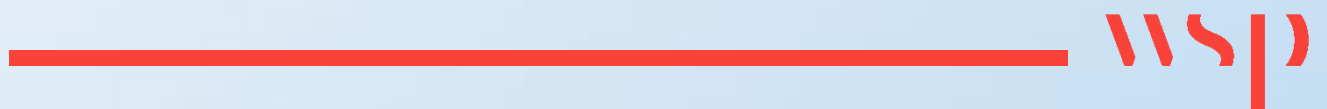


Appendix B

SPECIALIST CVS AND DECLARATIONS



Appendix B.1

SPECIALIST CVS



APPENDIX 1: SPECIALIST CURRICULUM VITAE

Johann Lanz Curriculum Vitae

Education

M.Sc. (Environmental Geochemistry)	University of Cape Town	1996 - 1997
B.Sc. Agriculture (Soil Science, Chemistry)	University of Stellenbosch	1992 - 1995
BA (English, Environmental & Geographical Science)	University of Cape Town	1989 - 1991
Matric Exemption	Wynberg Boy's High School	1983

Professional work experience

I have been registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science since 2012 (registration number 400268/12) and am a member of the Soil Science Society of South Africa.

Soil & Agricultural Consulting Self employed 2002 - present

Within the past 5 years of running my soil and agricultural consulting business, I have completed more than 170 agricultural assessments (EIAs, SEAs, EMPRs) in all 9 provinces for renewable energy, mining, electrical grid infrastructure, urban, and agricultural developments. I was the appointed agricultural specialist for the nation-wide SEAs for wind and solar PV developments, electrical grid infrastructure, and gas pipelines. My regular clients include: Zutari; CSIR; SiVEST; SLR; WSP; Arcus; SRK; Environamics; Royal Haskoning DHV; ABO; Enertrag; WKN-Windcurrent; JG Afrika; Mainstream; Redcap; G7; Mulilo; and Tiptrans. Recent agricultural clients for soil resource evaluations and mapping include Cederberg Wines; Western Cape Department of Agriculture; Vogelfontein Citrus; De Grendel Estate; Zewenwacht Wine Estate; and Goedgedacht Olives.

In 2018 I completed a ground-breaking case study that measured the agricultural impact of existing wind farms in the Eastern Cape.

Soil Science Consultant Agricultural Consultants International (Tinie du Preez) 1998 - 2001

Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

Contracting Soil Scientist De Beers Namaqualand Mines July 1997 - Jan 1998

Completed a contract to advise soil rehabilitation and re-vegetation of mined areas.

Publications

- Lanz, J. 2012. Soil health: sustaining Stellenbosch's roots. In: M Swilling, B Sebitosi & R Loots (eds). *Sustainable Stellenbosch: opening dialogues*. Stellenbosch: SunMedia.
- Lanz, J. 2010. Soil health indicators: physical and chemical. *South African Fruit Journal*, April / May 2010 issue.
- Lanz, J. 2009. Soil health constraints. *South African Fruit Journal*, August / September 2009 issue.
- Lanz, J. 2009. Soil carbon research. *AgriProbe*, Department of Agriculture.
- Lanz, J. 2005. Special Report: Soils and wine quality. *Wineland Magazine*.

I am a reviewing scientist for the *South African Journal of Plant and Soil*.



UNIVERSITY OF CAPE TOWN

we certify that

Johan Lanz

was admitted to the degree of

Master of Science

in Environmental Geochemistry

on 12 December 1997

Vice Chancellor

Registrar



herewith certifies that

Johan Lanz

Registration Number: 400268/12

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Soil Science (Professional Natural Scientist)

Effective **15 August 2012**

Expires **31 March 2025**



A handwritten signature in black ink, appearing to read 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. S. S. S.'.

Chief Executive Officer





Tebogo Khoza

Earth & Environment – Biodiversity & Geospatial, Planning & Advisory –
Aquatic Ecologist

CAREER SUMMARY

Tebogo is a SASS-accredited Aquatic Ecologist with a M.Sc. in Biodiversity and Conservation and has over 4 years' worth of experience in the environmental management field. He has spent 3 years within the consulting industry with focus on various aquatic-related studies thereby establishing himself as an aquatic ecologist. Tebogo has been involved in numerous Aquatic Ecology projects across various sectors including mining (e.g., coal, gold, platinum, diamond, titanium etc.), industrial (e.g., smelters, special economic zones, etc.), transport infrastructure upgrades (e.g., roads, airports, rapid transport systems, etc.), public utility services infrastructure (e.g., powerline installations, bulk water pipelines, etc.), as well as mixed-use, residential and commercial developments.

He has undertaken aquatic ecology surveys across Gauteng, Mpumalanga, Free-State, KwaZulu Natal and Limpopo provinces of South Africa and other African countries including Swaziland, Lesotho, Tanzania, Mali as well as along the Zambezi and Chobe rivers in Botswana, Zambia and Namibia. He has acted as lead Aquatic Ecologist for numerous projects, responsible for completion of the aquatic biodiversity and impact assessment surveys, report compilation and amendment to the report queries.

He has been involved at various levels of Specialist Input required for the nationally legislated environmental processes throughout South Africa, especially in the form of Environmental Impact Assessments (EIA's) or Environmental and Social Impact Assessments (ESIA's), Mining Right Applications (MRA's), Water Use License Applications (WULA's), as well as in fulfilment of Biodiversity Management Plans (BMP's).

<1 year with WSP

Area of expertise

ESIA
Aquatic Biomonitoring
Aquatic Biodiversity & Impact Assessment
Aquatic Ecology & Impact Assessment

4 years of experience

Language

English – Fluent
isiZulu – Fluent
Sesotho – Fluent
Setswana – Intermediate
Xitsonga – Intermediate
Sepedi – Intermediate

EDUCATION

Master of Science (Msc) Biodiversity & Conservation, University of Johannesburg, South Africa	2018
Bachelor of Science (Hons) Zoology, University of Johannesburg, South Africa	2015
Bachelor of Science (BSc) Biochemistry & Zoology, University of Johannesburg, South Africa	2014

ADDITIONAL TRAINING

Basic First Aid	2021
IUCN Red List Categories and Criteria Updated	2020



Tebogo Khoza

Earth & Environment – Biodiversity & Geospatial, Planning & Advisory –
Aquatic Ecologist

Defensive Driving Course	2020
Environmental Impact Assessment for Reviewers	2018
Advanced Driving Skills	2015

PROFESSIONAL MEMBERSHIPS

SACNSP - Candidate Natural Scientist, South African Council for Natural Scientific Professions – Member No. 119651	2018
SASS5 - South African Scoring System version 5 practitioner, DWA	2018

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd	June 2022 – present
Digby Wells Environmental, Johannesburg, Aquatic Ecologist	November 2019 – May 2022
GCS Water & Environmental (Pty) Ltd. Junior Aquatic Ecologist	March 2019 – November 2019
The Biodiversity Company (Pty) Ltd. Junior Natural Scientist	September 2018 – March 2019
Gauteng Department of Agriculture & Rural Development	March 2018 – August 2018

PROFESSIONAL EXPERIENCE

ESIA

Karo Platinum, Environmental and Social Impact Assessment (ESIA) for the proposed powerline, Chegutu, Zimbabwe
2022

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Barrick Gold, Environmental and Social Impact Assessment for the proposed Gena-Gokona. Expansion Project, Nyamongo, Tanzania
2022

Aquatic Biologist

Field assistant and data Collation.

Aquatic Biomonitoring

Richards Bay Minerals, Aquatic Biomonitoring for the Smelter and Processing Site, KwaZulu Natal, South Africa
2022 – Ongoing

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Exxaro Coal Mpumalanga, Aquatic Biomonitoring Programme for the Belfast Implementation Project, Mpumalanga, South Africa
2022 – ongoing

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Tebogo Khoza

Earth & Environment – Biodiversity & Geospatial, Planning & Advisory –
Aquatic Ecologist

National Petroleum Refiners of South Africa, Aquatic Biomonitoring Programme associated with Natref's Sasolburg Operations, Free State, South Africa

2022 – ongoing

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Omnia Fertilizer, Aquatic Biomonitoring and Whole Effluent Toxicity testing along the Taaibosspruit, Free State, South Africa

2022 – ongoing

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Sasol Sasolburg, Aquatic biomonitoring programme associated with Sasol's Sasolburg Operation, Free State, South Africa

2022 – ongoing

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

KBP-JV, Environmental Monitoring for the Kazungula Bridge Project, Kasane, Botswana

2021 – 2022

Aquatic Biologist

Field assistant for quarterly aquatic biomonitoring surveys and data collation.

Barrick Gold, Aquatic Biomonitoring at the Loulo & Gounkoto Gold Mining Complex, Loulo, Mali

2021

Aquatic Biologist

Field assistant and data collation.

Exxaro Resources, Malta Colliery Aquatic Biomonitoring at the Matla Colliery Mpumalanga, South Africa

2019 – 2022

Aquatic Biologist

Responsible for undertaking quarterly aquatic biomonitoring surveys, data collation and report writeup.

Mafube Coal, Aquatic Biomonitoring at the Mafube Colliery Mpumalanga, South Africa

2020 – 2022

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Sasol Defunct Sigma Colliery, Aquatic Biomonitoring for the proposed Ash Backfilling Project at Defunct Sigma Colliery Free State, South Africa

2020 – 2022

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Sasol Mooikraal Colliery, Aquatic Biomonitoring for the Mooikraal Colliery Free State, South Africa

2020 – 2022

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Ivanplats, Aquatic Biomonitoring for the Ivanplats complex Limpopo, South Africa

2021

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Harmony Gold, Aquatic Biomonitoring for the Kusasalethu Operations Gauteng, South Africa



Tebogo Khoza

Earth & Environment – Biodiversity & Geospatial, Planning & Advisory –
Aquatic Ecologist

2021 – 2022

Aquatic Biologist

Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.

Aquatic Biodiversity & Impact Assessment

Sasol, Aquatic Biodiversity and impact assessment desktop screening for the proposed Sasol Boegoebaai Green Hydrogen and Renewable Energy Project, Northern Cape, South Africa
2022

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment report compilation.

Tronox Mineral Sands, Aquatic Biodiversity and Impact Assessment for the mining of the Tronox Port Dunford Resource, KwaZulu Natal, South Africa
2022

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Universal Coal, Aquatic Biodiversity and Impact Assessment Update for the Proposed Environmental Regulatory Process for the New Clydesdale Colliery Mining Right Area, Limpopo, South Africa
2021

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Pan African Resources, Aquatic Biodiversity & Impact Assessment for the Pan African Resources PLC Environmental Application Process, Gauteng, South Africa
2021

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Far West Gold Recoveries, Aquatic Ecology and Impact Assessment for the Far West Gold Recoveries Kloof Application, Gauteng, South Africa
2021

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation

Copper Sunset Sand, Aquatic Ecology and Impact Assessment for the Proposed Sand Mine Expansion, Gauteng, South Africa
2021

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Universal Coal, Aquatic Ecology and Impact Assessment for the Proposed Dalyshope Coal Mining Project, Limpopo, South Africa
2020

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Fetakgomo-Tubatse Municipality, Aquatic Ecology and Impact Assessment for the Proposed Fetakgomo-Tubatse Special Economic Zone (FTSEZ), Limpopo, South Africa
2020

Aquatic Biologist

Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.



UNIVERSITY
OF
JOHANNESBURG

The Council and the Senate of the
UNIVERSITY OF JOHANNESBURG
hereby certify that the degree

Master of Science

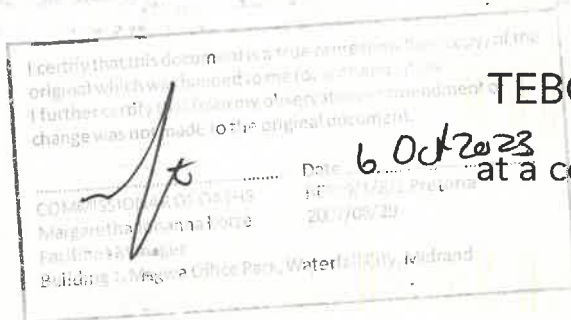
with field of study

Biodiversity and Conservation

with all its associated rights and privileges
in accordance with the Statute of the
University has been conferred upon

TEBOGO MAGUDU KHOZA

at a congregation of the University



Vice-Chancellor



Registrar



16 May 2019
Johannesburg
ID/Passport No: 9304265232089



N00063904



herewith certifies that
Tebogo Magudu Khoza
Registration Number: 119651
is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Candidate Natural Scientist)
Aquatic Science (Professional Natural Scientist)

Effective **1 August 2018**

Expires **31 March 2025**



A handwritten signature in black ink, appearing to read 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. Lesauw'.

Chief Executive Officer



9. Appendix: CV of Dr Caroline Lötter

Name: DR CAROLINE ANGELA LÖTTER (NEÉ YETMAN)

Name of Firm: Inkululeko Wildlife Services (Pty) Ltd

Position: Managing Director

Date of Birth: 6 November 1979

Nationality: South African

Languages: English, Afrikaans

QUALIFICATIONS and PROFESSIONAL REGISTRATION

- PhD – Zoology (University of Pretoria: 2003-2011)
- MSc – African Mammalogy (University of Pretoria: 2002)
- BSc Hons – Zoology (University of Pretoria: 2001)
- BSc – Ecology (University of Pretoria: 1998-2000)
- Registered with SACNASP (no. 400182/09) as a Professional Natural Scientist in the field of Zoology

KEY EXPERIENCE

- **Specialist Assessments:**
 - Long-term bat monitoring at more than 70 wind farm sites in southern Africa, including field work, desktop research, report writing, and project management.
 - Surveys and impact assessments for the Square Kilometre Array project and several bat caves.
 - Baseline and impact assessments for fauna in general at over 100 sites in South Africa.
 - Biodiversity Management Plans for large South African mining complexes.
 - Specialist Giant Bullfrog assessments for more than 50 proposed development sites.

EMPLOYMENT EXPERIENCE

- **Inkululeko Wildlife Services, Johannesburg (June 2019 – present)**
Position Title: Managing Director and Senior Zoologist
 - Bat project management
 - Proposals
 - Desktop research
 - Field work
 - Reporting and report reviews
 - Analysis and reporting of data for peer-review publication
 - Co-author of South African pre-construction bat monitoring guidelines (MacEwan *et al.* 2020a)
 - Co-author of article on bat activity in South Africa and its implications for wind farm development (MacEwan *et al.* 2020b)
- **Natural Scientific Services, Johannesburg (November 2011 – April 2019)**
Position Title: Senior Zoologist
 - Bat, faunal, and general biodiversity (i.e., faunal, flora, wetland, and aquatic) project management
 - Proposals
 - Desktop research
 - Field work
 - Reporting and report reviews
 - Analysis and reporting of data for peer-review publication





University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Doctor of Philosophy in Zoology

with all the associated rights and privileges
was conferred on

Caroline Angela Yetman

in terms of the Higher Education Act, 1997 and the Statute of the University

On behalf of the Council and Senate

On behalf of the Faculty of
Natural and Agricultural Sciences

C. de la Rey

Vice-Chancellor and Principal



Albin

Dean

N. G. me'

Registrar

EK SERTIFISEER DAT HIERDIE DOKUMENT 'N WARE AFDRUK (AFSKRIF) IS VAN
DIE OORSPRONKLIKE DOKUMENT WAT AAN MY VIR WAARNEMING VOORGELE
IS. EK SERTIFISEER VERDER DAT, VOLGENS MY WAARNEMINGS, DAAR NIE 'N
WYSIGING OF VERANDERING OP DIE OORSPRONKLIKE DOKUMENT AANGE-
BRING IS NIE.

I CERTIFY THAT THIS DOCUMENT IS A TRUE REPRODUCTION (COPY) OF THE
ORIGINAL DOCUMENT WHICH WAS HANDED TO ME FOR AUTHENTICATION.
FURTHER CERTIFY THAT, FROM MY OBSERVATIONS, AN AMENDMENT OR A
CHANGE WAS NOT MADE TO THE ORIGINAL DOCUMENT.

HANDTEKENING/SIGNATURE

MAGSNOMMER 00048718-3 RANG RANG

NAME IN DRUKSKRIF NAME IN PRINT



herewith certifies that
Caroline Angela Yetman
Registration Number: 400182/09
is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)
Zoological Science (Professional Natural Scientist)

Effective **8 September 2009**

Expires **31 March 2025**



A handwritten signature in black ink, appearing to read 'A. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. S. S. S.'.

Chief Executive Officer



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

CAREER SUMMARY

Rudolph's current role is that of a senior terrestrial ecologist focusing on biodiversity, with specific reference to fauna and flora biodiversity management. In this capacity he is responsible for the execution and management of terrestrial ecological and biodiversity studies and the management of numerous specialists who perform this function under his leadership. He has completed numerous independent reports where the sole focus was terrestrial ecology and biodiversity as well as integrated projects such as EIA reports and ESIA reports. With regards to the latter, he has extensive experience in the interrelationship of the various biotic and abiotic specialist components and the concepts that can have an impact and must be discussed. These reports are used for environmental authorizations or are focused specialist studies which meet local and international standards. He is well versed in the demands of inter disciplinary cooperation and has executed projects where a combination of highly qualified specialists have collaborated. He has experience in stakeholder engagement where the relationships with NGO's and other interested and affected parties must be established for the completion of projects to an acceptable international standard. Rudolph has extensive experience in the application of the International Finance Corporation Performance standards, specifically performance standard 6. In this field he has worked within the extractive and energy sectors across Africa to ensure their compliance to IFC PS6. In applying international best practice he has gained experience in applying the No Net Loss and Net Positive Impact approaches for Biodiversity in a business context. He has experience in applying leading practice according to the Equator Principles, Business and Biodiversity Off-set Program, the Cross Sectoral Biodiversity Initiative, the Energy and Biodiversity Initiative, Fauna and Flora International standards, the International Petroleum Industry Environmental Conservation Association's guidance documents, the Economics of Ecosystems and Biodiversity and World Bank criteria, specifically Criteria 7. Rudolph is responsible for off set design after a mitigation hierarchy is applied, in this regard he compiles Biodiversity Land Management Programs/Biodiversity Action Plans, where various specialist studies are collated into a working document for clients to aid in pre or post mining management and achieving the No Net Loss and Net Positive Impacts. Further to this he is also involved in rehabilitation design studies which entail the planning, implementation and monitoring of vegetative rehabilitation. He is responsible for the planning of post mine land use and the various methods utilized to achieve this.

Rudolph also fulfils the role of project manager. Here he manages national and international projects across Africa, specifically west, central and southern Africa, managing a multi- disciplinary team of specialists.

Rudolph is also involved in the acquisition of regulatory permits for clients, this includes the planning of relocation strategies for protected and endangered plant species in areas where mines are to be established. This involves the planning and execution of data gathering surveys. Thereafter he manages the process involving relevant provincial and National authorities in order to obtain the specific permit that allows for a development to continue.

