johannesburg and surrounding areas, but also opened up valuable urban areas for economic development.



**Figure 3-1: Historical mining activities during the early part of the 1940's**



As illustrated in Figure 3-2, the regional location of Dump 4/L/2 is situated in an industrial zone of Johannesburg in the Gauteng Province.

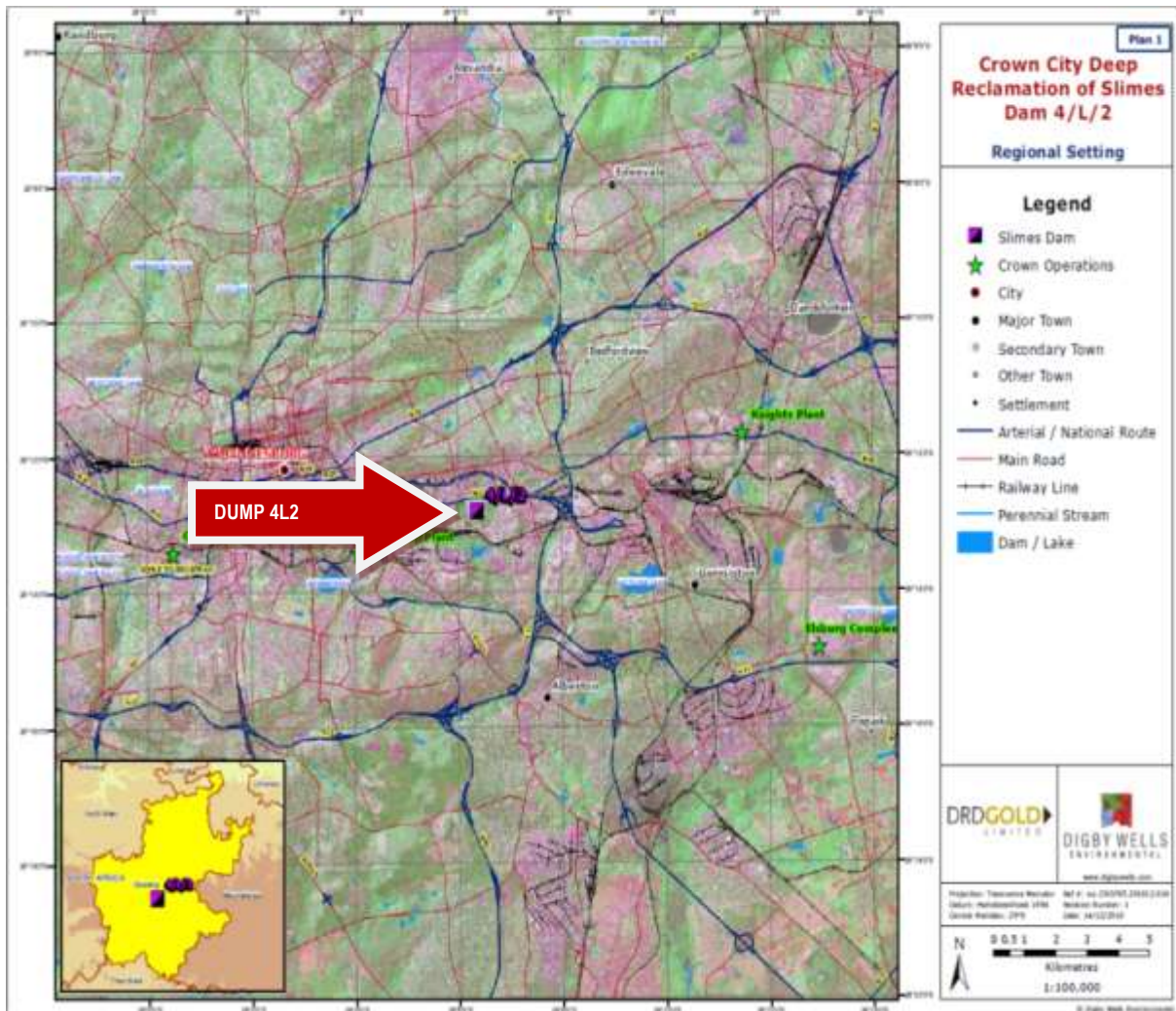


Figure 3-2: Regional location of the study area

### 3.2 Local overview

On a local level, Dump 4/L/2 is located on the property Doornfontein 92 IR and forms part of the City Deep Operations as a depositional site, which forms part of the original mining right. The specific geographical location of the dump (GPS Location) is: 26°12'51.91"S and 28° 6'18.80"E.

As illustrated in Figure 3-3, the project area is located in an industrial development zone where the soil and surrounding surface has already been disturbed. It is clear that the surrounding dumps are also being reclaimed and the disturbance and development of surrounding areas is on-going. The exact age of this dump is unknown, however Dump 4/L/2 was previously used as a tailings deposition site and the soil and surrounding surface have therefore already been disturbed by development.



Figure 3-3: Aerial view of Dump 4/L2



### 3.3 Site illustrations

As part of the environmental studies required for this project, a site visit was undertaken. As illustrated in the following figures, Dump 4/L/2 is mostly a disturbed site that consists of waste material (tailings).

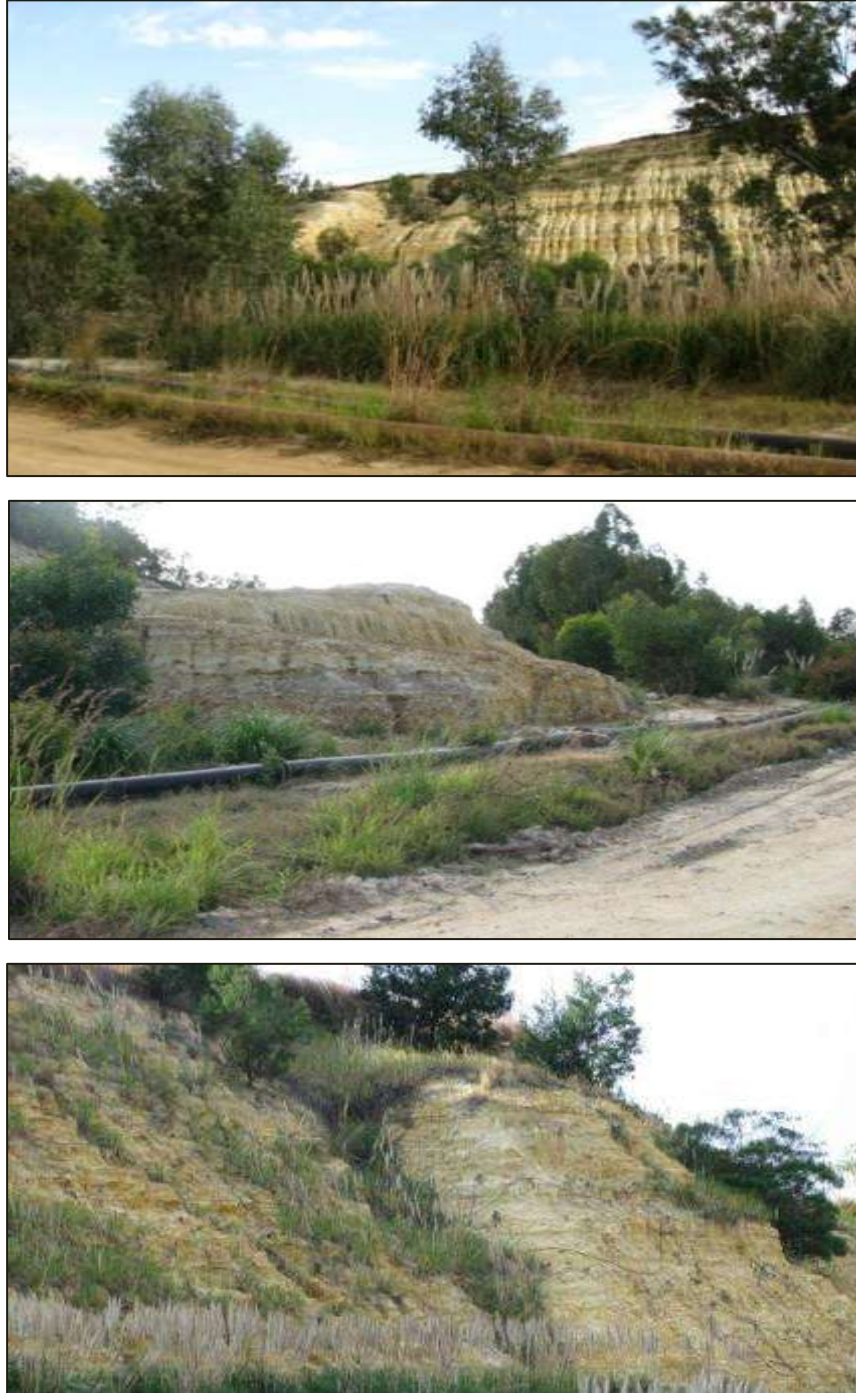


Figure 3-4: Various angles of Dump 4/L/2 (Digby Wells, 25 May 2011)