Information pertaining to the technical expertise of Rudolph includes knowledge and working experience in the following:

- Environmental Impact Assessments (EIAs), Basic Assessments and Environmental Management Plans (EMPs) for environmental authorisations in terms of the South African National Environmental Management Act (NEMA), 1998 (Act 107 of 1998);
- Implementation of Government Notice 320 (dated 20 March 2020) and Government Notice 1150 (dated 30 October 2020) in terms of NEMA: "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation;
- Environmental pre-feasibility studies for gold tailings reclamation and iron ore and coal mining projects;
- Convention on Biological Diversity, Strategic Planning for Biodiversity, Mechanisms for implementation, Cooperation and Partnerships;



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

- Business and Biodiversity Off Sets program, standards on biodiversity off sets;
- International Finance Corporation (IFC) related projects across central and west Africa, applying performance standards and Equator Principles on the Environmental Health and Safety Guidelines set down by the IFC;
- International Council for Mining and Metals, Conservation of Biodiversity and Integrated approaches to land use planning;
- European Investment Bank; application of sustainability principles, such as those of the International Finance Corporation (part of the World Bank Group), in particular on biodiversity. Standard 3 on Biodiversity and Ecosystems, as part of the EIB Environmental and Social Standards;
- Environmental and Social Impact Assessments (ESIA) for Environmental Authorisation;
- Environmental off-Set studies, determining off-set liability, applying the Mitigation hierarchy and best practice in the form of IFC performance standard 6.
- Large Mammal Monitoring Projects;
- Biodiversity Assessments including Mammalia, Avifauna, Herpetofauna and Arthropoda Environmental Impact Assessments (EIA) based Impacts to the terrestrial Ecological environment;
- Geographic Information Systems (GIS), frequent use of ArcGIS, QGIS.
- Biodiversity Action Plan, design and Implementation;
- Biodiversity and Land Management Programs;
- Protected plant species management strategies planning and implementation;
- Monitoring of rehabilitation success by means of vegetation establishment;
- Rehabilitation planning;
- Environmental auditing of rehabilitated areas;
- Project management of ecological specialist studies;
- Planning and design of Rehabilitation off-set strategies.

0.1 years with WSP

16 years of experience

Area of expertise

Terrestrial Ecology

Language

English

EDUCATION

B-tech Degree in Nature Conservation, Nelson Mandela Metropolitan University (NMMU) 2005-2006
National Diploma in Nature Conservation, Nelson Mandela Metropolitan University (NMMU) 2001-2004.



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

SKILLS

Project management and leadership skills;

Sound organizational, good people skills;

Good verbal presentation, written communication, language skills and excellent report writing skills;

Researching, analysing and integrating data;

Working experience in Environmental Impact Assessment processes and knowledge of the Environmental Impact Assessment Regulations 2010 & 2014;

Understanding of the Municipal Land Use application processes;

Knowledge and experience in the National Environmental Management Act, (No. 107 of 1998), as amended;

Knowledge and working experience of the National Environmental Management: Biodiversity (Act no. 10 of 2004) and the National Management Protected Areas (Act no. 57 of 2003);

Experience in working with multi-stakeholder groups, organizations;

Working experience in Geographical Information Systems;

Advanced computer skills (Microsoft (MS) word, MS excel, MS PowerPoint, Internet & Email, GIS and Remote Sensing), QGIS;

Ecstatus classification, specifically Riparian Vegetation Response Index.

ADDITIONAL TRAINING

Measurements of Biodiversity at the University of the Free State, led by Prof. M. T. Seaman. September 2008

IFC performance standards implementation training, Lee-Ann Joubert, January 2013

Bird Identification course led by Ettiene Marais November 2009

Introduction to VEGRAI and Eco-classification led by Dr James Mackenzie December 2009 and January 2018

Dangerous snake handling and snake bite treatment with Mike Perry 2011, 2015.

Rehabilitation of Mine impacted areas, with Fritz van Oudshoorn, Dr Wayne Truter and

Gustav le Roux 2011.

First aid Level 2, School of Emergency and Critical Care, Netcare, 2013

First aid Level 2, National First Aid Academy, 2017

PROFESSIONAL MEMBERSHIPS

South African Council for Natural Scientific Professions, Professional Natural Scientist in the field of practice Conservation Science, registration number, 400018/17 8 years

IAIA, International Association for Impact assessments 7 years

Botanical Society of South Africa; 7 years

The Land Rehabilitation Society of Southern Africa, LARSA (Membership No. 0085); 7 years



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

Grassland Society of Southern Africa.

7 years

PROFESSIONAL HISTORY

Current WSP Group Africa (Pty) Ltd	2024
Founder, Owner, AES Eco Solutions, Johannesburg.	2021 - 2024
Senior Biodiversity Specialist ERM, Johannesburg	2020-2021
Digby Wells Environmental, Johannesburg, International. Manager: Group Biodiversity.	2016-2019
Digby Wells Environmental, Johannesburg, International. Unit Manager: Fauna, Flora and Wetlands	2011-2016
Digby Wells and Associates, Johannesburg, South Africa. Senior Consultant.	2009-2011
Digby Wells and Associates, Johannesburg, South Africa. Consultant	2006-2009
Shamwari Game Reserve, Eastern Cape, South Africa	2002-2003
Kop-Kop Geotechnical instrumentation specialists, Johannesburg, South Africa	2001

PROJECT EXPERIENCE

HDF Energy Renewable Power Plants, Mpumalanga South Africa, 2023-2024

Terrestrial Biodiversity Lead.

Responsible for the Terrestrial Ecology specialist functions from Scoping through to EIA phases.

Khanyazwe Flexpower Gas Powerplant, Malelane, South Africa 2023-2024

Terrestrial Biodiversity Lead.

Responsible for the Terrestrial Ecology specialist functions from Scoping through to EIA phases.

Eskom Distribution Perseus-Zeus walkdown, Free State, Mpumalanga, Gauteng Provinces. 2023-2024

Terrestrial Biodiversity Lead.

Responsible for the Terrestrial Ecology specialist functions from Scoping through to EIA phases.

Everest SPP, Distribution Lines, BESS, Welkom, Free State. 2023-2024

Terrestrial Biodiversity Lead.

Responsible for the Terrestrial Ecology specialist functions from Scoping through to EIA phases.

Client Confidential, Two Solar Power Plants, Kathu, Northern Cape 2023

Terrestrial Biodiversity Lead.

Responsible for the Terrestrial Ecology specialist functions from Scoping through to EIA phases.

Engie SPP, Free State, South Africa 2024

Terrestrial Biodiversity Lead.

Dwarf Succulents inventory, and Relocation strategies.



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

**Randgold Resources Limited, Tongon Off-set project, Ivory Coast,
2012-15**

Project Lead Technical Specialist

Applying IFC, BBOP and other best practice guidelines in designing an Off-set project for the residual Impact of the Tongon Gold Mine

**DPN Direction des Parcs Nationaux du Sénégal, Annual Large Mammal Monitoring in the Niokola Koba National Park, Senegal,
2018/19**

Aerial game counter, project specialist

Applying Aerial, Ground and vehicle, large mammal monitoring techniques in the National Park.

**Barrick Gold, Biodiversity Management for Massawa Gold Mine, Senegal
2015**

Project management

With the discovery of Western Chimpanzees in close proximity to the project area, detailed field work was conducted by world renowned experts. Leading to various mitigation measures. Completed in accordance with IFC PS 6 standards.

**CIC energy, Mmamabula Energy Project (MEP)., Botswana
2010-2013**

Technical Specialist Ecologist,

Construction of a railway, opencast mine, wellfield, conveyors, addits, housing.

**Orlight SA, Orlight Solar PV Power Project, South Africa,
2015-2016**

Technical Specialist

Ecologist Environmental Impact Assessment (EIA) process for five proposed Solar Photovoltaic (PV) Power Plants

**CSIR, Twenty Nine Capitol, South Africa,
2018**

Technical Specialist

Ecologist Photovoltaic Power stations

**Randgold Resources Limited, Tongan Biodiversity Land Management Plan, Ivory Coast
2014**

Technical Specialist Ecologist,

Project Manager Design, compilation and implementation of the BLMP, Completed in. accordance with IFC PS 6 standards.

**Randgold Resources Limited, Kibali Gold mine, DRC Congo
2010-2017**

Technical Specialist Ecologist

Gold mine infrastructure, Completed in accordance with IFC PS 6 standards.

**Randgold Resources Limited, Kibali Gold mine, DRC Congo
2016**

Technical Specialist Ecologist

ESIA Update, Completed in accordance with IFC PS 6 standard.

Randgold Resources Limited, Nzoro Hydroelectric station, DRC Congo



RUDOLPH GREFFRATH

Terrestrial Biodiversity Specialist

2014

Technical Specialist Ecologist

Hydroelectric plant, Completed in accordance with IFC PS 6 standards.

Randgold Resources Limited, Loulo Biodiversity Land Management Plan, Mali

2015-2017

Technical Specialist Ecologist, Project Manager

Design, compilation and implementation of the BLMP, Completed in accordance with IFC PS 6 standards.

Koidu Diamond Mine, Mali

2014

Technical Specialist Ecologist, Project Manager

Design, compilation and implementation of the BLMP, Completed in accordance with IFC PS 6 standards

Temo Coal, Resource Generation, South Africa,

2016-2017

Technical Specialist Ecologist

Coal mine/Railway Line.

Glencore, Impunzi Rehabilitation monitoring, South Africa,

2009-2010

Technical Specialist, Flora specialist, Project manager

Monitoring of rehabilitation success and suggested management measures.

PUBLICATIONS

Biodiversity Action Plans for faunal habitat maintenance and expansion in mining. Poster presented at the 48th Annual Grassland Society of Southern Africa (GSSA) conference.

Limpopo Province South Africa – the Biodiversity perspective Paper presentation, presented at the Limpopo Minerals Conference and Trade show, hosted by the fossil fuel foundation and LEDET, 2015/11/11.

Sustainability and Biodiversity Strategic Planning, Randgold Resources, 2018.

Niokola Koba National Park, Senegal. Annual Census of Large Mammals, contributing author, 2018.



**Nelson Mandela
Metropolitan
University**

This is to certify that, all the requirements having been met, the degree

Baccalaureus Technologiae

NATURE CONSERVATION

with all the associated rights and privileges, was conferred upon

Rudolph Johannes Greffrath

(ID No.: 7804055043085)

at a congregation of the Nelson Mandela Metropolitan University on
19-APRIL-2006

Certificate No.: 20063827


CAPT
S.K. MOGOTLANE

Vice-Chancellor

2009-06-23

Registrar

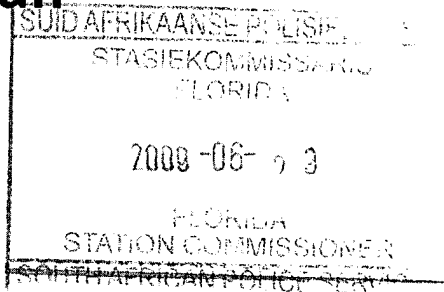
FLORIDA
STATION COMMISSIONER

SOUTH AFRICAN POLICE SERVICE



**Nelson Mandela
Metropolitan
University**


CAPT
S.K. MOGOTLANE



CHIEF
CLERK
OFFICE
PRINT

This is to certify that, all the requirements having been met, the three-year

National Diploma

NATURE CONSERVATION

with all the associated rights and privileges, was awarded to

Rudolph Johannes Greffrath

(ID:7804055043085)

at a congregation of the Nelson Mandela Metropolitan University on

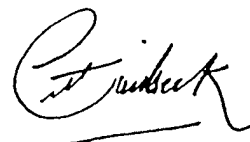
17-MAR-2005

Cert. No. 20051170





Vice-Chancellor



Registrar



herewith certifies that
Rudolph Johannes Greffrath

Registration Number: 400018/17

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Conservation Science (Professional Natural Scientist)

Effective **25 January 2017**

Expires **31 March 2025**



A handwritten signature in black ink, appearing to read 'R. Greffrath'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. Maseko'.

Chief Executive Officer





Heather Davis

Earth & Environment, Mine Waste, Geotechnical & Material Services – Geotechnical Team Lead

CAREER SUMMARY

Over forty years of experience within the fields of geotechnical engineering and engineering geology. Most of the work has been gained in Sub Saharan Africa including South Africa, Swaziland, Botswana, Malawi, and Angola. A wide range of projects have been handled ranging from investigations for large projects such as coal fired power stations, hydroelectric power schemes, mine processing plants, major freeways and major pipelines to smaller scale projects for commercial developments and residential buildings. Forensic investigations have, also, been completed for failed tailings facilities, structures and slopes.

Responsibility has been taken for all facets of the geotechnical investigation including the site investigation planning, procurement, drilling supervision, fieldwork, in situ testing, analysis, reporting and supervision during construction. Contract documentation and administration for geotechnical investigations has, also, been handled.

Extensive experience in dolomitic terrain and was involved in the re-drafting of SANS 1936 Parts 1 and 2 and subsequent revisions to the standard. Also, involved in the ECSA feasibility study to have a specified category of registration for D4 level dolomite geo-professionals. Dolomite assessments for large facilities such as the Telkom site in Centurion, the Mispah tailings facility as well as for residential complexes and individual units have been carried out. Linear dolomitic assessments for roads and pipelines have been completed.

Heather is a registered professional engineer, a fellow of the South African Institution of Civil Engineers and served as Treasurer of the Geotechnical Division from 2006 to 2020.

2 years with WSP

40 years of experience

Area of expertise

Site Investigations

Forensic Assessments

Dolomitic Terrain Assessments

Problem Soil Assessments

Language

English – Fluent

EDUCATION

Graduate Diploma in Civil Engineering in the field of Geotechnical Engineering, University of the Witwatersrand SA	1993
BSc (Honours) Engineering Geology and Geotechnics, Portsmouth University, England	1982

PROFESSIONAL MEMBERSHIPS

ECSA – Professional Engineer, Engineering Council of South Africa – Member No. 960229	1996
SAICE - Fellow of the South African Institution of Civil Engineering	1998

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd	April 2022 – present
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Heather Davis

Earth & Environment, Mine Waste, Geotechnical & Material Services – Geotechnical Team Lead

Jones & Wagener (Pty) Ltd (following the merger with Verdi Consulting)	January 2018 – March 2022
Verdi Consulting Engineers (Pty) Ltd	March 2014 – December 2017
AECOM SA (Pty) Ltd (formerly BKS (Pty) Ltd.	February 2007 – February 2014
ARQ (Pty) Ltd	January 2003 – January 2007
Knight Hall Hendry (Pty) Ltd	January 2001 – December 2003
VKE Engineers (Pty) Ltd	November 1987 – December 2000
National Building Research Institute of the CSIR	November 1985 – October 1987
Geological Survey of South Africa	November 1982 – October 1985

PROFESSIONAL EXPERIENCE

Western Range Iron Ore Mine Development, Liberia 2022 - 2023

Lead Geotechnical Engineer: South Africa Team

Design level geotechnical investigations for the Processing Plant, Quarries and several Tailings Residual Facilities were undertaken. The investigations included rotary core drilling, Cone Penetration testing and test pitting. All the data was analysed and assessed with recommendations provided for founding and required remedial measures. A challenging project due to the shallow water table which reaches the surface during the wet season.

Wessels and Mamotwan Mine Geotechnical Investigations, Hotazel, South Africa 2022 – 2024

Lead Geotechnical Engineer.

Geotechnical investigations carried out to allow the Mine to comply with International Standards with regard to information pertaining to the Tailings Residue Facilities (TSF). In addition, rail lines are to be constructed across the TSFs in places. Investigations including rotary core drilling, Cone Penetration Testing, test pitting and sampling of the tailings streams were undertaken. Comprehensive reports issued.

SANRAL, N1 Sections 20 and 21 Geotechnical Investigation, Brakfontein, South Africa 2008 to 2012

Lead Geotechnical Engineer

Upgrade, extensions and additions to the N1 Ben Schoeman Freeway, Sections 20 and 21, between the Brakfontein and Allandale Interchanges as part of the Gauteng Freeway Improvement Project (GFIP) carried out for South African National Roads Agency SOC Ltd (SANRAL). Contract documentation for the subsurface investigation was drafted and all components of the project management of the SANRAL contract were handled. The site investigation included extensive rotary core drilling, percussion drilling and test pitting. Work included the analysis, assessment and provision of founding recommendations for the 22km of dual carriageway. Design components included culverts, retaining walls, cut slopes, embankments and bridges founded on ancient granite, sedimentary rocks of the Pretoria Group along with dolomite and dolomitic residuum. Both conventional and piled foundations were used for the various bridge structures and elements.

SANRAL, N11 Section 9, Hendrina, South Africa 2015 to 2016

Lead Geotechnical Engineer

Upgrade of National route N11 Section 9 between Hendrina and Hendrina Power Station. Planning and supervision of the linear investigation, by means of rotary drilling and test pitting, of 18.56km of roadway including two river bridges, cuts, fills and culverts. Full report complied including recommendations for all

Heather Davis

Earth & Environment, Mine Waste, Geotechnical & Material Services – Geotechnical Team Lead

facets of the project. All work carried out as per the current SANRAL requirements and all contract administration for the drilling investigation handled.

SANRAL, National Route N5, between Harrismith and Kestell, Harrismith and Kestell, Orange Free State, South Africa 2011 to 2013

Lead Geotechnical Engineer

Carried out for SANRAL, which included drafting the contract documentation for the subsurface investigation which included extensive rotary core drilling and test pitting. The project includes the rehabilitation of the National Route 5 involving extending existing bridges, design and construction of new bridges and design of significant culvert structures. The bridge structures included river bridges, road over rail and road over road structures. Work carried out included supervision of the site investigation, analysis and provision of founding recommendations for all structures, contract administration and arbitration of claims.

Anglo Platinum. Mogalakwena Platinum Mine, New Northern Concentrator, Limpopo, South Africa. 2020 to 2021

Lead Geotechnical Engineer

Pre-feasibility and feasibility level investigations for the New Northern Concentrator. Supervision of all field work and provision of recommendations for all the structural elements. Additional design level investigation carried out for the M3C BOS Low Grade Stockpile.

NMPP/ Transnet, Multi Products Pipeline, Geotechnical Investigation, Johannesburg. South Africa 2008 to 2009

Section Lead Geotechnical Engineer

Geotechnical input for pipeline section running from Kendal to Waltloo and Jameson Park to Langlaagte in Johannesburg. Investigations have included test pitting; in situ testing and borehole have included test pitting, in situ testing and borehole drilling. The assessment of the route underlain by dolomite and dolomitic residuum was, also undertaken.

TCTA, Vaal River Eastern Sub-System Augmentation, Vaal, South Africa 2006 to 2008

Lead Geotechnical Investigation

Geotechnical investigation for TCTA for a pipeline to carry water from the Vaal Dam to Secunda for use by SASOL and ESKOM. Planning and preparation of contract documentation for drilling, trenching programmes, laboratory and in situ testing. Extensive field work was completed, and recommendations provided for trench sidewall stability, excavatability, construction through problem areas and recommendations for design and construction of the surge tanks, pipe bridges, abstraction works, de-silting works and access roads.

Aquarius Mining. Marikana, Mine Processing Plant, Rustenburg, South Africa 2001 to 2002

Geotechnical Engineer – Plant side

Several candidate sites and the detailed Geotechnical investigation of the final site for the processing plant for new platinum mine. Foundation recommendations for all plant elements were provided including those for silos, mills, crushers and conveyor trestles. Foundation design for large vibratory plant elements. Ongoing foundation inspections and providing geotechnical advice and recommendations to the client throughout construction.

Eskom, Medupi and Kusile Power Stations, Investigations and Foundation Assessments, Limpopo, South Africa 2008 to 2014

Lead Geotechnical engineer for AECOM

Assessment carried out for Hitachi/Eskom of existing information regarding the founding conditions. Provision of structure specific foundation recommendations which included settlement analysis, assessment of bearing capacity and determination of parameters for dynamic design. Site inspections and assessment of ground

Heather Davis

Earth & Environment, Mine Waste, Geotechnical & Material Services – Geotechnical Team Lead

conditions during construction for both Kusile and Medupi. Also, project manager for an additional geotechnical investigation carried out at Medupi Power Station due to unforeseen ground conditions. Investigation included percussion drilling with the Jean Lutz computerised system along with triple tube rotary drilling. Analysis of data allowing optimisation of the power station design.

Harmony Goldfields, Mispah, Tailings Storage Facility, Far West Rand 2017 to 2018

Geotechnical Team Lead

Failure of a section of the Mispah Tailings Storage Facility (TSF) which is underlain by dolomite, dolomitic residuum and rocks of the Karoo Supergroup. The initial assessment lead to the entire facility being re-assessed and candidate sites for new facilities being investigated. Of specific note was the liaison with several other geotechnical/engineering geological consulting firms regarding the failure.