### **3.4 Discussion of results**

No known sites of archaeological or heritage significance were identified in the project area. The surrounding land owners were consulted as part of the Public Participation Process (PPP) for this project, who indicated that no known graves or additional sites of cultural or archaeological significance occur in the area. In addition, no visible evidence of sites of cultural or archaeological significance was found in the footprint area of the dump. With regards to the potential heritage value associated with mining heritage, the impact significance is considered to be low as this dump is not a significant landmark. It was reported that the dump is considered as a source of environmental pollution and a health hazard as result of increased nuisance dust, safety, air pollution and water pollution. As part of the reclamation project for Dump 4/L/2, the area would be rehabilitated in order to free land for alternative economic developments or other suitable use. Due to the size and nature of the dump, no impacts resulting from the reclamation of Dump 4/L/2 are foreseen on any sites of cultural or archaeological significance in the project area.

## **4 CONDITIONS AND ASSUMPTIONS**

It should be noted that some archaeological and heritage sites may be located below the surface. Consequently, chances find procedure must be implemented, which means that an archaeologist or heritage specialist must immediately be contacted should any archaeological or heritage features be uncovered during the construction and operational phases. Such heritage features and/or objects may not be disturbed or removed until such time that a heritage specialist has been able to do an assessment of the site (or object) in question.

## **5 RECOMMENDATIONS AND CONCLUSION**

Based on the outcomes of the heritage scoping assessment and findings, Digby Wells recommends that SAHRA and/or PHRA exempt this project from a full phase one Archaeological or Heritage Impact Assessment (AIA/HIA); however, the final decision lies with SAHRA and/or PHRA.

After review of this assessment, SAHRA and/or PHRA will inform the relevant parties if a phase one AIA or HIA may be required for the reclamation of Dump 4/L/2. Due to the potential issues surrounding mining heritage and cultural landscape, an effective management and monitoring process may be required for this project if SAHRA recommends a site monitoring and management plan. The purpose of an effective monitoring and management process is to provide advice to the developer in the management of significant resources. From a heritage perspective, this implies that sites must be monitored for potential archaeological and heritage findings (i.e. chances find procedures must be implemented).

## 6 LIST OF SOURCES

ASAPA, Association for Southern African Professional Archaeologists; (2009)  
<http://www.asapa.org.za/index.php>

BAUMANN & WINTER Consultants (2005), Guideline for involving Heritage specialists in EIA processes, CSIR, Edition 1, June 2005, Pretoria

IFC, International Finance Corporation, (2006), IFC Performance Standard, Guidance Note, April 2006, World Bank

Matakoma Heritage Consultants (2006), Heritage Scoping Assessment for The Top Star Dump Mining Project – Crown Gold Recoveries Reference: Top Star Dump – 001; Compiled By: Wouter Fourie and Jaco Van der Walt, 22 May 2006

NHRA (No 25 of 1999), National Heritage Resource Act, South Africa

PISTORIUS, J. (1994), Eskom Archaeological Identification guide, Johannesburg

SAHRA APMHOB Permit Committee, (2006), Assessment & Mitigation as a Prerequisite for Mining & Prospecting

SAHRA Website, (2008), South African Heritage Resource Agency, <http://www.sahra.org.za/intro.htm>, Online

## APPENDIX 1

### **JOHAN NEL**

Archaeologist at Digby Wells Environmental

#### PERSONAL INFORMATION

Date of Birth: 07/01/1980

Languages: English, Afrikaans

Motor Vehicle License: code 08

Tel: (011) 504 1404 / 072 288 5496

Email: johan.nel@digbywells.co.za

#### EDUCATION

Potchefstroom Gimnasium (1993 – 1995)

Hoërskool Brandwag (1996-1997)

Matric Exemption (Standard 10 / Grade 12) English, Afrikaans, History, Art, Biology, Geography

University of Pretoria (UP) (1998-2001)

BA Degree (Bachelor of Arts) with Majors in Anthropology & Archaeology Subjects included: Anthropology, Archaeology, IsiZulu, History of Ancient Cultures, Geography, Philosophy.