Irene Village, Mall Extensions, Centurion, South Africa 2015 to 2018

Dolomite Specialist

In depth assessment of existing information applicable to the Irene Village Mall retail development in Irene. Dolomite stability assessments for extensions to the existing shopping mall including the addition of a multi-level parkade and additional retail space. Provision of founding recommendations for all facets of the development including earthworks, roadways and foundations.

Gautrans. Gautrain Project, Centurion, South Africa 2007 to 2014

Geotechnical Engineer

Input and comment on aspects of the route underlain by dolomite including the Centurion Gautrain Station were provided. Assessment of the efficacy of the remedial measures utilised at the station including an extensive programme of grouting. Also, investigation of dolomite related subsidence and a sinkhole adjacent to the Gautrain route and below a raised section of the train line in the Centurion area. Subsequent design of the remedial measures for the sinkhole, drainage measures and long-term monitoring of the area.

Africa Kingdom Holdings. Serengeti Golf and Wildlife Estate, Estate Developments, Kempton Park, South Africa 2016 to 2022

Dolomite Specialist

Dolomite stability assessments, coupled with near surface investigations, of parcels of land throughout the Serengeti Golf and Wildlife Estate. Developments have included single, double and triple storey residential units, Hotel, Club House and artificial lake. All reports have been submitted to the Council for Geoscience (CGS) and have included IHC to IHC7 conditions with Dolomite Area Designations of D2 to D4 being represented. NHBRC applications have been made for all the residential developments.

Aerosud, Manufacturing Facility, Pierre van Ryneveld Park, Centurion . South Africa 2016 to 2018

Dolomite Specialist

Various dolomite stability investigations and reviews have been undertaken for warehouses, ablution blocks, workshops, parking areas and other infrastructure elements across the Aerosud manufacturing facility. All work has, and is, being carried out according to SANS 1936 Parts 1 to 4 of 2012. A Dolomite Risk Management Plan was drafted for the Aerosud Facility and is updated on a regular basis. The site manly classifies as IHC4 to IHC7 with Dolomite Area Designation D2 and D3 being applicable to most of the site.



UNIVERSITY OF THE WITWATERSRAND,
JOHANNESBURG

GRADUATE DIPLOMA IN
ENGINEERING

THIS IS TO CERTIFY THAT

HEATHER DAVIS

having satisfied the Senate in respect of the completion of the prescribed courses
is hereby granted the Graduate Diploma in Engineering

IN THE BRANCH OF

CIVIL ENGINEERING

Dean of the Faculty

Vice-Chancellor and Principal

Registrar

7 DECEMBER 1993

JOHANNESBURG

Penrose 20572 11/93 4aE6

It is hereby certified that
is a true copy of the original
document and is correct
in all particulars.
Hiermee word gesertifiseer
dat hierdie 'n ware afskrif is van
die oorspronklike dokument en dat
dit geen wendinge in dit
dokument bevat.
POSTMASTER
DATE 98.06.17
POSMEESTER
DATUM



Council for National Academic Awards

HEATHER MCEWAN

of PORTSMOUTH POLYTECHNIC

has been awarded the degree of
BACHELOR OF SCIENCE
with Second Class Honours (1st Division)
having completed a course in
ENGINEERING GEOLOGY AND GEOTECHNICS

6 July 1982



President

Portsmouth Polytechnic

Chairman

Chief Officer

Engineering Council of South Africa



This is to
certify
that

Heather Davis

is registered as

Professional Engineer

in terms of the Engineering Profession of South Africa Act
1990 (Act 114 of 1990)

Date

23 May 1996

Registration
Number

960229

A handwritten signature in black ink, appearing to read 'R. W. Allen', written over a horizontal line.

President

A large, stylized handwritten signature in black ink, written over a horizontal line.

Registrar





Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

CAREER SUMMARY

Kirsten is a Principal Air Quality and Acoustic Consultant with a Master of Science (Atmospheric Sciences) degree obtained from the University of the Witwatersrand. She is currently employed at the Johannesburg branch of WSP and has worked on various air quality and acoustic impact assessments; air quality management plans; air quality and acoustic monitoring projects; and air quality and acoustic modelling projects for a variety of clients over the past twelve years. She has provided consulting support to various client industries including petrochemical, mining, metallurgical, manufacturing and local government bodies, among others. She is also a registered Professional Natural Scientist (Pr.Nat.Sci.) with the South African Council for Natural Scientific Professions (SACNASP).

Countries of work experience gained include South Africa, Botswana, Mozambique, Madagascar, Somalia, Ethiopia, Serbia, Qatar and Kuwait.

12 years with WSP

14 years of experience

Area of Expertise

Air Quality Impact Assessments
Environmental Acoustic Impact Assessments
Air Quality Management
Ambient Air Quality and Acoustic Monitoring

Language

English – Fluent

EDUCATION

Master of Science, Atmospheric Sciences, University of Witwatersrand, Johannesburg, South Africa	2009
Bachelor of Science (Honours) Geography and Environmental Studies, University of the Witwatersrand, Johannesburg, South Africa	2006
Bachelor of Science, Geography and Environmental Studies, University of Witwatersrand, Johannesburg, South Africa	2005

ADDITIONAL TRAINING

CadnaA - Acoustics Training	2022
Snake Awareness Training	2016
Business-focussed Project Management	2013

PROFESSIONAL REGISTRATIONS

SACNASP – South African Council for Natural Scientific Professions – Registration No. 115870	2016
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ORGANIZATION MEMBERSHIPS

SASAS – South African Society for Atmospheric Sciences	2022
NACA – National Association for Clean Air	2016

WSP



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd

September 2011 – present

Climatology Research Group (University of the Witwatersrand)

January 2009 – April 2011

PROFESSIONAL EXPERIENCE

Acoustics

**National Petroleum Refiners of South Africa (Pty) Ltd, Environmental Acoustic Impact Assessment for the Hybrid Clean Fuels II Project, Sasolburg, Free State, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed Hybrid CFII upgrade project at the refinery. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Tronox Mineral Sands (Pty) Ltd, Environmental Acoustic Compliance Statement for a Mining Expansion, Mtunzini, KwaZulu-Natal, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake a desktop review of a proposed expansion to an existing mineral sands mining operation and provide a noise compliance statement in order to confirm that noise from the proposed expansion was a non-issue. Kirsten was responsible for conducting the assessment and compiling the noise compliance statement.

**Red Rocket South Africa, Environmental Acoustic Compliance Statement for two Solar PV Facilities, Thuthukani, Mpumalanga, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake a desktop review of two proposed solar PV facilities and provide a noise compliance statement in order to confirm that noise from the facilities was a non-issue. Kirsten was responsible for conducting the assessments and compiling the noise compliance statements.

**ENERTRAG South Africa, Environmental Acoustic Screening Assessment for two Proposed Wind Energy Facilities, Belfast, Mpumalanga, South Africa
2022 – 2023**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for two proposed wind energy facilities near Belfast in Mpumalanga. Kirsten was responsible for conducting the assessments which determined the potential acoustic impacts of the proposed projects based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**ENERTRAG South Africa, Environmental Acoustic Screening Assessment for two Proposed Wind Energy Facilities, Camden, Mpumalanga, South Africa
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for two proposed wind energy facilities near Camden in Mpumalanga. Kirsten was responsible for conducting the assessments which



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

determined the potential acoustic impacts of the proposed projects based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**ENERTRAG South Africa, Environmental Acoustic Impact Assessment for a Proposed Green Hydrogen and Ammonia Facility, Camden, Mpumalanga, South Africa
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic Impact assessment for the proposed Camden I Green Hydrogen and Ammonia Facility. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using attenuation-over-distance acoustic calculations.

**Crossboundary Energy, Environmental Acoustic Screening Assessment for a Proposed Wind Energy Facility, Port Dauphine, Madagascar
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for a proposed wind energy facility in Madagascar. Kirsten was responsible for conducting the assessment which determined the potential acoustic impacts of the proposed project based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**DP World, Environmental Acoustic Impact Assessment for the Port of Berbera Phase 2 Expansion, Somaliland, Somalia
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed Phase 2 expansion to the Port of Berbera. An acoustic inventory was developed to identify all potential sources of noise associated with the construction and operational phases of the Phase 2 expansion project. The construction phase impacts were assessed through attenuation-over-distance acoustic calculations, whilst acoustic impacts of the proposed port operations were assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**Loci Environmental, Environmental Acoustic Impact Assessment for a Proposed Manganese Mine, Kanye, Botswana
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for a proposed manganese mine in Botswana. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Die Oesterreichische Entwicklungsbank Ag And Metito Utilities Ltd, Environmental Acoustic Impact Assessment for a Proposed Wastewater Treatment Plant, Zrenjanin, Serbia
2021**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the development of a proposed wastewater treatment plant (WWTP). To assess the existing noise climate in the area surrounding the proposed site, ambient noise monitoring was conducted at four receptor locations. An acoustic inventory was developed to identify all potential sources of noise associated with the construction and operational phases of the WWTP. The acoustic impacts of the operation of the proposed WWTP were then assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model, while construction phase impacts were assessed through attenuation-over-distance acoustic calculations.



**DNG Energy Ltd, Environmental Acoustic Impact Assessment for a Proposed Gas to Power Project, Komatipoort, Mpumalanga, South Africa
2021**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the development of the proposed Khensani Gas to Power Project. To assess the existing noise climate in the area surrounding the proposed site, ambient noise monitoring was conducted at five receptor locations. An acoustic inventory was developed to identify all potential sources of noise associated with the operational phase of the project. The acoustic impacts of the operation of the proposed facility during both an unmitigated and mitigated scenario were then assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**Platinum Cement Industries, Environmental Acoustic Impact Assessment for a Proposed Cement Grinding Processing Facility, Umbogintwini, KwaZulu-Natal, South Africa
2020 – 2021**

Project Manager and Lead Consultant

WSP was appointed to conduct a screening-level environmental acoustic impact assessment for a proposed cement grinding processing facility. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using attenuation-over-distance acoustic calculations.

**AngloGold Ashanti, Environmental Acoustic Impact Assessment for the Expansion to a Tailings Storage Facility, Northwest, South Africa
2017 – 2020**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed extension of the Kareerand Tailings Storage Facility. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for both the construction and operational phases of the project; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**BioTherm Energy, Environmental Acoustic Impact Assessment for three Wind Energy Facilities, Northern and Western Cape, South Africa
2016 – 2019 and 2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for three proposed wind energy facilities located between Sutherland and Matjiesfontein in the Northern and Western Cape provinces. Kirsten was responsible for conducting the assessments which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for both the construction and operational phases of the project; and determination of the impact of the proposed wind energy facilities on the surrounding sensitive receptors (farmhouses) using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software. Various updates and expansions to the above-mentioned projects were then further assessed during 2021/2022.

**Sappi Southern Africa Limited, Environmental Acoustic Impact Assessment for the proposed Expansion to a Paper Mill, KwaZulu-Natal, South Africa
2018**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed expansion to the Sappi Saiccor Mill, near Umkomaas. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for the proposed expansion activities; and determination of the impact of the proposed expansion on the surrounding sensitive receptors through the use of attenuation-over-distance acoustic calculations.

**Sappi Southern Africa Limited, Environmental Acoustic Impact Assessment for a Proposed Timber Handling Facility, Umkomaas, KwaZulu-Natal, South Africa
2017**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for a proposed timber handling facility near Umkomaas. Kirsten was responsible for conducting the assessment which included



Kirsten Collett

**Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant**

baseline acoustic monitoring; development of a comprehensive acoustic inventory; and determination of the impact of the proposed facility on the surrounding sensitive receptors (specifically, a newly proposed retirement village) using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Loci Environmental, Environmental Acoustic Impact Assessment for the Proposed Rehabilitation of the Sekoma-Morwamosu Road Section, Botswana
2017**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed rehabilitation of a section of road within the southern part of Botswana. Kirsten was responsible for conducting the assessment. Current operational noise levels in the vicinity of the road section were determined using an acoustic modelling platform, with current (2017) traffic count data as input. The acoustic impacts of the proposed rehabilitation were determined using attenuation-over-distance calculations (construction phase) and acoustic modelling (operational phase). Changes in noise levels at specific receptor locations were then assessed for each phase and the resultant community responses were evaluated.

**City of Cape Town, Environmental Acoustic Impact Assessment for the Redevelopment of the Athlone Power Station, Cape Town, Western Cape, South Africa
2016 – 2017**

Lead Consultant

WSP was contracted to undertake an environmental acoustic impact assessment for redevelopment of the Athlone Power Station site to determine the noise impacts of a) the surrounding activities on the redevelopment site; and b) the proposed site activities on the surrounding communities. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive noise source inventory; and determination of the impact of the current noise climate on the Athlone site as well as the impact of the proposed redevelopment activities on the surrounding communities.

**Central Termica Da Ressano Garcia, Environmental Acoustic Monitoring for a Gas Engine Power Plant, Ressano Garcia, Mozambique
2016**

Project Manager

WSP was commissioned to undertake acoustic monitoring at the Central Termica De Ressano Garcia gas engine power plant site in order to assess the noise associated with the operation of the plant. Kirsten was responsible for project management, technical input and reporting for this project.

**Anglo American Coal SA, Community Environmental Acoustic Monitoring Survey, Vereeniging, Gauteng, South Africa
2016**

Project Manager

WSP was appointed to conduct community-based noise monitoring in a region adjacent to the New Vaal Colliery in order to assess the acoustic impacts of the colliery on the surrounding communities. Kirsten was responsible for project management, data analysis and reporting for the project.

**Anglo American Platinum Limited, Screening Level Environmental Acoustic Impact Assessment for a New Ventilation Shaft, Rustenburg, Northwest, South Africa
2016**

Lead Consultant

WSP was appointed to investigate the acoustic impacts associated with the construction and operation of an additional ventilation shaft at the Siphumelele 1 Mine near Rustenburg. Kirsten was responsible for conducting the assessment through baseline acoustic monitoring and acoustic propagation calculations.



**Industrial Development Corporation of SA (Pty) Ltd, Environmental Acoustic Impact Assessment for a Proposed Paper Mill, Frankfort, Free State, South Africa
2013 – 2015**

Lead Consultant

WSP was contracted to undertake an environmental acoustic impact assessment for a proposed paper mill in Frankfort in the Free State Province. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive noise source inventory; and determination of the impact of the proposed project on the surrounding communities using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**South32 Aluminium SA Limited, Environmental Acoustic Impact Assessment for the Decommissioning of a Smelter, Richards Bay, KwaZulu-Natal, South Africa
2014 – 2015**

Lead Consultant

WSP was contracted to undertake a screening-level environmental acoustic impact assessment for the decommissioning of the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for conducting the assessment which included the development of a comprehensive noise source inventory; and determination of the impact of the proposed project on the surrounding communities using noise propagation calculations.

**Sasol New Energy Holding (Pty) Ltd, Environmental Acoustic Monitoring for a Gas Engine Power Plant, Ressano Garcia, Mozambique, Africa
2014 – 2015**

Project Manager and Lead Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake acoustic monitoring at the Central Termica De Ressano Garcia gas engine power plant site in order to assess the noise associated with the construction and operational phases of the plant. Kirsten was responsible for technical input, acoustic data analysis and reporting for this project.

**Sonae Novobord (Pty) Ltd, Environmental Noise Survey for a Wood Producer, White River, Mpumalanga, South Africa
2012 – 2015**

Consultant

WSP has been conducting environmental noise monitoring at the Sonae Novobord White River plant since 2009. The project includes day and night-time monitoring in accordance with the SANS 10103:2008 methodology, data analysis, compliance assessment and reporting. Kirsten was involved in the data analysis, interpretation and reporting for the project.

**Atha-Africa Ventures (Pty) Ltd, Environmental Acoustic Impact Assessment for a Proposed Mine, Wakkerstroom, Mpumalanga, South Africa
2012 – 2014**

Lead Consultant

WSP Environmental was commissioned to undertake an environmental acoustic impact assessment for a proposed underground coal mine near Wakkerstroom, Mpumalanga as part of a comprehensive environmental and social impact assessment for the mine. Kirsten was responsible for conducting the environmental acoustic assessment. The assessment comprised on-site environmental noise monitoring in order to obtain a baseline noise climate for the region as well as acoustic modelling to determine the predicted impacts that the proposed mine will have on the existing noise climate. An inventory of all noise sources during the construction and operational phases was compiled with associated sound power levels for each source. These sources were then input into the Computer Aided Noise Abatement (CadnaA) acoustic model. Results were compared with the monitored (existing) noise levels as well as the SANS day and night-time guidelines to assess compliance.

**Sonae Novobord (Pty) Ltd, Environmental Noise Survey for a Wood Producer, Panbult, Mpumalanga, South Africa
2013**

Project Manager

WSP was commissioned to do a once-off environmental acoustic compliance monitoring survey at the Sonae Novobord Panbult site in Mpumalanga. Kirsten was responsible for project management and reporting for the project.



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Principal Consultant

Rustenburg Platinum Mines Limited, Environmental Noise Impact Assessment for the Amandelbult Mine, Limpopo, South Africa

2013

Lead Consultant

As part of an environmental impact assessment, WSP was commissioned to conduct an environmental noise assessment for the sinking of a new shaft at the Tumela mine in the Limpopo Province. Kirsten conducted this environmental noise impact assessment through a baseline review of the site; compilation of a detailed site-specific noise inventory; determination of the impact of the proposed project on the surrounding communities using the CadnaA acoustic model; interpretation of modelled results; compliance assessment; and reporting.

Shell and BP South Africa Petroleum Refineries (SAPREF), Environmental Noise Impact Assessment for SAPREF Cleaner Fuels Phase Two, Durban, KwaZulu-Natal, South Africa

2013

Lead Consultant

WSP was contracted to perform the environmental noise impact assessment of the Cleaner Fuels Phase Two Project for the SAPREF Refinery in South Durban. The project investigated the noise associated with undertaking the required modifications to the refinery in order to meet the pending fuel specifications published by the South African Department of Energy. Kirsten was responsible for analysis and interpretation of on-site acoustic monitoring; compilation of a detailed site-specific noise inventory; determination of the impact of the proposed project on the surrounding communities through the use of the CadnaA acoustic model; interpretation of modelled results; compliance assessment; and reporting.

Assmang Black Rock Mine Operations, Environmental Monitoring Assessment for a Manganese Mine, Hotazel, Northern Cape, South Africa

2012 – 2013

Consultant

WSP was commissioned to conduct environmental monitoring for their underground manganese mining venture at Black Rock in the Northern Cape Province. The environmental monitoring consisted of both environmental noise monitoring and particulate monitoring. Vehicle noise and emissions testing was also performed on various Assmang owned vehicles onsite. Kirsten was responsible for analysis of all monitored data, interpretation, compliance assessment and reporting.

AngloGold Ashanti (Pty) Ltd, Environmental Noise Surveys, Vaal River and West Wits Operations, Northwest, South Africa

2012

Consultant

WSP was commissioned by Anglo Gold Ashanti to perform environmental noise surveys of their Vaal River and West Wits mining operations in the Northwest Province, as part of their commitment to minimise negative impacts on the environment. The project included day and night-time monitoring in accordance with the SANS 10103:2008 methodology, data analysis, compliance assessment and reporting. Kirsten was responsible for assisting with data analysis, interpretation and reporting.

Sasol New Energy Holding (Pty) Ltd, Environmental Acoustic Impact Assessment for a proposed Power Plant, Ressano Garcia, Mozambique

2011

Field Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake an integrated environmental and social impact assessment (ESIA) and bankable environmental, social and health impact assessment (ESHIA) for the proposed gas engine power plant that is to be constructed in Ressano Garcia, Mozambique. As part of this assessment, a specialist environmental acoustic study was conducted to assess what impacts the proposed plant may have on the noise climate of the region. Kirsten was responsible in assisting with on-site acoustic monitoring for the project.



Air Quality Impact Assessments (AQIAs)

Transnet Port Terminals - Saldanha, AQIA for a Proposed Expansion to an Iron Ore Loading Terminal, Saldanha, Western Cape, South Africa 2020 – 2022

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment in the form of an atmospheric impact report (AIR) to determine the impacts of a proposed increase in iron ore storage and handling capacity at the Saldanha Port. The project was part of an Atmospheric Emission Licence (AEL) variation application, with an AIR specifically requested by the authorities. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the CALPUFF dispersion model to assess the impacts of emissions on the surrounding communities. The project also included the AEL component, with authority liaison, advertisement placement and submission of the AEL variation application on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

Cast Products South Africa, AQIA for a Section 22A AEL Renewal for a Foundry, Boksburg, Gauteng, South Africa 2022

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment in the form of an atmospheric impact report (AIR) for the Boksburg Foundry. The Client failed to renew their current AEL timeously and as such a Section 22A rectification process was triggered. As part of the Section 22A process, an AIR was specifically requested by the authorities. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on the surrounding communities. The project also included the AEL component, with authority liaison, advertisement placement and submission of the AEL renewal application on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

Orion Engineered Carbons, AQIA for a Bulk Liquid Cargo Facility, Port of Gqeberha, Eastern Cape, South Africa 2020 – 2021

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of the licencing of the operational tanks at the port. This formed part of a Noxious Use Permit application, as per the Port Elizabeth Zoning Scheme. The assessment consisted of quantification of emissions from the tanks using the US EPA's Tanks 4.0.9 model as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

Platinum Cement Industries, AQIA for a Proposed Cement Grinding Processing Facility, Umbogintwini, KwaZulu-Natal, South Africa 2020 – 2021

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of an Atmospheric Emission Licence (AEL) application for a proposed cement grinding processing facility. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the facility as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

Protea Chemicals, AQIA for a Revised Production Rate for a Chemical Producer, Cape Town, Western Cape, South Africa 2020

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of an Atmospheric Emission Licence (AEL) amendment application for a production rate change at the facility. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the facility as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.



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Principal Consultant

WSP Middle East, AQIA for a Proposed Independent Power Project, Qatar 2020

Project Manager and Lead Consultant

WSP was contracted to undertake a screening-level air quality impact assessment to determine the suitability of the proposed stack heights in dispersing emission away from sensitive receptors. The project included a baseline assessment, emissions inventory, dispersion modelling using SCREEN3 and comparison of the predicted concentrations against the Qatar ambient air quality standards.

Transnet Port Terminals - Saldanha, AQIA for a Proposed Expansion to an Iron Ore Loading Port, Saldanha, Western Cape, South Africa

2019

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of a proposed increase in iron ore storage and handling capacity at the Saldanha Port. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the CALPUFF dispersion model to assess the impacts of emissions on the surrounding communities.

Anglo American Coal SA, AQIA for a proposed coal stockpile at an underground mine, Ogies, Mpumalanga, South Africa

2018

Project Manager and Lead Consultant

WSP was appointed to conduct an Air Pollution Assessment in the form of an Atmospheric Impact Report for a proposed coal stockpile at the underground section of the Zibulo Colliery. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the proposed stockpile as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

WSP Middle East, AQIA for a Proposed Waste to Energy Facility, Kuwait 2017 – 2018

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of a proposed waste to energy facility in Kuwait. The project included assessment of baseline monitoring data (conducted by a local partner), a baseline assessment, emissions inventory, dispersion modelling using CALPUFF and comparison of the predicted concentrations against the Kuwait and International ambient air quality guidelines/standards. A preliminary screening assessment was undertaken using SCREEN3 to determine the monitoring locations for the baseline monitoring campaign.

The Dow Chemical Company (Rohm and Haas) - Advanced Materials, AQIA for a Chemical Manufacturer, New Germany, KwaZulu-Natal, South Africa

2015

Project Manager and Lead Consultant

WSP was appointed to conduct an Air Pollution Assessment in the form of an Atmospheric Impact Report for the proposed Polyol Blending Plant at the Dow Advanced Materials site in New Germany. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from both the existing and proposed operations as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on the surrounding communities.

South32 Aluminium SA Limited, AQIA for Remediation of a Smelter, Richards Bay, KwaZulu-Natal, South Africa

2015 – 2016

Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of remediating the legacy landfill sites at the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for the



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development of a comprehensive emissions inventory; and determination of the impact of the proposed project on the surrounding communities using the AERMOD dispersion modelling software.

**South32 Aluminium SA Limited, AQIA for a Smelter Decommissioning, Richards Bay, KwaZulu-Natal, South Africa
2014 – 2015**

Lead Consultant

WSP was contracted to undertake a screening-level air quality impact assessment for the decommissioning of the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for the development of a comprehensive emissions inventory; and determination of the impact of the proposed project on the surrounding communities using the AERSCREEN Tier 1 dispersion modelling software.

**First in Spec Biofuels Ltd, AQIA for a Biodiesel Plant, Coega IDZ, Eastern Cape, South Africa
2011 – 2015**

Lead Consultant

As part of a larger Environmental Impact Assessment for a proposed biodiesel production plant in Coega, WSP was commissioned to conduct a specialist air quality impact assessment for the facility. Kirsten was responsible for compiling the air quality impact assessment which was initially a screening-level assessment and later upgraded to a Tier 2 full air quality impact assessment. The project involved a baseline review of the area; baseline meteorological and pollutant data analysis; emission inventory compilation; dispersion modelling; reporting; and atmospheric emission licence (AEL) compilation.

**Atha-Africa Ventures (Pty) Ltd, AQIA for a Proposed Mine, Wakkerstroom, Mpumalanga, South Africa
2012 – 2014**

Lead Consultant

WSP was commissioned to undertake an air quality impact assessment for a proposed underground coal mine near Wakkerstroom, Mpumalanga as part of a comprehensive environmental and social impact assessment for the mine. Kirsten was responsible for conducting the air quality assessment. The assessment comprised on-site ambient air quality monitoring in order to assess the existing air quality in the region as well as dispersion modelling (using the ADMS (v5) software) to determine the predicted impacts that the proposed mine will have on the existing air quality.

**Apollo Tyres South Africa (Pty) Ltd, AQIA for a Tyre Manufacturer, Durban, KwaZulu-Natal, South Africa
2012 – 2013**

Consultant

WSP was commissioned to perform an air quality impact assessment for a tyre manufacturer to determine the changes in emissions should they replace their existing heavy fuel oil fired boiler with two coal fired boiler equipped with bag filters. Kirsten was responsible for conducting this screening-level air quality assessment through a baseline review of the site; emissions inventory compilation; and determination of the impact of the boiler emissions on the surrounding communities using the SCREEN3 screening-level dispersion modelling software.

**Ferrochrome Furnaces (Pty) Ltd, AQIA for Ferrochrome Production Facility, Rustenburg, North West, South Africa
2012**

Lead Consultant

WSP was commissioned to perform an air quality impact assessment of a proposed ferrochrome production facility in Zinziaville, Rustenburg as part of a larger environmental impact assessment. Kirsten was responsible for conducting the air quality assessment through a baseline review of the site; compilation of a detailed site-specific emissions inventory; determination of the impact of the proposed facility on the surrounding communities using the ADMS dispersion modelling software; and compilation of the atmospheric emission licence (AEL) application.



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SIVEST SA (Pty) Ltd, AQIA for a Fuel Depot Recommissioning, Western Cape, South Africa 2012

Consultant

WSP was commissioned as part of a broader environmental impact assessment, to conduct an air quality impact assessment of the recommissioning of the Total Paarden Island fuel storage and distribution terminal near Cape Town. The air quality impact assessment investigated emissions generated as a result of both the construction phase and operational phase of the facility. Kirsten was responsible for the assessment which comprised a baseline review of the site; compilation of a detailed site-specific emissions inventory; estimation of emissions generated from each of the onsite storage tanks through the use of the TANKS 4.0.9 model; and determination of the impact of the proposed facility on the surrounding communities using the SCREEN3 dispersion modelling software.

Noble Resources Ltd, AQIA for a Proposed Oilseeds Processing Plant, Standerton, Mpumalanga, South Africa

2011-2012

Consultant

Noble Resources proposed to construct an oilseeds processing plant in Standerton and required an air quality assessment to determine what impacts the activity would have in the region. Kirsten performed this assessment through a baseline assessment of the site; development of a comprehensive emissions inventory; and determination of the proposed impacts through the use of a Tier 2 atmospheric dispersion model (ADMS)

City of Johannesburg, Ambient Air Quality Assessment during Car Free Day, Johannesburg, South Africa

2007 – 2008

Consultant

This project monitored vehicular emissions from a mobile monitoring station placed alongside the M1 highway in Johannesburg. This was done to evaluate the effectiveness of car free day and to assess whether there was a reduction in emissions on the day. Kirsten was involved in the assessment, analysis and reporting in this specific project.

Air Quality Management

Strandfoam Group (Pty) Ltd, NAEIS submission for a Polyurethane Foam Manufacturer, Strand, Western Cape

2023

Project Manager and Lead Consultant

WSP was appointed to undertake the required National Atmospheric Emissions Inventory System (NAEIS) reporting for the facility. Kirsten was responsible for compiling the emissions inventory for the facility and uploading the necessary information to the NAEIS.

Weir Minerals, Atmospheric Emission Licence (AEL) Audit, Annual Reporting and NAEIS submission for a Foundry, Isando, Gauteng

2021

Project Manager and Lead Consultant

WSP was appointed to undertake an audit of the facility's current AEL to assess the accuracy of what was represented in the AEL as well as to evaluate compliance with the conditions stipulated in the AEL. Additionally, the scope of work included compilation of their Annual Report as well as reporting of emissions onto the National Atmospheric Emissions Inventory System (NAEIS). Kirsten was responsible for conducting the audit, compiling the audit report and annual report and submitting all information onto NAEIS.



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**Sasol Satellite Operations Ekandustria, Atmospheric Emission Licence (AEL) Audit for an Explosives Manufacturer, Ekandustria, Mpumalanga, South Africa
2020**

Project Manager and Lead Consultant

WSP was appointed to undertake an audit of the facility's current AEL to assess the accuracy of what was represented in the AEL as well as to evaluate compliance with the conditions stipulated in the AEL. Kirsten was responsible for conducting the audit and compiling the audit report.

**Anglo American Coal SA, Isibonelo Colliery Air Quality Management Plan, Mpumalanga, South Africa
2019 – 2020**

Project Manager and Lead Consultant

Anglo American Coal SA requested the compilation of an Air Quality Management Plan (AQMP) for the Isibonelo Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the AERMOD dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Transnet Port Terminals Saldanha Bay, Atmospheric Emission Licence (AEL) Audit for a Manganese Multipurpose Terminal, Saldanha, Western Cape, South Africa
2019**

Lead Consultant

WSP was contracted to undertake an audit of the current provisional AEL (PAEL) for the terminal and assist with conversion of the PAEL to a final AEL. The project included a site visit and audit, Client and Authority liaison and assistance with submission of the AEL on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

**Anglo American Coal SA, Mafube Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2015 – 2016**

Project Manager and Lead Consultant

WSP was appointed for the compilation of an integrated Air Quality Management Plan (AQMP) for the Mafube Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the AERMOD dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Sonae Novobord (Pty) Ltd, Air Quality Management Reports, White River, Mpumalanga, South Africa
2011 – 2015**

Consultant

WSP has been continuously monitoring formaldehyde, suspended particulate matter (PM₁₀) and dust deposition (fallout) concentrations in and around the Sonae Novobord White River plant since 2008. Kirsten was responsible for analysing and assessing the ambient monitoring data and drafting the air quality management reports.



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Principal Consultant

**Anglo American Coal SA, Combined Integrated Air Quality Management Plan for the Greenside, Kleinkoppje and Landau Collieries, Mpumalanga, South Africa
2013 – 2014**

Lead Consultant

Anglo American Coal SA requested the compilation of a combined integrated Air Quality Management Plan (AQMP) for the Greenside, Kleinkoppje and Landau Collieries in the Mpumalanga province. The AQMP was aimed at becoming a management tool for the collieries going forward. Kirsten was responsible for the compilation of the combined AQMP which was performed through a baseline assessment of activities at each colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory for each colliery; determination of the impact of emissions from each colliery (as well as the combined impact) on surrounding communities using the CALPUFF dispersion modelling software; review of current management and mitigation techniques at each colliery; and development of strategies to minimise any impacts of emissions going forward.

**Columbus Stainless (Pty) Ltd, Fugitive Dust Suppression Plan for a Steel Producer, Middelburg, Mpumalanga, South Africa
2013**

Lead Consultant

WSP was commissioned to compile a fugitive dust suppression plan in order to assess the fugitive dust emanating from a stainless-steel plant in Middelburg. Kirsten was responsible for compiling the fugitive dust suppression plan through on-site dust fallout monitoring; analysis of all historical particulate matter, dust fallout and meteorological data for the site; identification of key emission sources; and provision of mitigation and management measures to limit the impact of fugitive dust going forward.

**Anglo American Coal SA, Greenside Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2012 – 2013**

Lead Consultant

Anglo American Coal SA requested the compilation of an integrated Air Quality Management Plan (AQMP) for the Greenside Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the ADMS dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Anglo American Coal SA, Landau Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2012**

Lead Consultant

Anglo American Coal SA requested the compilation of an integrated Air Quality Management Plan (AQMP) for the Landau Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the ADMS dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.



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Principal Consultant

Sonae Novobord (Pty) Ltd, Strategic Overview of Air Quality Conditions at the Sonae Novobord Plant, White River, Mpumalanga, South Africa

2008 – 2011

Consultant

WSP has been monitoring various air quality aspects in and around the Sonae Novobord White River plant since 2008. Concentrations of formaldehyde, suspended particulate matter (PM₁₀) and dust deposition (fallout) have been continually monitored in terms of the requirements of the NEMA Section 24G Environmental Management Plan. Kirsten was involved in performing a strategic assessment of conditions at the plant, to ascertain whether the air quality has improved over time and whether the conditions set out in the Record of Decision and the Air Quality Management Plan are being met.

Ambient Monitoring

Anglo American Coal SA, Dust Fallout and Particulate Matter Monitoring for nine Collieries, Mpumalanga, South Africa

2016 – 2022

Project Manager

WSP was appointed to manage Anglo American Coal SA's air quality monitoring requirements at nine of their collieries. The contract includes dust fallout monitoring at all nine collieries, while continuous particulate matter (PM₁₀ and PM_{2.5}) monitoring is conducted at seven collieries using mobile custom-designed solar system trailers. Kirsten was responsible for project management and quality control for the project.

Foskor (Pty) Ltd, Dust Fallout and Particulate Matter Monitoring for a Phosphate Mine, Phalaborwa, Limpopo, South Africa

2016 – 2019

Project Manager

WSP was commissioned to manage and maintain a dust monitoring network for Foskor Phalaborwa's phosphate rock operations in the Limpopo Province. The monitoring network comprises 37 dust fallout samplers, and a real-time particulate matter (PM₁₀) monitor. Kirsten was responsible for project management and quality control for the project.

Total South Africa (Pty) Ltd, Leak Detection and Repair Programs for Ten Fuel Depots, South Africa

2016 – 2017

Project Manager

WSP was appointed to conduct leak detection and repair programs at ten of Total South Africa's bulk fuel storage depots as part of their atmospheric emission licence conditions. Kirsten was responsible for project management, data analysis and reporting for the project.

Eskom Holdings SOC Limited, Dust Fallout Monitoring for Kendal Power Station, Kendal, Mpumalanga, South Africa

2016

Project Manager

WSP was commissioned to monitor dust fallout at the Kendal Power Station in Mpumalanga for a six month period. Kirsten was responsible for project management, data analysis and reporting for the project.

Evrast Highveld Steel and Vanadium Corporation Ltd, Dust Fallout Monitoring for a Steel Facility, Mpumalanga, South Africa

2012 – 2015

Project Manager

As part of Evrast Highveld Steel's on-going monitoring program for the assessment of dust generated by the steelworks and associated activities, WSP was commissioned to conduct dust fallout monitoring both on and off site. Monitoring has been performed over time at the site on a monthly basis in accordance with the ASTM D1739 reference method. Kirsten was responsible for data analysis, interpretation and reporting during the



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2012 monitoring period. Most recently, Kirsten was responsible for project management during the 2014 and 2015 campaign.

**Evrax Highveld Steel & Vanadium Corporation Ltd, Particulate Matter Monitoring for a Steel Facility,
Mpumalanga, South Africa
2014 – 2015**

Project Manager

WSP was commissioned to monitor particulate matter concentrations at three locations in and around the Evrax Highveld Steel facility using E-sampler monitoring equipment. Kirsten was responsible for project management and reporting for the project.

**Eskom Holdings SOC Limited, Dust Fallout Monitoring for Majuba Power Station, Volksrust,
Mpumalanga, South Africa
2013 – 2015**

Project Manager

WSP was commissioned to monitor dust fallout at the Majuba Power Station in Mpumalanga for a two-year period. Kirsten was responsible for project management, data analysis and reporting for the project.

**Tubular Holdings (Pty) Ltd, Dust Fallout Monitoring, Kendal, Mpumalanga, South Africa
2013 – 2014**

Project Manager

WSP was commissioned to monitor dust fallout and meteorological conditions at the Tubular Holdings workers' living quarters near Kendal, Mpumalanga. The project was initiated to determine the source of dust at this location. Kirsten was responsible for project management; data analysis; and reporting for the project.

**Atlantis Foundries (Pty) Ltd, Dust Monitoring Program for a Foundry, Atlantis, Western Cape, South Africa
2011**

Data Analyst

WSP was commissioned to provide specialist air quality support and monitoring services to Atlantis Foundries (Pty) Ltd, situated within Atlantis near Cape Town. The project included: dust deposition monitoring, the compilation of an Atmospheric Emission Licence (AEL) for the facility and the development of site-specific dust mitigation and management strategies. Kirsten was involved in assisting with data analysis and interpretation of the results obtained from the monthly monitoring campaigns at the site.

**Sasol New Energy Holding (Pty) Ltd, Air Quality Monitoring for a Proposed Power Plant, Ressano Garcia, Mozambique
2011**

Field Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake an integrated environmental and social impact assessment (ESIA) and bankable environmental, social and health impact assessment (ESHIA) for the proposed gas engine power plant that is to be constructed in Ressano Garcia, Mozambique. As part of this assessment, a specialist air quality study was conducted to assess what impacts the proposed plant may have on air quality in the region. Kirsten was responsible in assisting with the set-up of passive monitoring equipment, dust buckets and a meteorological station at the site.

**Eskom Holdings SOC Limited, European Integrated Project on Aerosol, Cloud, Climate and Air Quality Interactions, Mpumalanga, South Africa
2007 – 2010**

Technical Consultant

This was an international aerosol project focusing on four developing countries, namely South Africa, India, Brazil and China. It was initiated to provide a comparative set of aerosol emission data between the four countries. Kirsten was involved in the setup and maintenance of the monitoring instrumentation at the South

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African site. For this, Kirsten was also involved in an aerosol training course in Hyytiälä, Finland as well as technical training in Leipzig, Germany for the SMPS (Scanning Mobility Particle Sizer) instrument.

Eskom Holdings SOC Limited, Ambient Air Monitoring at the Point of Highest Impact Resulting from Kriel and Matla Power Stations, Mpumalanga, South Africa 2009

Consultant

This study was conducted on the Mpumalanga Highveld in order to increase our understanding of the sources and diurnal variations of various atmospheric species as well as the effects of local meteorology on the concentration of these species. The study included ambient monitoring using a mobile monitoring station. Kirsten was involved in the data analysis, statistical manipulation and reporting.

MSC Thesis

The Atmospheric Nitrogen Budget over the South African Highveld, Mpumalanga, South Africa 2007 – 2009

This project was Kirsten's MSc thesis and was performed in collaboration with Eskom. The project aimed to assess the atmospheric nitrogen cycle in the industrialised Highveld region. The project investigated the various atmospheric nitrogen compounds on the South African Highveld and looked at the dominant sources, the transport and conversion of the species in the atmosphere and in what form they are deposited to the ground. From this it was confirmed that the majority of emitted nitrogen remains in the atmosphere, confirming the trends depicted by satellite technology. Client: Eskom Holdings SOC Limited.