University of Pretoria (UP) (2002)

BA (Honours) Degree specialising in Archaeology, focussed on Isotopic Analysis of Human Remains from the Ben Alberts Nature Reserve, Thabazimbi, and documentation of ritual initiation structures (phiri) from Maleoskop, Groblersdal.

University of Pretoria (UP) (2002)

Attended a course on physical anatomy and dissection for non-degree purposes.

University of Pretoria (UP) (2007 – present)

M.A (Magister Artium) Degree, specialising in Archaeology. Dissertation title: Finding Frontiers: An Archaeology of Landscape in South Africa's northern frontier during the last 500 years. The study uses a landscape approach to determine whether pottery analysis and settlement layout are adequate heuristics to interpret notions of 'frontiers' and identity. Received an National Research Foundation / Five Hundred Year Initiative research bursary over the years 2008 to 2009.

#### EMPLOYMENT

- 2010 – present: Archaeologist and CRM specialist, Digby Wells Environmentals
- 2005 – 2010: Co-owner and manager of Archaic Heritage Project Management, Cultural Heritage Resources Management consultancy company;
- 2004 – 2005: Resident, professional archaeologist, Rock Art Mapping Project based at Didima / Cathedral Peak, Ukhahlamba-Drakensberg World Heritage Site, Department of Geomatics, University of KwaZulu-Natal;
- 2003 – 2004: Freelance, professional archaeologist;
- 2002 – 2003: Special Assistant, Physical Anthropology Unit, Department of Anatomy, UP;
- 2000 – 2002: Technical Assistant, Physical Anthropology Unit, Department of Anatomy, UP;
- 1999 – 2000: Assistant in Mapungubwe Project, Department of Anthropology and Archaeology, UP;
- 1998 - 1999: Volunteer at National Cultural History Museum, Pretoria, Writer for BAT ('By About Town) arts section in Perdeby, official University of Pretoria student newspaper.

#### EXPERIENCE

Johan has volunteered at museums since childhood. His first formal experience in the archaeological and heritage environment during his tertiary studies, where he assisted professional archaeologists in cataloguing excavated material from a historical site in Pretoria. He was employed by the Department of Anthropology and Archaeology in his second year of study to assist in the Mapungubwe Project. This entailed collections management of certain artefacts from the Mapungubwe archaeological site to be included in the Mapungubwe Museum at UP. By his third year of study he was permanently employed by the Department of Anatomy, UP, where his training and experience included grave relocation, forensic archaeology, collections management, fossil preparation, as well as intensive archaeological fieldwork. He left this department soon after qualifying as a professional archaeologist to pursue a freelance career. He gained valuable experience in Cultural Resources Management, being contracted by established companies in addition to undertaking his own projects. In 2004 an opportunity arose for him to be the resident, professional archaeologist for the Rock Art Mapping Project. This entailed survey and documentation of known rock art sites, as well as the identification of new sites. Johan established Archaic Heritage Project Management with a partner towards the end of 2005. He managed this company until his appointment at Digby Wells in 2010. During the five years managing Archaic, Johan has undertaken numerous projects that included archaeological impact assessments and Phase 2 projects, grave relocation, social consultation, and general heritage research projects such as land claims. Current areas of expertise at Digby Wells include archaeological field work, historical research, managing Archaeological and Heritage Impact Assessments, and drafting and reviewing reports.

#### PROFESSIONAL MEMBERSHIPS

- Association of Southern African Professional Archaeologists (ASAPA): Professional Member
- ASAPA Cultural Resources Management (CRM) section: Accreditation in:
- Grave Relocation – Field Director
- Iron Age – Field Supervisor
- Rock Art – Field Supervisor
- International Association of Impact Assessors (South Africa)
- Society for Africanist Archaeologists (SAFA)

#### MARIKE FOURIE

Environmental Consultant at Digby Wells and Associates (DWA)

#### PERSONAL INFORMATION

Date of Birth: 08/09/1981

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Constantia Kloof, 1709

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#### EDUCATION

Florida High school (1994 – 1999)

Matric Exception (Grade 12) Distinctions in Biology, Mathematics, Tourism Management and History of Art, Scottish Exams (supplementary) 1999 Distinctions in Biology and Afrikaans

University of Pretoria (UP) (2000 – 2002)

Bhcs. Degree (Baccalaureas Hereditans Culturaeque Scientea) Specializing in Heritage Tourism Management. Prestige bursary holder for 3 consecutive years; this degree is based on intensive research on heritage resource management and emphasizes sustainable development. It focuses on the practical application of interdisciplinary academic theories. Subjects include: Tourism management, Geography, Computer Information Literacy (CIL), Archaeology, Anthropology, History and Heritage management.