Honours Project

NO_x or Not: Nitrogen Oxide Levels over the South African Highveld, Mpumalanga, South Africa 2006

This was Kirsten's honours project and was performed in collaboration with Eskom. This project aimed to validate the nitrogen dioxide hotspot over the South African Highveld as identified by satellite technology. The prevalent sources of nitrogen dioxide were investigated as well as the diurnal and seasonal distributions. Client: Eskom Holdings SOC Limited.

AWARDS

2009 - MSc Distinction

2008 - Best presentation for paper entitled "The Atmospheric Nitrogen Budget over the South African Highveld".

National Association for Clean Air (NACA) conference

PUBLICATIONS AND PRESENTATIONS

Publications

Collett, K.S., Piketh, S.J. and Ross, K.E. "An assessment of the atmospheric nitrogen budget on the South African Highveld." South African Journal of Science, 2010, pp. #106, 5/6, Article# 220.

Laakso, L., Vakkari, V., Laakso, H., Virkkula, A., Kulmala, M., Beukes, J.P., van Zyl, P.G., Pienaar, J.J., Chiloane, K., Gilardoni, S., Vignati, E., Wiedensohler, A., Tuch, T., Birmili, W., Piketh, S., Collett, K., Fourie, G.D., Komppula, M., Lihavainen, H., de Leeuw, G. and Kerminen, V.-M. "South African EUCAARI – measurements: a site with high atmospheric variability," Atmospheric Chemistry and Physics Discussion. Month 2010, 10, 30691 – 30729.

Ross, K., Broccardo, S., Heue, K-P., Collett (nee Ferguson), K. and Piketh, S. "Nitrogen oxides on the South African Highveld." Clean Air Journal, Month 2007. 16, 2, 6 – 15.



Kirsten Collett

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Presentations

Collett, Kirsten. "The Atmospheric Nitrogen Budget over the South African Highveld." National Association for Clean Air Conference, Nelspruit, Mpumalanga, 2009.



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

At a congregation of the University

held on 25 November 2009

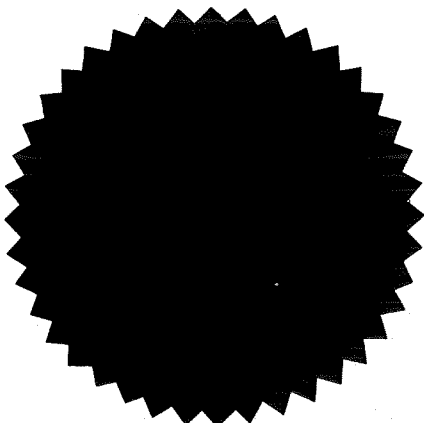
Kirsten Sheena Ferguson

was admitted to the Degree of

Master of Science

(Geography and Environmental Studies)

(with Distinction)



Dean : Faculty of Science

Vice-Chancellor and Principal

IT IS HEREBY CERTIFIED THAT THIS IS A TRUE COPY OF THE ORIGINAL DOCUMENT AND THAT THERE IS NO INDICATION THAT ALTERATIONS HAVE BEEN MADE THERETO BY AN UNAUTHORISED PERSON.	
DATE:	2011-07-18
NAME:	THEMBU
RANK:	TELLER
SIGNATURE:	[Signature]
OFFICE:	LIBRARY

Registrar



herewith certifies that
Kirsten Sheena Collett
Registration Number: 115870
is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)
Environmental Science (Professional Natural Scientist)

Effective 20 July 2016

Expires 31 March 2025



A handwritten signature in black ink, appearing to read 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. S. S. S.'.

Chief Executive Officer



CONSULTANT CURRICULUM VITAE

NAME : DEBRA MITCHELL

EDUCATION :

BSc Chemical Engineering (Cape Town) 1985
BA Psychology, Economics (UNISA) 1995
MSc Process Safety & Loss Prevention (U. Sheffield UK) 2004
(Distinction)

AFFILIATIONS :

Professional Engineer
Member of SA Institute of Chemical Engineering
ISHECONcc is an Approved Inspection Authority for Major Hazard Installations and for Explosives
SANAS ISO 17020 Technical Auditor
Chairman of SABS TC292 Sub-committee for compilation of SANS1461- MHI RA Standard
Member of DEL TC for compilation of Guidelines for the New MHI Regulations.



WORK EXPERIENCE:

- | | |
|-------------|--|
| 1999 – now | Formed Ishecon c.c. with two partners as a management-buy-out of the SHE Consulting Group of AECl Engineering. Assignments include MHI Risk Assessments (40 per year), Hazops (12 per year), PHA's, Hazardous Area Classifications, Occupied Building Studies, Qualitative Risk Assessments. Presentation of process safety training courses and auditing of MHI AIAs. |
| 1997 - 1999 | AECl Engineering Pty (Ltd), Modderfontein. Chemical Engineering Department. Risk assessments and Hazard Studies for AECl projects. |
| 1991 - 1997 | Sasol Synthetic Fuels and Sastech, Secunda, Senior Process & Environmental Engineer, Seconded to Foster Wheeler UK for 6 months. |
| 1987 – 1991 | SAPPI, Ngodwana, Technical Superintendent, responsible for management of a team on an applied research and development effluent recovery pilot plant. |
| 1986 - 1987 | Atomic Energy Corporation, Engineer-in-training, process engineering design. |



UNIVERSITY OF CAPE TOWN

with which is incorporated the South African College

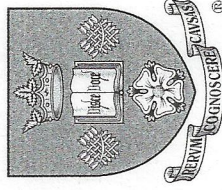
Degree of Bachelor of Science in Engineering

We hereby certify that DEBRA CATHERINE MITCHELL
obtained the Degree of Bachelor of Science in Engineering in the
year 1985 in CHEMICAL ENGINEERING.

Vice-Chancellor

Registrar

Cape Town, 12 DECEMBER, 1985.



It is hereby certified that

Debra Catherine Mitchell

having fulfilled the requirements prescribed by Ordinances and after
due examination was awarded the degree of

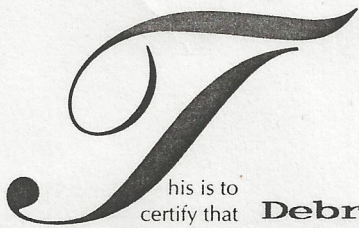
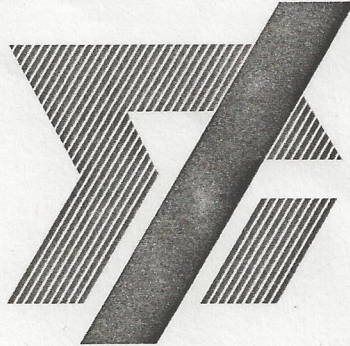
Master of Science in Engineering

of this University
in Process Safety and Loss Prevention
on 12 November 2004
with Distinction

Vice-Chancellor

Registrar and Secretary

Engineering Council of South Africa



his is to
certify that

Debra Catherine Mitchell

is registered as **Professional Engineer**

in terms of the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990)

date **4 December 1990**

registration number **900554**

President

Registrar



Steve Horak

Earth & Environment - Environmental Planning & Advisory, Director: Social Sciences

CAREER SUMMARY

Steve has worked in the social sciences since 1998 (26 years) in the mining, oil and gas, renewable energy and agricultural sectors. Expertise includes social impact assessments, development of mitigation measures, social management plans, community and stakeholder engagement, resettlement action plans, livelihood restoration plans, social baseline studies, grievance mechanisms, social due diligence, high conservation value assessments and indigenous peoples plans.

Steve has experience locally, in South Africa, and internationally, working in compliance with International Finance Corporation (IFC) social performance standards. He has worked in 17 African countries, including Angola, Botswana, Cameroon, the Democratic Republic of Congo, Djibouti, Ethiopia, Gabon, Ivory Coast, Kenya, Mali, Malawi, Mozambique, Nigeria, São Tome, Sierra Leone, South Africa and Tanzania. Steve's experience is supported by a Masters Degree (Environmental and Social Science) from the University of Pretoria (UP), an Honours Degree in Development Studies from the University of South Africa (UNISA), a BA Degree in Anthropology, UP, Managers Development Programme (MDP) (University of Stellenbosch), Certificate in Public Participation from the International Association of Public Participation Practitioners.



2,5 Years with WSP

26 years of experience

Area of expertise

Social impact assessment, social management plans, community and stakeholder engagement, resettlement action plans, livelihood restoration plans, grievance mechanisms, high conservation value assessments, indigenous peoples plans, and social due diligence.

Languages

English - Fluent
Afrikaans - Fluent

EDUCATION

Managers Development Programme (MDP), University of Stellenbosch, South Africa	2009
Master of Arts, Environment and Society, University of Pretoria, South Africa	2005
Honours Degree in Development Studies, University of South Africa	2000
Bachelor of Arts Degree in Anthropology, University of Pretoria, South Africa	1994

ADDITIONAL TRAINING

Certificate in Public Participation from the International Association of Public Participation Practitioners	2008
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PROFESSIONAL MEMBERSHIPS

IAIAAsa – International Association for Impact Assessment: South Africa, Membership No.7212	2004
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PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd, Director Social Sciences	2022 – Current
Independent Consultant	2015 – 2022
Digby Wells Environmental, Principal Consultant, Departmental Manager	2008 – 2015
Perisseuo Consulting cc (CK98/68973/23), Independent Consultant	1998 – 2008
UNISA, Dept of Development, Administration,	1996 – 1998
South African Defence Force, Operational Medical Orderly, Medical Phase Course Instructor	1990

PROFESSIONAL EXPERIENCE

Social Impact Assessments

Thungela Resources, Isibonelo Colliery, Social Impact Assessment, Lead review, Regional Waste Transfer Facility, (Mpumalanga) 2023

Mukondeleli Solar (RF) (Pty) Ltd, Social Impact Assessment, Lead, Wind and Solar PV, South Africa (Mpumalanga) 2023

Seriti Green (Pty) Ltd, Social Impact Assessment, Lead, Phefumula Wind Energy Facility, South Africa, (Mpumalanga)

ArcelorMittal South Africa (Pty) Ltd / Bidvest Port Operations (Pty) Ltd, Social Impact Assessment, Lead, Proposed Logistics Hub At Saldanha Steel Facility - Phase 1, South Africa (Western Cape) 2023

HyShift Consortium, Social Impact Assessment, Lead, Green Hydrogen Electrolyzer, South Africa (Mpumalanga) 2023

Rainbow Rare Earths (Pty) Ltd, Social Impact Assessment, Lead, Rare Earths Phalaborwa Project, South Africa (Limpopo)

Tronox Sands, WSP, Social Impact Assessment, Project Director, Fairbreeze Mine, South Africa (KwaZulu Natal) 2023

Genmin Pty Ltd, WSP, Social Impact Assessment, Lead, Baniaka Iron Ore Mining Project, Gabon 2022-2023

Enertrag South Africa (Pty) Ltd, Social Impact Assessment, Lead for the Dalmanutha Wind Energy Facilities, Belfast, South Africa, (Mpumalanga) 2022

Eskom Holdings SOC Ltd, WSP, Social Impact Assessment Lead, Proposed Solar Photovoltaic and Battery Energy Storage System at Komati Power Station, South Africa, (Mpumalanga) 2022

Société des Mines de Fer de Guinée (SMFG), WSP, Social Impact Assessments Inputs, Proposed Nimba Iron Ore Project, Guinea, 2022

Enviro Insight, Social Impact Assessment Lead, Proposed Botterblom Wind Energy Facility, South Africa, (Northern Cape) 2021

Minbos, HCV Africa, Social Impact Assessment and Stakeholder Engagement Lead, Cúcata Phosphate Mine Project, Angola (Cabinda Province) 2021

Pensana PLC Social Impact Assessment and Stakeholder Engagement Project Lead, Longonjo Ndpr Mining Project Environmental and Social Impact Assessment (ESIA), International Finance Corporation (IFC) Angola 2019-2021

Rand Gold, Digby Wells, Social Impact Assessment Lead, Doko- Aru road development, Democratic Republic of Congo 2010 - 2011

Wesizwe Platinum Mine, TWP, Perisseuo Consulting, Social Impact Assessment Lead, IFC and World Bank standards, South Africa (North West Province) 2007-2008

BKS, Perisseuo Consulting, Preliminary Environmental, Social and Transition Management Assessments Lead, South Africa (Pretoria, Gauteng) 2007 - 2008

Digby Wells, Perisseuo Consulting, Social Impact Assessment Lead, Sand dump reclamation 3/A/1, South Africa (Gauteng) 1998

Tavistock Collieries, Digby Wells, Perisseuo Consulting, Social Impact Assessment Lead, South Africa (Ogies) 1999

Tselentis Colliery, Digby Wells, Perisseuo Consulting, Social Impact Assessment Lead, South Africa (Mpumalanga) 1999

Winning Business Systems, Woman's Development Bank, Perisseuo Consulting Socio-Economic Impact Assessment Lead, (Boipatong, Daveyton, Katlehong) South Africa, 1999

Resettlement Action Planning

Globeleq, WSP, Resettlement and Livelihood Restoration Policy Framework Lead, Namaacha Wind Energy Facility, Mozambique, 2023

Genmin Pty Ltd, WSP, Resettlement and Livelihood Restoration Policy Framework Lead, Baniaka Iron Ore Mining Project, Gabon 2022-2023

Pensana PLC, HCV Africa, Longonjo Ndpr Mining Project, Resettlement Action Plan Development Lead, International Finance Corporation (IFC) standard, Angola, 2021-2022

Glencore, WSP, Tweefontein Relocation Action Plan Lead, IFC standard, South Africa, (Mpumalanga) 2022-2023

Total Energy, Professional Grave Solutions, Mozambique Gas Development Project, Resettlement Action Plan, Implementation of Stakeholder Engagement Process Lead for Grave Relocations - Mozambique Gas Development, Mozambique 2018 – 2021

Tselentis Colliery, Digby Wells, Perisseuo Consulting, Resettlement Action Plan Lead, South Africa, (Mpumalanga) 2004

High Conservation Value (HCV) assessments

Agripalma, Retrocession of concession areas, Stakeholder Engagement and Participatory Process of ceding parts of the palm oil concession back to the government of São Tome, Project Lead, São Tome 2021

Socapalm, HCV Africa, High Conservation Value (HCV) assessments, Social Sciences Lead, Cameroon 2021

Socapalm Palm Oil Plantations, High Conservation Value (HCV) Monitoring: HCVs 4,5 and 6, Monitoring Lead Monitoring and Management Plan Development, Cameroon 2021

Socapalm, HCV Africa, High Conservation Value Assessment, Social Sciences Lead, Cameroon and São Tome 2018 - 2021

SOGB palm oil plantation, HCV Africa, High Conservation Value Assessment, Social Sciences Lead, Ivory Coast 2019

Indigenous Peoples Plan

Genmin Pty Ltd, WSP, Indigenous Peoples Plan Lead, Baniaka Iron Ore Mining Project, Gabon, 2022-2023

Eskom Holdings SOC Ltd, WSP, Indigenous Peoples Plan inputs for the proposed Mier Rietfontein Solar PV and Battery Storage Project, Khoi-San Peoples, South Africa, Kalahari, (Northern Cape Province), 2022

Stakeholder Engagement (International)

Sasol Pty (Ltd), WSP, Stakeholder Mapping and Pre-Consultation Approach Development team member for the proposed Boegoebaai Green Hydrogen and Green Derivatives Project, South Africa (Northern Cape) 2022

Genmin Pty Ltd, WSP, Stakeholder Engagement Lead, Baniaka Iron Ore Mining Project, Gabon 2022-2023

Minbos, HCV Africa, Social Impact Assessment and Stakeholder Engagement Căcata Phosphate Mine Project, Angola (Cabinda Province) 2021



Pensana PLC, HCV Africa, Longonjo Ndpr Project Stakeholder Engagement Lead, Angola, 2019 - 2021

Total Energies, Professional Grave Solutions, Grave Relocation Action Plan (GRAP) Development, Stakeholder Engagement Process Lead, (Mozambique), 2016 -2020

Mkango Resources, Digby Wells, Stakeholder Engagement Lead, Environmental and Social Impact Assessment (EISA) to IFC standard, Rare Earth project, (Malawi), 2014 - 2015

Aurecon, Bridge over the Niger River, Stakeholder Engagement Lead, ESIA, IFC, (Nigeria), 2013 -2014

Platreef Resources, Digby Wells, Proposed Platinum Mine, Stakeholder Engagement Lead, South Africa (Limpopo) 2013 -2014

Randgold, Hydro Power Stations on the Kibali River, Stakeholder Engagement Lead, ESIA, RAP, IFC requirements, (Democratic Republic of Congo) 2013

Randgold, Life of Mine Kibali Gold Project, Stakeholder Engagement Plan Lead, (Democratic Republic of Congo) (DRC) 2012

Randgold, Stakeholder Engagement Lead, Hydro Power Developments ESIA, Kibali Gold Project, (DRC) 2012

Taurus Gold, Stakeholder Engagement Process Independent Review Afema Gold project Ivory Coast 2012

Randgold, Stakeholder Engagement Lead, Updating of ESIA to IFC, Lolo Mine, (Mali) 2011

Randgold, Public Consultation and Disclosure Lead, ESIA, Resettlement Action Plan (RAP) engagements to IFC standard, (DRC) 2010 - 2012

Koidu Holdings, Digby Wells, Public Consultation and Disclosure, ESIA, IFC, Sierra Leone 2010 - 2011

Randgold, Digby Wells, Public Consultation and Disclosure: Nzoro Road Upgrade ESIA, IFC, DRC 2010 – 2011

CIC Energy, Digby Wells Public Consultation and Disclosure Lead, Serorome Parshalt, Mamabula Project ESIA IFC, Botswana, 2008

Due Diligence

International lenders, Independent Environmental and Social Monitoring, Social Sciences Lead, 4 international airports and 3 domestic airports, Cape Verde, 2024

Standard Bank, Review of Stakeholder Engagement Plan and Grievance Redress Mechanism, for the Grinrod Matola Coal Terminal, Social Sciences, Lead reviewer, Mozambique, 2024

Solarcentury, Review of Action Plan for the Implementation of Resettlement Project for the Construction of the Chimuara Photovoltaic Power Plant, lead Social Sciences reviewer, Mozambique, 2023

ASGC, WSP, Lenders Due Diligence, Project Strada-Senegal roads project, Human Rights Methodology Review, Lead, Senegal, 2023

ASGC, WSP, Lenders Due Diligence, Project Strada-Senegal roads project, Resettlement Action Plan (RAP) Methodology Review, Lead, Senegal, 2023

ASGC, Kidepo, WSP, IFC Due Diligence Tourism Road Project, RAP Methodology Review, Lead, Uganda, 2023

Maridain, WSP, IFC Due Diligence, Wind Energy Facility, Social Sciences Lead, Kenya, 2022

Confidential client, WSP, IFC Due Diligence, Railway Project, Social Sciences Lead, Ethiopia 2022

Confidential client, WSP, IFC Due Diligence, Gold Tailings Reclamation Project, Social Sciences Lead, South Africa 2022-2023

Confidential Client, WSP, Environmental and Social Impact Assessment (ESIA) Review and Gap Analysis of a 100MW Gas to Power Plant, Mozambique 2022

Uranex Nachu Graphite Mine, Stakeholder Engagement Process Review, Environmental and Social Impact Assessment (ESIA), International Finance Corporation (IFC), Tanzania 2013

Banro Corporation, Digby Wells, IMC independent IFC Review, Bankable Feasibility Study, DRC, 2009



Price Waterhouse Coopers, Perisseuo Consulting, Feasibility Study, Mankwe Campus University of the North West, South Africa (North West) 2004

Policy Development

Mulilo, WSP, Policy Author, Local Employment and Procurement Policies for the Du Plessis Dam Solar PV Project South Africa (Northern Cape) 2024

Public Participation (South Africa)

Glencore, Kongiwe Environmental, Public Participation Process Lead, Leslie 1 Coal Mining Project, Leslie South Africa (Mpumalanga) 2018

Glencore, Kongiwe Environmental Public Participation Process Lead, eMakhazeni Coal Mining Project, Belfast, South Africa (Mpumalanga) 2018

Glencore, Kongiwe Environmental, Lephalale Coal and Power Project, Public Participation process Lead, Lephalale, South Africa (Limpopo) 2017

AECOM, Digby Wells, Public Participation Process Lead, EIA Sludge Storage Facility and Pipeline Associated with the Treatment of Acid Mine Drainage in the Eastern Basin of Witwatersrand Gold Fields, South Africa (Springs) 2014 - 2015

Sasol Mining, Digby Wells Public Participation Process Lead, Environmental Regulatory Processes for Proposed Syferfontein Block 4 Mine Expansion Project, South Africa, (Trichardt) 2014-2015

Northern Coal, Digby Wells Environmental, Belfast, Public Participation Process Lead, Environmental Authorisation for Listed Activities Associated with a Proposed Open Pit Coal Mine on the Farm Weltevreden 381 JT, South Africa, (Mpumalanga Province) 2014 – 2015

Xstrata Coal, Digby Wells Public Participation Process Lead, Zandbaken Mine, EIA Green Fields Project, South Africa, (Mpumalanga) 2012

Mincorp, Digby Wells, Public Participation Lead, Prospecting Right Application, South Africa, (KwaZulu Natal) 2011

Temo Coal, Digby Wells Public Participation Lead, Mining Right Application, South Africa, (Limpopo) 2011

Mashala Resources, Digby Wells Public Consultation Lead, Geluk Closure Plan, South Africa, (KwaZulu Natal) 2010-2011

DRD Gold, Digby Wells, Public Participation Process Lead, Crown Ergo Pipeline Project, South Africa, (Gauteng) 2010-2011

Xstrata Alloys, Digby Wells, Public Meetings Facilitation Lead, Lesedi Power Station, South Africa, (Mpumalanga) 2010

HCI Khusela, Digby Wells, Public Participation Process Lead, Palesa Colliery Expansion, EIA EMP amendment, South Africa, (Mpumalanga), 2010

HCI Khusela, Digby Wells, Public Participation Process Lead, Mbali Mine EMP amendment, South Africa (Mpumalanga) 2009

Marafe Resources, Digby Wells, Public Participation Process Lead, Bankfontein Mining Right Application, South Africa, (Mpumalanga) 2009

Crown Gold Recoveries, Digby Wells, Public Consultation Lead, Topstar Dump Reclamation, South Africa, (Gauteng) 2008-2011

Exxaro, Digby Wells, Public Participation Process Lead, Arnot Coal EIA/EMP amendment, South Africa, (Mpumalanga) 2008-2010

Bakgaga Mining, Digby Wells, Public Consultation Lead, Prospecting Right Application, South Africa, (Limpopo) 2008

Mincorp, Digby Wells, Public Participation Process Lead Schoongezicht, Mining Right Application, South Africa, (Mpumalanga) 2008



Pomodzi Gold, Digby Wells Public Participation Process Lead, Environmental Management Plan Amendment, South Africa, (North West) 2008

Vista Resources, Digby Wells, Consultation Process Lead, Prospecting Right Application, South Africa, (Makhado Local Municipality, Limpopo Province) 2008

TWP Perisseuo Consulting Public Participation Process Lead, IFC and World Bank standards Proposed ConRoast Platinum Smelter, South Africa (North West), 2008

Mintails, Umsizi, Perisseuo Consulting Public Participation Process Lead, Super Dump, EIA, South Africa, (Gauteng) 2008

Black Mountain Mine, Umsizi, Perisseuo Consulting, Public Participation Process Lead, Closure Plan, South Africa, (Northern Cape) 2007-2008

Taba Romana Granite, CT Environmental, Perisseuo Consulting, Public Participation Process Lead, South Africa, (Britz, North West) 2006

CT Environmental, Perisseuo Consulting Public Participation Process Lead for the conversion of the old order mining rights: extension of existing opencast mining operations, construction of a river diversion and application for an integrated water use licence on the farm Halfgewonnen 190 IS, South Africa (Mpumalanga) 2006

Xstrata Coal, Digby Wells, Perisseuo Consulting Public Participation Process Lead, Spitzkop Colliery (EMPR amendment), South Africa (Ermelo, Mpumalanga) 2005

CT Environmental, Perisseuo Consulting, Public Participation Process Lead, Environmental Management Plan (EMP) new coal mine development Boschmanskop, South Africa, (Mpumalanga) 2005

Xstrata Coal, Digby Wells, Perisseuo Consulting Preliminary Public Participation Lead, EMP new coal mine development, Boschmanskop, South Africa, (Mpumalanga) 2004

Xstrata Coal, Digby Wells, Perisseuo Consulting, Public Participation, Spitzkop Colliery, EMPR amendment, South Africa, (Mpumalanga) 2003

Etruscan, Digby Wells, Perisseuo Consulting, Public Participation Process Lead, EMP and Water License Application new diamond mining development, South Africa, (North West) 2003

Digby Wells, Perisseuo Consulting, Public Participation Process Lead, EMP, Diamond Mining Development, South Africa, (Vaal River) 2003

Social and Labour Plans

Northern Coal, Digby Wells, Social and Labour Plan Audit Lead, Jaglust Colliery, South Africa, (Mpumalanga) 2011

Sylvania, Digby Wells, Social and Labour Plan Lead, Vollspruit Mine, South Africa, (Steelpoort Valley Limpopo) 2011

Zyl Limited, Digby Wells, Social and Labour Plan Lead, Kangwane, South Africa, (KwaZulu Natal) 2011

HCI Kusela, Digby Wells, Social and Labour Plan Lead, Palesa Colliery, South Africa, (Gauteng) 2011

Xstrata Coal, Digby Wells, Social and Labour Plan Lead, Easternplats Kenidies Vale & Spitzkop, South Africa, (Limpopo) 2011

Eastplats, Digby Wells, Social and Labour Plan Audit Lead, Crocodile River Operations, South Africa, (North West) 2010

Xstrata Coal, Digby Wells, Social and Labour Plan Lead, Local Economic Feasibility Assessment, South Africa, (Mpumalanga) 2010

Tyax, Digby Wells, Social and Labour Plan Lead, Agnus Mine Tyax Trading Mining Right Conversion, South Africa, (Mpumalanga) 2009

Universal Coal, Digby Wells, Social and Labour Plan Lead, Kangala Mining Right Application, South Africa, (Mpumalanga) 2009

Chemwes Recovery Operation, Digby Wells, Perisseuo Consulting Social and Labour Plan Development Lead, South Africa (North West) 2004

Social Development Planning and Facilitation

Palabora Copper, Social Closure Plan Framework Development Lead, South Africa, (Limpopo), 2022

Talmar, Sustainable Developments, Social Development Facilitation Lead, Namakwa Irrigation Scheme, Onseepkans, South Africa, (Northern Cape). 2018 -2021

LMJ Consulting, Magalies Water, Social Development Lead, Maboloka-Letlhabile Ground Water Supply Project, South Africa, (Brits) 2016

BHP Billiton, Digby Wells, Perisseuo Consulting Social Development Plan Development, South Africa, (Revilo North West) 2004-2005

Community Baselines

Xstrata Coal Operations, Digby Wells, Community Baseline Survey Lead, South Africa, (Mpumalanga) 2009-2010

BHP Billiton, Digby Wells Community Baseline Survey Lead, Kutala Southern Access Project, South Africa, (Mpumalanga) 2009

Department of Public Works, Bigin Africa, Perisseuo Consulting Special Intervention Programme Team Member, Data Management Specialist, Free Basic Water Implementation, South Africa, (National) 2008

Department of Water Affairs and Forestry WRP, Perisseuo Consulting, Consumer Survey Team Member, Water Services Regulation, South Africa, (National) 2008

Department of Water Affairs and Forestry, Perisseuo Consulting Business Intelligence Team Member, Water Services Planning and Information, National Census, South Africa, (National) 2005 -2008

Environmental Impact Assessments

Universal Coal, Digby Wells, Environmental Impact Assessment Lead, Mining Right Application, South Africa, (Mpumalanga) 2009-2011

CT Environmental, Perisseuo Consulting, Environmental Impact Assessment (EIA) and Environmental Management Programme (EMP) for Boschmanskop Coal Mine, South Africa, (Mpumalanga) 2006

Department of Water Affairs and Forestry, Project Coordinator, Strategic Environmental Assessment: Usutu – Mhlatuze Water Management Area, South Africa, (Kwa-Zulu Natal) 2000-2003

Monitoring and Evaluation

Department of Provincial and Local Government, Focus BI, Perisseuo Consulting, Monitoring and Evaluation Framework, Team Member, South Africa (National) 2006

Department of Water Affairs and Forestry, Coastal & Environmental Services, Perisseuo Consulting, Socio-Economic Profiling Lead, Kromme, Seekoei Catchments, Reserve Determination, South Africa (Eastern Cape), 2006

Training and Facilitation

Department of Agriculture, Social Development Facilitation, Namakwa Irrigation Scheme, Talmar Sustainable Developments, South Africa, Onseepkans, (Northern Cape) 2017-2021

Total Energy, Professional Grave Solutions, Lead trainer, training Community Liaison Officers for the relocation of approximately 1000 graves in northern Mozambique 2017-2020

Kongiwe Environmental, Chairing and Facilitation, Public and Stakeholder Meetings, 2018-2020

Digby Wells Environmental, Chairing and facilitation: Public and Stakeholder Meetings, 2008-2015

Perisseuo Consulting, Workshop facilitation, Chair public and stakeholder meetings, various projects, 1998-2008



Department of Water Affairs and Forestry, Workshop facilitation and chairing meetings: for the Strategic Environmental Assessment (SEA) Usutu to Mhlathuze Water Management Area (WMA), 2000-2003

Winning Business Systems Skills Accel / South Atlantic Plastics, Training and workshop facilitation for small business development, (Gauteng) 1998

Client BKS / Consultbro, Workshop facilitation and training in small business development, 1998

The University of South Africa (UNISA), Coordinator, Centre for Development Administration, Teaching Programme in Community Based Development, UNISA 1998-2000

The University of South Africa, Teaching Participatory Development Management during attendance sessions, 1998-2000

The University of South Africa, Junior lecturer: Development Administration first year, teaching first-year Development Administration 1998-2000

Stellenbosch University, Project trainer, MA Political Science, Managing simulation game Exaction, 1999

Atlas Aviation Company, Project trainer, Air Traffic Controllers, managing simulation game Green Revolution, 1999

BKS Consultburo, Consulting Engineers, Perisseuo Consulting, Kyalami Community Health Education Programme for the Kyalami Metropolitan Council, South Africa, (Gauteng Province) 1998

South African Defence Force, South African Medical Services, Medical Phase Instructor, Teaching the Operational Medical Orderly Course, South Africa (National) 1990

Anthropological Research

Chizumulu Island, Lake Malawi, 1996



University of Pretoria

The Council and Senate hereby declare that the degree

Magister Artium with specialisation in Environment and Society

with all the associated rights and privileges was conferred on

STEPHEN GEORGE HORAK

in terms of the Higher Education Act, 1997 and the
Statute of the University

A degree to this effect was
conferred on him/her on
2005/04/22



Signed at Pretoria on the
2019-11-04

Registrar

Vice-Chancellor and Principal



Annexure A: Specialist Expertise

SUMMARY OF EXPERIENCE

Iris is a Professional Engineer registered with ECSA (20110156) and obtained her Master of Science degree in Civil Engineering in Germany in 2003. She has more than 20 years of experience in a wide field of traffic and transport engineering projects.

Iris left Germany in 2003 and has gained work experience as a traffic and transport engineer in South Africa and Germany. She has technical and professional skills in traffic impact studies, public transport planning, non- motorised transport planning and design, design and development of transport systems, project planning and implementation for residential, commercial, and industrial projects.

Her passions are the renewable energies and road safety, and she is highly experienced in providing traffic and transport engineering advise.

Iris is registered with the International Road Federation as a Global Road Safety Audit Team Leader and is a regular speaker at conferences, seminars and similar.

PROFESSIONAL REGISTRATIONS & INSTITUTE MEMBERSHIPS

PrEng	Registered with the Engineering Council of South Africa No. 20110156 Registered Mentor with ECSA
MSAICE	Member of the South African Institution of Civil Engineers
ITSSA	Member of ITS SA (Intelligent Transport Systems South Africa)
SAWEA	Member of the South African Wind Energy Association
SARF	South African Road Federation: Committee Member of Council
SARF WR	South African Road Federation Western Region – Chair
SARF RSC	South African Road Federation National Road Safety Committee
IRF	Registered as International Road Safety Audit Team Leader

EDUCATION

1996 – Matric (Abitur)	Carl Friedrich Gauss Schule, Hemmingen, Germany
1998 - Diploma (Draughtsperson)	Lower Saxonian State Office for Road Engineering
2002 – BSc Eng (Civil)	Leibniz Technical University of Hannover, Germany
2003 - MSc Eng (Civil & Transpt)	Leibniz Technical University of Hanover, Germany

Master Thesis on the Investigation of the allocation of access rights to the European rail network infrastructure - Research of the feasibility of the different bidding processes to allocate access rights of railway operators in the European railway market. Client: Technical University of Berlin and German Railway Company.

SUMMARY OF EXPERIENCE

iWink Consulting (Pty) Ltd – Independent Consultant

2022 – present

Position: Independent Consultant – working as an independent Specialist in the field of Traffic & Transport Engineering, Renewable Energies and Road Safety.

-

JG Afrika (Pty) Ltd (Previously Jeffares & Green (Pty) Ltd)

2016 – 2022

Position: Associate / Division Head: Traffic & Transport Engineering

Jeffares & Green (Pty) Ltd

2012 – 2016

Position: Senior Traffic & Transport Engineer

Arup (Pty) Ltd

2010 - 2012

Position – Senior Traffic & Transport Engineer

Arup (Pty) Ltd

2004 - 2010

Position – Traffic & Transport Engineer

Schmidt Ingenieurbüro, Hannover, Germany

2000

Position – Engineering Assistant

Leibniz University of Hannover, Germany

2000 - 2003

Position – Engineering Researcher - Institute for Road & Railway Engineering

SELECTION OF PROJECTS

Please note: The below lists show only a *selection* of projects that Iris has been involved in over the last 20 years. More information and a complete Schedule of Experience can be made available on request.

RENEWABLE ENERGY PROJECTS

Transport Impact Assessments /Traffic Management Plans for:

- Selebi Phikwe Solar PV Project, Botswana
 - Cradock – Kaladokhwe WEFs
 - Britstown WEFs
 - Highveld Solar Cluster
 - Dealsville & Bloemfontein Solar PV
 - Great Karroo Wind and Solar Cluster
 - Ummbila Emoyeni Solar Project
 - Poortjie Wind&Solar
 - Hydra B Solar Cluster
 - Choje Windfarm, Eastern Cape
 - Richards Bay Gas to Power Project
 - Oya Black Mountain Solar Project
 - De Aar Solar Project
 - Euronotus Wind & Solar Cluster
 - Pienaarspoort Wind Energy Project
 - Karreebosch Wind Energy Project
 - Dyasonsklip Solar Project
 - Kuruman Windfarm
 - Bloemsmond Solar Farms
 - Hendrina Wind Energy Project
 - Orkney Solar Project
 - Bulskop Solar Project
 - Hyperion Solar & Thermal Project
 - Gromis & Komas Wind Energy Projects
 - Kudusberg & Rondekop Wind Energy Projects
 - Bayview Windfarm
 - Coega West Windfarm
 - Suikerbekkie Solar Project
 - Poortjie Solar Project
 - Northam Solar Project
-

- Sibanye Solar Project
- Du Plessis Dam Solar Project
- Mercury Solar Project
- Aberdeen Wind Energy Project
- Saldanha Wind and Solar Projects
- Ummbila Emoyeni Wind Energy Project
- Springhaas Solar Project

Clients:

- G7 Energies
- ABO Wind Renewable Energies
- Atlantic Renewable Energy Partners
- Mulilo
- Acciona
- Enel
- Engie
- DNV GL
- Enertrag
- Scatec Solar
- Red Rocket Energies
- Windlab
- Mainstream
- Africoast
- Genesis

FURTHER PROJECTS**Traffic Impact Studies & Site Development Plan Input:**

- Nooiensfontein Housing Development, City of Cape Town
- Belhar Housing Development, City of Cape Town
- Baredale Phase 7, City of Cape Town
- Beau Constantia Wine Farm
- Constantia Glen Wine Farm
- Eagles Nest Wine Farm
- Groenvallei Parking Audit, City of Cape Town
- Kosovo Housing Development, Western Cape Government
- Enkanini Housing Development, Stellenbosch
- Delft Housing Development, City of Cape Town
- Secunda Sasol, Free State
- Marula Platinum Mine
- InnerCity Transport Plan, City of Cape Town
- Stellenbosch Road Master Plan
- Nyanga Public Transport Interchange
- Crawford Campus Cape Town
- Durban RoRo Car Terminal, Transnet

- Durban Farewell Container Site
- Msunduzi Waterfront Housing Development
- Transnet Park Site – Traffic Management and Evacuation Plans
- UWC Bellville Medical Campus
- Bloekombos District Hospital
- Malabar Extension 3, Port Elizabeth

Traffic Engineering for Roads Projects:

- Namibia Noordoewer to Rosh Pina, Road Agency Namibia
- N2 Section 19 Mthatha – NMT Studies
- R63 Alice to Fort Beaufort – NMT, Road Link and Intersection Studies
- N2 Kangela to Pongola Upgrade
- Cofimvaba Eastern Cape – NMT, Road and Intersection Upgrades
- Stellenbosch R44 Traffic Signals
- Secunda Traffic Signals
- Fezile Dabi District Gravel Roads Upgrade, Free State Province
- Zambia RD Rehabilitation Project
- R61 Eastern Cape – NMT Studies, SANRAL

CONTINUED PROFESSIONAL DEVELOPMENT (CPD)

Last five years*full CPD list available

2023 – International Traffic Safety Conference, Doha – Speaker

2022 – 7th Regional Conference for Africa & PIARC International Seminar on Rural Roads and Road Safety - Speaker

2022 – Non-motorised Transport Seminar (SARF) – Co-Organizer / Speaker

2021 – SARF KZN Road Safety Considerations (SARF) – Guest Speaker

2021 – Road Safety Audit Course (IRF) – Guest Speaker

2021 – Legal Obligations / Road Safety Act (SARF) – Presenter

2020 – Understanding Road Accidents (SARF)

2020 – Road Safety Auditor Course (SARF) – Co-Lecturer

2018 – African Road Conference (IRF/SARF/PIARC)

2018 – Road Safety in Engineering (SARF) – Presenter

2016 - SATC Road Safety Audit Workshop Pretoria (SARF)

2015 - Non-motorised Transport Planning (SARF)

I hereby certify
that this translation corresponds
to the original documents.