University of Pretoria (UP) (2003 – 2004)

Bhcs. (Honours) Degree Cum Laude, focussed on Environmental Impact Assessment (EIA), sustainable development, African archaeology, Geography and Community development. Research report/Mini-thesis entitled: "Ethno-botanical assessment of the Blouberg region: Its significance for tourism", conducted under leadership of Prof. C.C. Boonzaaier.



The report focused on the potential of ethno-botanical tourism development at Blouberg, which is part of the 'African Ivory Route' Tourism Project in the Limpopo Province. (South Africa). Marike conceded her Bhcs (Hon.) degree with distinction.

#### University of Johannesburg (UJ) (2005 – 2006)

M.A (Magister Artium) Degree, specializing in Sustainable Development and tourism management, focusing primarily on development in the northern regions of the Limpopo Province; Activities include intensive research, implementation of sustainable principles, problem-solving, management evaluation, mission & goal definition, impact assessment, monitoring, strategic management and continuous feedback. Case study: Hananwa region (Blouberg) in the Limpopo Province.

#### Wildlife Campus (Ecolife) (2007 – 2008)

Wildlife Management, Certificate course focusing on the science of wildlife management, habitat management, game management, nutritional physiology of herbivores, nutritional chemistry for herbivores, wildlife nutrition, wildlife diseases, wildlife parasites, toxic plants, soil assessment, carrying capacity, assessing vegetation and integrated game reserve management. The wildlife management course is presented by Ecolife, owned and operated by Professor Wouter Von Hoven at the University of Pretoria's Centre for Wildlife Management (Wildlife campus)

#### University of Johannesburg (UJ) (2008 – current)

Doctoral Degree in Environmental Management in the Science Faculty, Department Geography, Environmental Management and Energy studies, focussing on the systematic analysis of impacts on archaeological and palaeontological resources in the Sterkfontein Caves of the Cradle of Humankind World Heritage Site, as result of groundwater pollution from mining on the West Rand

Lifetime Membership: Goldenkey International Honorary Society: Membership attained through academic achievement (Honorary Colours) in the BhcS. Degree at University of Pretoria (UP).

#### EMPLOYMENT

- 2006 – 2010 Environmental Consultant at Digby Wells and Associates (DWA), Randburg;
- 2005 – Lecturer in Sustainable Tourism Development at the University of Johannesburg (previously known as R.A.U);
- 2005 – Lecturer in Geography at Abbott's College, Northcliff;
- 2004 – Researcher for South African Veterinary Association (SAVA): Development of Veterinary Museum at Onderstepoort, Pretoria;
- 2004 – Administrative Assistant at Financial Services Compensation Scheme (FHCS), London, U.K;
- 2002 – 2003 : Research Assistant at University of Pretoria (UP), Archive Assistant & Part-time Travel Writer for Campus Newspaper, Perdeby

#### EXPERIENCE

Whilst completing a BhcS. (Hon) and Masters Degree, Marike has done intensive research, fieldwork and impact assessments in the Blouberg area, Limpopo Province. The Hananwa community formed an integral part of the Masters Degree in Sustainable Development as well as an Ethno-botanical assessment of the region. As lecturer in Sustainable Development, Tourism development and Geography at University of Johannesburg (UJ) and Abbott's College, she was responsible for the preparation of formal lectures, presentations, practical guidance (excursions) and student evaluation. Other work experiences such as Research assistant for South African Veterinary Association (SAVA) and University of Pretoria (UP) were primarily focussed on resource analysis, literature reviews, compilation of development proposals, data input and constructive recommendations. Current area of expertise at DWA lies in the formulation and implementation of sustainable development initiatives, archaeological impacts assessments and assisting with Environmental Impact Assessments (EIA), Environmental Management Plans (EMP), Scoping Reports and Closure Reports.