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Koch

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Ms. Iris Hagen

An der Wehrkirche 9

30966 Hemmingen

2008-04-07

2008-04-02

born: 1976-10-12
in: Hannover
matriculation number: 1930441
current subject semester: 11

Certification of Studies and Examination Performances rendered

Course of Studies: Civil Engineering
(Expected) Degree: University Diplom (equivalent to Master of Science)
Exam regulations version: 1999
Examination section: General and Advanced Studies

Exam-no.	Performance Description	Kind/ Form of Exam		Date	Grade	Status	B	M	Remark
25100	Statics and Dynamics	FG	KT	2001-07-24	3.0	BE	8	0	
25101	Force Method	KP	NN	2001-07-24	3.7	BE	4		
25103	Vibrations on Civil Engineering Structures	KP	NN	2001-03-05	2.3	BE	4		
25200	Structural Engineering	FG	KT	2002-02-15	3.3	BE	16	0	
25201	Basis of Design in Structural Engineering	KP	NN	2002-02-12	3.3	BE	4		
25202	Reinforced and Prestressed Concrete Design	KP	NN	2001-07-15	3.0	BE	4		
25203	Basics of Steel and Composite Construction	KP	NN	2001-07-23	3.7	BE	4		
25204	Basics of Timber Engineering	KP	NN	2002-02-15	3.3	BE	4		
25300	Geotechnics	FG	KT	2001-07-27	3.2	BE	12	0	
25301	Foundation Engineering and Soil Mechanics I	KP	NN	2001-03-05	3.0	BE	4		
25302	Foundation Engineering and Soil Mechanics II	KP	NN	2001-07-27	3.0	BE	4		
25304	Underground Construction	KP	NN	2001-07-26	3.7	BE	4		
25400	Building Site Operations and Management	FG	KT	2002-02-09	1.7	BE	12	0	
25401	Principles of Building Site Operations	KP	NN	2000-08-23	1.3	BE	4		
25402	Construction Methods and Safety Engineering	KP	NN	2001-03-05	2.3	BE	4		
25403	Project Monitoring and Execution	KP	NN	2002-02-09	1.7	BE	4		
25500	Highway and Transport Studies	FG	KT	2001-03-05	2.9	BE	12	0	
25501	Transportation-, Urban- and Regional Planning	KP	NN	2000-07-12	2.7	BE	4		
25502	Speed-oriented Design of Roads and Railway Lines	KP	NN	2000-07-04	2.7	BE	4		
25503	Road and Permanent Way Construction	KP	NN	2001-03-05	3.3	BE	4		
25505	Design of and Operation on Road Infrastructures	KP	K	2003-03-21	2.3	BE	4		
25600	Water Studies	FG	KT	2002-02-11	2.3	BE	12	0	
25601	Fluid Mechanics and Hydrology	KP	NN	2000-07-06	3.3	BE	4		
25603	Hydraulic and Coastal Engineering	KP	NN	2002-02-11	2.0	BE	4		
25605	Water Quality and Waste Management	KP	NN	2001-03-05	1.7	BE	4		

25700	Numerical Methods	FG	KT	2001-07-19	2.5	BE	8	0
25702	Finite Elements	KP	NN	2001-03-05	2.3	BE	4	
25703	Graphs and Networks	KP	NN	2001-07-19	2.7	BE	4	
26200	Traffic System	FR	KT	2003-02-28	2.2	BE	24	0
26201	Technology of Rail Systems	KP	NN	2002-08-02	1.3	BE	4	
26203	Rail Traffic Fields of Application	KP	MP	2003-02-28	1.7	BE	4	0
26204	Track Vehicles	KP	MP	2003-02-18	3.3	BE	4	0
26209	Rail Fixation	KP	MP	2003-02-11	2.3	BE	4	0
26210	CAD Supported Line Design of Traffic Routes	KP	NN	2002-07-29	2.0	BE	4	
26230	Special Legal and Economic Problems in Construction	KP	NN	2002-07-18	3.0	BE	4	
26500	Advanced Studies Electives	FR	KT	2002-09-21	1.7	PV	4	0
26501	Elective Subject in Advanced Studies Examination	KP	NN	2002-09-21	1.7	BE	4	0
	Law in Building and Architect Contracts							
26900	Other Examination Performances	FR	KT	2003-03-21	2.3	PV	4	0
25505	Design of and Operation on Road Infrastructures	KP	K	2003-03-21	2.3	BE	4	0
29000	Practical Course General Studies Examination	PR	G	1998-09-30		BE		
29100	Project Study - General Studies Examination	PA	KT	2002-01-14	1.7	BE	6	
29200	General Studies Examination	FP	G	2003-03-21		BE	0	0
29296	Bonus Points Account - General Studies Examination	BK	G	2002-02-15	2.7	PV	80	0
29297	Malus Points Account - General Studies Examination	MK	G	2000-07-10	5.0	PV	0	4
29500	Study Project Advanced Studies Examination (Topic: Eschershausen Bypass - CARD 1 Variant Analysis for Link-up of Federal Highway B 240)	SA	G	2002-12-04	2.7	BE	6	0
29600	Advanced Studies Examination	VT	G	2003-03-21		BE	0	0
29996	Bonus Points Account - Advanced Studies Examination	BK	KT	2003-03-21	2.1	BE	32	0
29998	Diplom Thesis - Institute of Transport (Topic: Railway Transportation Companies in Competition for Schedule Capacities in a Liberalized Traffic Market)	DA	S	2003-10-10	2.0	BE	16	0
9999	Diplom (U) (equivalent to Master of Science)	HD	KT	2003-10-10	2.4	BE	142	0

The diplom examination has been passed / has not yet been passed / has definitely not been passed / has been discontinued.

By order
signature (Stamp)

Kind of Examination: AK = course with special conditions BA = bachelor thesis MO = module BK = bonus points account DA = diploma thesis
F = subject FP = subject examination GA = total final examination HD = main diploma KL = written test
KP = course examination LN = efficiency statement LU = performance without grading MA = master thesis
PR = internship SA = study project TL = partial performance VL = advance performance ZU = admission

Status: AN = registered BE = passed EN = definitely not passed NB = not passed PP = examination schedule
(performance yet to be rendered) PV = examination account

Remark: ANA = medical certificate not recognized FBE = free attempt passed FNB = free attempt not passed FNV = free attempt without improvement of grades FRU = free attempt with unexcused withdrawal FRT = medical certificate in the free attempt FVB = free attempt for grade improvement LAN = performance recognized NIZ = not admitted
NRT = medical certificate in grade improvement PFV = potential free attempt PVB = potential free attempt for grade improvement RTE = excused absence RTU = unexcused absence RT = registration withdrawn
RTL = withdrawal with cancelation ZUG = admitted

I hereby certify
that this translation corresponds
to the original documents.

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By Order
K. K. K. 2008-04-07
(Chartered Translator
to the Courts and Notaries
of Hannover Regional Court District)

Engineering Council of South Africa



**This is to
certify
that**

Iris Sigrid Wink

is registered as

Professional Engineer

in terms of the Engineering Profession Act, 2000
(Act No. 46 of 2000)

Date

9 May 2011

**Registration
Number**

20110156



President



Chief Executive Officer



Johan Bothma

Earth & Environment - Rehabilitation & Closure, Visual Assessment Specialist,
Registered Landscape Architect

CAREER SUMMARY

Johan is the Director for Rehabilitation and Closure based in the Midrand, South Africa office. He has 20 years consulting experience and is currently advancing closure planning and costing for mining, industrial, power, and renewable sector operations, with a focus on risk mitigation, post mining land use planning, and land stewardship. Johan has completed mine closure related projects for a wide variety of commodities throughout Africa and abroad, including sites throughout South Africa, and in Zambia, Mozambique, Botswana, Namibia, Uganda, the DRC and Congo, Ghana, Guinea, Mauritania, the UK, Mexico, and Uzbekistan. He specialises in visual assessment and graphic representation of project impact and mitigation and also has considerable experience in impact assessment, environmental management plans, and auditing for mining, industrial, commercial and property development and projects.



Johan is a professionally registered Landscape Architect and completed his master's degree in 2004, focusing on climate responsive design and energy efficiency for residential developments. He has previously worked on various landscape planning and design projects, including large scale open space management plans, as well as landscape architectural design for prestige governmental projects including the Presidential residence in Bryntirion Estate in Pretoria.

16 years with WSP

Area of expertise

Advancing Closure Planning and Costing
Land Use Planning and Latent Risk Mitigation
Visual Assessment
Environmental Management Plans
Auditing for Mining, Industrial & Commercial
Property Development
Open Space Management Plans
Landscape Design Projects
Open Space Management Plans

20 years of experience

Language

Afrikaans – Fluent
English – Fluent

EDUCATION

MLArch Landscape Architecture, University of Pretoria, Pretoria	2004
BL Landscape Architecture, University of Pretoria, Pretoria,	2001



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Registered Landscape Architect

PROFESSIONAL AFFILIATIONS

Institute of Landscape Architecture of South Africa (ILASA)	2007
South African Council for the Landscape Architectural Profession (SACLAP)	2007

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd.	July 2022 – present
Golder Associates Africa (Pty) Ltd.	2008 – June 2022
African EPA	2004 – 2007
University of Pretoria (part-time contract)	2003
Strategic Environmental Focus SA (part-time contract)	2002 – 2003
Karien Hanekom Landscape Architects (part-time contract)	2001 - 2002
Maarten Venter Landscape Architects (part-time contract)	2000

PROFESSIONAL EXPERIENCE

REHABILITATION AND CLOSURE

Anglo American Platinum – Limpopo Province, South Africa

2021 – ongoing

Project director

Ongoing closure planning and costs development aligned to the requirements of GN R. 1147, Anglo American Mine Closure Toolbox Version 3 and IRMA, including operational rehabilitation planning and residual costs quantifications.

Sasol Secunda - Mpumalanga, South Africa

2015; 2017; 2019; 2021-2022

Project manager/technical director

Project manager 2015 and 2017, and technical direction and review 2019 and 2021-22 closure costs updates, for the Sasol Secunda Synfuels and Chemicals operations complex, including waste disposal, post-closure water treatment and cash flows.

Sibanye-Stillwater Gold Mines - Gauteng, Free State, and Mpumalanga, South Africa

2013 - ongoing

Project manager/project director

Ongoing closure planning and costs updates for the Kloof, Driefontein, Cooke, Ezulwini, RUSO, Beatrix and Burnstone operations, including operational rehabilitation planning and residual costs quantifications.

Sibanye-Stillwater Platinum operations - Northwest Province and Limpopo, South Africa

2017 - ongoing

Project manager/project director

Ongoing closure planning and costs updates for RPM, Kroondal, Marikana and Blue Ridge operations, including operational rehabilitation planning and residual costs quantifications.

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ICL Boulby Polyhalite Mine – North York Moors National Park, UK 2023

Closure Planning Specialist

Development of a comprehensive mine closure plan which formed part of a larger mine-wide water management project, was the first comprehensive closure planning that had been done for the mine, and included several components, namely: Closure environmental risk assessment, Mine-wide demolition, remediation and rehabilitation planning, including implementation of post-mining land uses, Development of conceptual shaft and sea outfall decommissioning, plugging, and sealing measures, which had not been fully addressed before, Measures for closure of the extensive off-site infrastructure associated with the mine, including conceptual measures for making safe of numerous heritage features such as historical bridges, Computing of the mine-wide and off-site closure costs, for likely and higher-case scenarios, Inclusion of company overheads, retrenchment and reskilling, and committed post-closure costs, Scheduling and costing of operational demolition and rehabilitation activities

Rio Tinto Iron Ore Simandou Project – Guinea 2021 – ongoing

Closure specialist

Development of conceptual closure planning and associated costs for the RTIO Simandou open pit mining project, including further detailed site assessment and technical review of the ongoing for day-of-assessment and life-of-mine closure costs and further mine closure planning updates

Golden Star Resources – Ghana 2013, 2018, 2022

Closure specialist

Compilation of decommissioning plan and asset retirement obligations for its two mines, Golden Star Wassa Limited and Golden Star Bogoso/Prestea Limited. Develop detailed quantity survey based on site assessment to determine individual infrastructure volumes and identification of material to determine the quantities of materials needed for demolition, disposal, including rehabilitation of associated process water dams and impoundments, residue facilities, and associated contamination related remediation.

Torex Gold – Mexico 2013, 2018

Closure specialist

Development of conceptual closure planning and determination of unscheduled and scheduled closure costs for the Torex gold open pit gold mine in Mexico

Arnot OpCo Coal Mine - Mpumalanga, South Africa 2016 – 2019 (Exxaro), 2020 – ongoing (OpCo)

Project manager/technical review

Comprehensive GN R. 1147 compliant closure plan and costs for final closure of Arnot Coal mine, including qualitative and quantitative risk assessments, residual and latent risk mitigation and costs.

Gold Fields South Deep Mine - Gauteng, South Africa 2013-2017; 2019

Project manager

Operational rehabilitation, closure planning and costs, detailed next land use plan, residual and latent costs determination towards GN R. 1147 compliance. Compilation of joint Sibanye/Gold Fields rehabilitation options analysis, planning and costing for the Leeuwspruit.



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Mafube Coal Mine - Mpumalanga, South Africa 2017

Project manager

Closure plan and bio-physical closure costs, qualitative and quantitative risk assessments, residual and latent risk mitigation and water treatment costs, towards GN R. 1147 compliance.

Morupule thermal power station, and coal mine - Morupule area, Botswana

2016; 2018, 2021 - ongoing

Project manager/project director

Closure costs determination and closure framework for Phase 2 expansion of Morupule thermal coal power station (2016), and closure costs review and update of Morupule coal mine (2018, 2021).

Kenmare Moma Mine - Sofala, Mozambique

2015; 2018; 2020

Project manager

Scheduled and unscheduled closure cost updates for Moma sand mine in Mozambique.

Anglo New Denmark, New Vaal, Union and Goedeheop Mines interim closure planning and costing - Mpumalanga, South Africa

2013 – 2014

Project manager/closure specialist

Anglo Closure Toolbox interim closure planning for respective Anglo Coal mines, including state of the environment, rapid strategic environmental assessment, closure criteria, risk assessment, closure costing and next land use planning.

Zincor detailed land use plan - Gauteng, South Africa

2013

Project manager

Detailed evaluation of post-closure next land use options for decommissioned Zincor zinc smelter complex. Letlhakane and Jwaneng land use plans and graphic modelling - Botswana

2012 – 2014

Closure specialist

Post-closure land use plans for the Letlhakane and Jwaneng open pit diamond mines in Botswana. Graphic modelling direction for various waste rock disposal, site-wide rehabilitation and end land use planning alternatives. Closure costs final review for Jwaneng.

Thaba Metsi Coal Mine - Limpopo, South Africa

2012

Closure specialist

Scheduled and unscheduled closure cost determinations, preliminary end land use plan for Thaba Metsi opencast and underground coal mine.

Goedeheop Colliery - Mpumalanga, South Africa

2012

Closure specialist

Scheduled and unscheduled closure cost determinations, preliminary land use plan for Goedeheop North and South underground coal mines.

International closure projects review and technical inputs (various)

Project manager/closure specialist

Specialist closure planning and costs direction and review for various African and international mines, including Kinsevere, Kipushi and Kamoanga copper mines (DRC), Kansanshi copper mine (Zambia), Guelb Moghrein gold-copper mine (Mauritania), Maamba coal mine (Zambia), Torex gold mine (Mexico).

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VISUAL IMPACT ASSESSMENTS

Verkykerskop, Phefumula Emoyeni, Mukondeleli Visual Impact Assessments – South Africa 2023 – ongoing

Visual assessment specialist

Visual impact assessments for various proposed renewables sector PV and wind turbine installations, including directing viewshed analysis and graphic simulation of the implemented project to evaluate visual impacts.

CNOOC on-shore gas project Visual Impact Assessment - Lake Albert, Uganda 2018 – 2019

Project manager/visual assessment specialist

Visual impact assessment and strategic direction for night-time light glare pollution for the new CNOOC offshore oil project on the shore of Lake Albert in Uganda.

Lonmin solar plant Visual Impact Assessment - Northwest Province, South Africa 2013

Project manager

VIA, including viewshed analysis and complex glare path analysis of a proposed photovoltaic installation at Lonmin mine.

Zonnebloem, Schoonoord, Brakfontein, Optimum, Rondebult, Doornrug, and Middelkraal mines – various locations in South Africa 2006 – 2013

Project manager/visual assessment specialist

Complex, staged VIA including viewshed analysis, for various phases of mining.

Lethlakane and Jwaneng diamond mines Visual Impact Assessment - Botswana 2012

Project manager/visual assessment specialist

Visual assessment and extensive graphic modelling for the rehabilitation, closure, and end land use of Lethlakane and Jwaneng open pit diamond mines in Botswana.

Kamoa, Dumasi mines Visual Impact Assessment - DRC, Ghana 2013

Visual assessment specialist

Visual impact assessments for open pit mines.

Schoonoord coal mine Visual Impact Assessment - Mpumalanga, South Africa 2012

Visual assessment specialist

Complex, staged VIA including viewshed analysis, for various phases of mining.

Prestea gold mine Visual Impact Assessment - Ghana, Ghana 2012

Visual assessment specialist

VIA for the redevelopment and expansion of the mothballed Prestea mine at the town of Prestea.

Lethlakane Diamond Mine Visual Impact Assessment - Orapa, Botswana 2012

Visual assessment specialist

Visual assessment and extensive graphic modelling for the rehabilitation, closure, and end land use of Lethlakane open pit diamond mine in Botswana.

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**Scantogo, Project title, Tabligbo, Togo
2011**

Visual assessment specialist

VIA for the construction of a quarry and clinker production plant.

**Crossways & Sunnyvale Estate Visual Impact Assessment - Kouga Municipality, EC, South Africa
2009**

Visual assessment specialist

VIA Report for proposed new residential development just outside of Jeffrey's Bay. Report included photographic assessment of existing site conditions, GIS viewshed analysis and modelling of visual impact before and after proposed development, Graphic representation of the visibility of the development from key visual vantage points and assessment of visual mitigation measures.

**Client, Boplaas Residential Estate Visual Impact Assessment - Kouga Municipality, EC, South Africa
2009**

Visual assessment specialist

VIA for proposed new residential development just outside of Jeffrey's Bay. Report included photographic assessment of existing site conditions, GIS viewshed analysis and modelling of visual impact before and after proposed development, Graphic representation of the visibility of the development from key visual vantage points and assessment of visual mitigation measures.

**KUKA, KUKA Aerial Ropeway Visual Impact Assessment - Mpumalanga, South Africa
2009**

Visual assessment specialist

VIA specialist study for the proposed new 50 km aerial ropeway, that will transport coal ore between the Lion and CMI Smelters and Thorncliff Mine, via suspended buckets. The Ropeway itself is suspended from a series of pylons up to 22 m high, spaced several hundred meters apart. The VIA included a thorough photographic baseline assessment of the study area, modelling of the proposed infrastructure, a complex viewshed analysis that illustrated the impact of the ropeway over distance as well as the number of pylons that will be visible, a 3-dimensional photo montage of the proposed infrastructure within the landscape as well as impact assessment and mitigation report.

**Tubatse Chrome WTP Visual Impact Assessment - Mpumalanga, South Africa
2009**

Project manager/visual assessment specialist

VIA specialist study for the proposed new Water Treatment Plant and associated additional infrastructure for Tubatse Chrome, as part of the overall Environmental Impact Assessment (EIA) process for the project. The existing Tubatse Chrome plant is situated just south of the town of Steelpoort along the R555 Road in Mpumalanga Province, South Africa.

**Anglo, Coal bed methane - Anglo Coal Gas Projects, Limpopo, South Africa
2009**

Visual assessment specialist

VIA specialist study for the proposed new Anglo Coal Gas Projects (Anglo Coal) 4,000 ha coal bed methane gas production site 25 km northwest of Lephalale (Ellisras), and an electricity transmission line to be routed from the proposed 4,000 ha site to a substation north of Lephalale in the Limpopo Province.

The development includes the development of 37 gas well on the farm Nooitgedacht that is approximately 1,000 ha in extent. The proposed 37 spot will be run as an extension to exploration activities, in order to provide a large-scale production test.

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Registered Landscape Architect

Western Utilities Corporation Visual Impact Assessment - Gauteng, South Africa 2009

Visual assessment specialist

VIA specialist study for the proposed new collection and distribution pipelines and associated purification and pumping infrastructure, for the ambitious WUC project, that aims to address the acid mine drainage problem in the West Rand. Although the pipeline will be mostly buried, they traverse a vast area and may potentially affect several areas of some visual significance and the project will potentially influence a very large number of people during the construction phases of the project. the VIA included a thorough photographic baseline assessment of the study area, modelling of the proposed infrastructure, GIA mapping of the visual resource quality of the landscape and anticipated of visual impact during construction, as well as impact assessment and mitigation report. the VIA report was awarded with the first Golder Africa Technical Writing Award, for excellence in technical report writing.

Cape Gate waste site Visual Impact Assessment - Gauteng, South Africa 2009

Visual assessment specialist

VIA specialist study for the proposed expansion of the Cape Gate waste and by-product storage site, which will include several large storage and discard dumps, storm water management dams, vehicular parking and loading areas and ancillary infrastructure. Analysis included extensive modelling of the dumps over the lifespan of the project, projected visibility of the dumps, the development of visual mitigation strategies and modelling of the anticipated effectiveness of the proposed mitigation of the development and management strategy.

Umcebo Rondebult, Doornrug, Steelecoal and Middelkraal mines Visual Impact Assessment - Mpumalanga, South Africa 2006

Visual assessment specialist

VIA for new opencast coal mine infrastructure and mining operations. Report included photographic assessments of existing site conditions, assessment of visual impact before and after proposed mine infrastructure, and graphic representation of proposed visual mitigation measures.

Xstrata Rhovan mine VIA - Brits, South Africa 2006

Visual assessment specialist

VIA for expansion of existing slimes dam, related infrastructure and plant area. Report included photographic assessments of existing site conditions, GIS viewshed analysis and modelling of visual impact before and after proposed mine infrastructure, and graphic representation of proposed visual mitigation measures. Preliminary cost assessment and implementation plan for proposed visual mitigation measures.

Xstrata Aloys, Lydenburg Works VIA - Mpumalanga, South Africa 2006

Visual assessment specialist

VIA for expansion of existing slimes dam, related infrastructure and plant area. Report included photographic assessments of existing site conditions, GIS viewshed analysis and modelling of visual impact before and after proposed mine infrastructure, and graphic representation of proposed visual mitigation measures. Preliminary cost assessment and implementation plan for proposed visual mitigation measures.

Paardeplaats Residential Estate VIA - Gauteng, South Africa 2006

Visual assessment specialist

VIA compiled for proposed new residential development near the National Botanical Gardens in Krugersdorp. Report included photographic assessments of existing site conditions, modelling of visual impact before and



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after proposed development, Graphic representation of the visibility of the development from key visual vantage points and assessment of visual mitigation measures.

Schurveberg Residential Estate, Northwest Province, South Africa 2006

Visual assessment specialist

VIA for proposed new residential development east of Pelindaba, within ecologically significant valley. Report included photographic assessments of existing site conditions, GIS viewshed analysis and modelling of visual impact before and after proposed development, Graphic representation of the visibility of the development from key visual vantage points and assessment of visual mitigation measures.

ENVIRONMENTAL ASSESSMENTS

Menlyn Maine EMPs and environmental audits, Pretoria, South Africa 2011 – 2013

Project manager, EMP auditor

Compiled Environmental Management Plans for the Menlyn Maine Clinton Climate Change Initiative-endorsed Phase 1 infrastructure development as well as Falcon, Epsilon and Pegasus Buildings; and conducted construction environmental compliance audits. All projects are targeting a minimum Green Star SA four-star rating, and LEED ND certification.

Tubatse, Water treatment and pelletiser plant EMP audits, Limpopo Province, South Africa 2010 – 2013

Project manager, EMP auditor

Six-monthly environmental compliance audits in terms of approved EMP and Environmental Authorisations for construction and operation of new water treatment plant and pelletiser plant.

Rand Uranium, TSF EIA, Gauteng, South Africa 2010

EIA Lead

Long term tailings storage facility for disposal of up to 350 million tons of re-processed tailing from a number of tailing resources in the Randfontein area, including 40 km associated pipelines. Coordination of specialist assessment and public participation in terms of overall EIA process.

Transnet, New Multi-Products Pipeline (NMPP) EMP, Durban, Kwa Zulu-Natal to Jameson Park Near Heidelberg, South Africa 2008

EMP development

Compiled the Environmental Management Plan (EMP) for the design, construction, operations, and decommissioning phases of the NMPP project. This consisted of a new multi-products liquid fuel pipeline (or "Trunkline") running from Durban, Kwa Zulu-Natal to Jameson Park near Heidelberg in Gauteng, with a pump station at each terminal, and eight pump stations along the route. A coastal fuel terminal either at the Durban International Airport or and inland fuel terminal at Jameson Park near Heidelberg. The EMP ensured that recommendations of numerous specialists from a wide variety of fields were implemented. Following the compilation of a draft version of the EMP, I also facilitated a detailed workshop between the Contractor and the Client to establish that the mitigation measures proposed are feasible, following which the EMP was amended as required.

City of Tshwane, KH2 and KK1,2,3 Pipelines, Pretoria, South Africa 2008

Project manager, EMP auditor

Various environmental processes to obtain authorisation for the installation of the proposed pipeline. Amendment and update of detailed Environmental Management plan for planning, construction, and operation phases.



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Registered Landscape Architect

The Hills and Sammy Marx lifestyle estates, Water Use Licence Applications, East of Pretoria, South Africa

2008 and 2013

Project manager

Water use licence applications for two extensive mixed use lifestyle estates.

Northwest Province Department of Roads and Transport Road D419 EIA, Northwest Province, South Africa

2005

EMP development

EMP for the construction of road D419, including extensive addressing of erosion prevention and mitigation. EIA Scoping report for the proposed D419 Road between the two Lekgophung and Swartkopfontein in the Northwest Province. The distance between the two termini of the road (approximately 15 km) required extensive consideration of several alignment option and extensive public participation.

The Hills Estate EIA and WULA, Pretoria, South Africa

2004

Project manager, EIA and WULA development, EMP auditor

EIA Scoping Report, EMP and various Water Use Licence Applications for "The Hills" mixed use development in Kungwini, east of Tshwane. This project was particularly complex due to the large extent of the site, large scale of the development and many environmental factors that had to be accommodated. The project includes single stands within an ecological conservation area, medium and high density residential and commercial sectors, resort and hotel facilities, a golf course designed by Greg Norman and the Jacques Kallis cricket oval.

Landscape Design

South African Police Services, Roodeplaat dog school landscape, Gauteng, South Africa

2007 – 2014

Project manager, landscape architect

Initial planning and detail landscape design as well as construction supervision for expanded and upgraded South African Police Services dog school facilities.

DPW Mahlamba Ndlopfu, Presidential residence landscape design, Pretoria, South Africa

2006 – 2009

Project manager, landscape architect

Conceptual and detail design of landscape architectural improvements. Set up of tender documentation and full administration and management of tendering and tender adjudication process for main landscaping contractor, contractor supervision and instruction for interim improvement measures and implementation. Coordination of process with Bryntirion ISM requirements.

DPW Bryntirion Estate Detail Landscaping Design, Pretoria, South Africa

2006 – 2008

Project manager, landscape architect

Initial conceptual and detail design of the landscape associated with the proposed new inner and outer fences around the entire estate, as well as the proposed new gatehouses. Extensive coordination with the entire project team and integration of all relevant Bryntirion ISM planning principles.

Rustenburg Local Municipality, Open Space and Heritage Management Plan (ROSHMAP), Rustenburg, South Africa

2007

Spatial planning expert

Initial project execution planning and engagement of stakeholders and public as well as various departments of Rustenburg Local Municipality (RLM). Coordination of all GIS mapping and databases associated with the project. Administration and management of the Public Participation and Ward Council Engagement processes.

Johan Bothma

Earth & Environment - Rehabilitation & Closure, Visual Assessment Specialist,
Registered Landscape Architect

Co-author and compilation of the Draft, Final Draft and Final versions of the comprehensive project report outlining open space and heritage management plan, including proposed genetic project proposal and management strategies.

Bloemhof, Bloemhof Dam Landscape Planning and Conceptual Design, Free State, South Africa 2007

Landscape architect

Conceptual layout and design as for the proposed Bloemhof Dam tourism and recreation resort development, as well as master plan proposal for the development. Development includes water park, sports facilities, multi-functional halls, agricultural show grounds, caravan park, fish amenities and associated facilities, as well as residential golf estate. Integration with engineering services and design of jetty structure.

Bryntirion Estate, Union Building and Ministerial Residential FM Tender, Pretoria, South Africa 2007

Project manager, landscape architect

Drafting setup and completion of tender documentation for DPW Facilities management project, including all specification, contractual matters and Provisional Bills of Quantities for landscape architectural and horticultural services for the project, and integration with architectural, engineering, safety and main Quantity Surveyor consultants on project, as well as DPW Horticultural Services. Facilities Estate and properties included in the project are the entire union Building complex, Bryntirion Estate and over 20 prestige portfolio residences in Gauteng. Projected landscape value of the project over 3 years amount to upwards of R 350 million.

Bryntirion Estate, Heritage Conservation Management Plan, Pretoria, South Africa 2007

Project manager, landscape architect

Part of a multi-disciplinary consortium involved with the Bryntirion Heritage Integrated Services Management Plan. Duties included a landscape inventory and assessment of the individual landscape elements and gardens of Bryntirion Estate. Specifically, the trees and built landscape elements were inventoried. Furthermore, the different landscape areas, that have distinct qualities and attributes that distinguish them from each other, were also identified and prescribed according to the definitions of the National Heritage Resources Act (Act No. 25 of 1999). Area of "cultural significance" in terms of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance were identified and inventoried. The significance of the individual landscape elements and areas, both natural and man-made, was determined using the criteria of the NHRA. This was done using a set of assessment sheets, developed specifically for the project. The overall purpose of the landscape character assessment and inventory was to guide the development of the landscape character assessment and inventory was to guide the development of the landscape Heritage Conservation Plan, Landscape Development Plan and Landscape Management Programme, which I carried out for the project. Conservation, development and management guideline in terms of planting design, hard landscaping design and spatial design were set up for the entire estate and a report was written for the integration of the new outer boundary fence with the existing landscape elements of significance. Pilot projects from a landscape point of view were also identified and described.

City of Tshwane, Environmental Guidelines, Pretoria, South Africa 2005

Environmental Guidelines

Civil municipal infrastructure projects for Tshwane Municipality. This project involved determining all environmental impact caused by municipal infrastructure during the construction, operational and maintenance phases and displaying these impacts in a matrix with all the infra-structural components. The process involved extensive participation from the various relevant departments of CTMM, including several workshops. An extended EMP was produced for all three phases of the infrastructure. A tool was developed in consultation

Johan Bothma

Earth & Environment - Rehabilitation & Closure, Visual Assessment Specialist,
Registered Landscape Architect

with a programmer, which allows the electronic capture of the information, enabling the user to carry out various kinds of searches per impact or to update the database.

Bryntirion Estate, VIP Residence and Staff Quarters Landscape, Pretoria, South Africa 2005

Landscape Design

VIP residence and staff housing on Bryntirion Estate in Pretoria: Extensive co-ordination with the architectural design team, taking into account the requirement for extensive indigenous planting design, due to the proximity of the site to the Meintjieskop Hill natural area. Integration of the landscape design with the Bryntirion Estate Heritage Conservation Management Plan Final tender documentation and Bills of Quantities. Site supervision/ inspection for construction process.

Galeshewe, Open Space and Landscape Plan (GOSLP), Kimberley, South Africa 2003

Primary Project Planner

Responsibilities included liaison with all parties involved in the project, on site survey of open space network with members of the community, research and background study work, writing of articles to promote the project, participation in workshops to involve community members in the decision-making process and conceptual design solution for the identified priority projects. Extensive GIS mapping and categorisation of open space network including suggested future development and proposed projects. Creation of an interactive electronic database of all spatial and written information of the open space inventory and spatial development programme.

PUBLICATIONS

Hattingh, R and Bothma, J. 2013. Taking the risk out of a risky business: a land use approach to closure planning, in Mine Closure 2013. Edited by M. Tibbett, A.B. Fourie and C. Dogby. Australian Centre for Geomechanics: Perth.

Bothma, J. and Theron, G. 2012. Human comfort and the South African climate design regions in terms of small-scale development design, in South African Landscape Architecture - a Reader. Pretoria: Unisa Press.

Bothma, J., Crockett, D. and Southwood, J. 2012. Siting a building for human comfort, on SABMag homepage. [Online] Available: www.sabmagazine.com/blog/2011/12/21/siting-a-building-for-human-comfort/

Bothma, J. 2011. Greening the building: Plants, planting and detailing, in Green Building Handbook South Africa - the Essential Guide Volume 3. Edited by L. Van Wyk, Cape Town. Alive2green (pp209-226)

Bothma, J. 2010. Siting a building for Human Comfort, in Green Building Handbook South Africa - The Essential Guide Volume 2. Edited by L.V. Wyk, Cape Town
Alive2green (pp57-72)

Theron, G. and Bothma, J. 2009. The Ecology of Building and Landscape Design, in Green Building Handbook South Africa Volume 1: A Guide to Ecological Design. Edited by L. van Wyk, Cape Town: Alive2green cc (pp61-75).

Bothma, J. 2004. "Landscape and Architectural Devices for Energy-Efficient South African Suburban Residential Design" Submitted in partial fulfilment of the requirements for the degree Master of Landscape Architecture. Pretoria: University of Pretoria.



Johan Bothma

Earth & Environment - Rehabilitation & Closure, Visual Assessment Specialist,
Registered Landscape Architect

AWARDS

2023. WSP Project of the Year Finalist, for the ICL Boulby Mine Closure Plan and Associated Costs

2022. Golder Africa Mentor of the Year Award

2009. Golder Award for Excellence in Technical Writing, for the Visual Impact Assessment for the Proposed Zonnebloem Opencast Coal Mine



Universiteit van Pretoria

Die Raad en die Senaat verklaar hiermee dat die graad

Baccalaureus in Landskapargitektuur

met al die regte en voorregte daaraan verbonde by geleentheid
van 'n kongregasie van die Universiteit toegeken is aan

JOHAN BOTHMA

kragtens die Wet op Hoër Onderwys, 1997 en die Statuut van die Universiteit

Namens die Raad en die Senaat

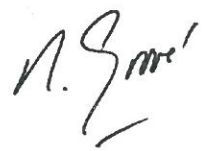
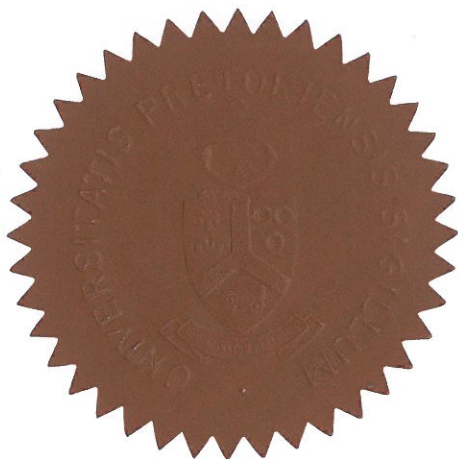


Visekanselier en Rektor

Namens die Fakulteit Ingenieurswese,
Bou-omgewing en Inligtingtegnologie



Dekaan



Registrateur

2002-04-17



REGISTRATION CERTIFICATE

THIS IS TO CERTIFY THAT

Johan Bothma

IS REGISTERED AS A

Professional Landscape Architect

In terms of the regulations of Section 19(2)(a) of the Landscape Architectural Profession Act, 2000 (Act No.45 of 2000)

REGISTER PARTICULARS

REGISTRATION NUMBER: 20163
ID NUMBER: 7802225132085
REGISTRATION RENEWAL DATE: 2025-08-01
CERTIFICATE SERIAL NUMBER: PRCL 2008043
CERTIFICATE DATE OF ISSUE: 2020-08-24

CONTACT DETAILS

EMAIL ADDRESS: jbo*hma@*old*r.co.*a
MOBILE: 082 *03 3*82

PROMOTE - GROW - TRANSFORM - SUSTAIN

Mr T. M. Munyai
PRESIDENT

Mrs C. E. Chinga
REGISTRAR



SACLAP has confirmed the above information, for digital certification and sharing
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Lara Lucija Kraljević

98 Analees Street, La Montagne, Gauteng 0103 • +27729916829 • laralkral@gmail.com

SUMMARY

Enthusiastic archaeologist with expertise in various analytical techniques related to ceramic studies. A strong researcher with ability to synthesize information into comprehensive academic writing. This serves as an abbreviated CV. A comprehensive version entailing all projects worked on can be made available by request.

EXPERIENCE

Archaeologist, 06/2022 - Current

Beyond Heritage

- Research and report writing of Heritage Impact Assessments

Archaeology Lab Assistant, 01/2014 - 12/2016

University of Pretoria

- Processing of archaeological material after various excavations

EXAMPLES OF HERITAGE IMPACT ASSESSMENT WRITTEN

Solar PV Projects:

- Heritage Impact Assessment for the Proposed Woodland Hills Solar Farm.
- Heritage Impact Assessment for the Proposed Aberdeen Solar Facility 1 and Associated Infrastructure, Eastern Cape Province.
- Heritage Impact Assessment for the Proposed Renewable Energy Generation Project Located within the Emalahleni Local Municipality, Mpumalanga Province: Highveld Industrial PV Park by Knabtiw (Pty) Ltd.

Township Development Projects:

- Heritage Impact Assessment for the proposed Township establishment on the Remainder of ERF 152 Lake Chrissie, Mpumalanga Province.
- Heritage Impact Assessment for the Proposed Construction of a Group Housing Development on Erf 1824, Equestria Extension 252, City of Tshwane Metropolitan Municipality, Gauteng Province.
- Heritage Impact Assessment for the Proposed Residential Development, Halcyon Estate, Broederstroom, North West Province.

Wind Energy Facility Projects:

- Heritage Impact Assessment for the Proposed Kaladokhwe Wind Energy Facility 1, Eastern Cape Province.
- Heritage Impact Assessment for the Proposed Kaladokhwe Wind Energy Facility 2, Eastern Cape Province.
- Heritage Impact Assessment For The Proposed De Rust North Wind Energy Facility (WEF), Pofadder, Northern Cape Province.

SKILLS

- Research and report writing
- Archaeological excavation - Iron Age
- X ray Fluorescence analysis
- Petrographic analysis
- Multivariate statistical analysis

EDUCATION

Master of Arts : Archaeology, 2022
University of Pretoria

BA Honours : Archaeology , 2017
University of Pretoria
Graduated Cum Laude

Bachelor of Arts : Archaeology and French, 2016
University of Pretoria

Matric, 2010
Hoërskool Overkruin

CONFERENCES

ASAPA 2016 - Presented Research titled "Fabrics of Social Boundaries: An X-Ray Fluorescence Analysis of Sites MNR 74 and MNR 78"

AWARDS

- Member of the Golden Key International Honour Society since 2015
- Doctor Hanisch Book Prize for Excellence in Postgraduate Studies in Archaeology - awarded in 2017

LANGUAGES

English, Afrikaans: First Language

Afrikaans:  C2
Proficient

Croatian:  B2
Upper Intermediate

French:  B1
Intermediate



University of Pretoria

The Council and Senate hereby declare that
at a congregation of the University the degree

Master of Arts Archaeology

with all the associated rights and privileges was conferred on

Lara Lucija Kraljevic

in terms of the Higher Education Act, 1997 and the
Statute of the University

On behalf of the Council and Senate

T. Kupe

Vice-Chancellor and Principal

A stylized, cursive signature in black ink.

Registrar



00103345



00407034-01-KD7E

2022-05-04

<<archaeologists

THE ASSOCIATION OF SOUTHERN AFRICAN PROFESSIONAL ARCHAEOLOGISTS

CERTIFICATE OF MEMBERSHIP

HEREBY CONFIRMS THAT

LARALUCIJA KRALJEVIĆ

Valid April 2024 -
March 2025

Is a Professional Member (No 0661) of
the Association of Southern African Professional
Archaeologists and is in good standing
with the organisation



ALBINO JOELA
CHAIRPERSON

SHAHZAADEE KHAN
TREASURER

Consulting zoologist (MSc Herpetology) with 12 years of experience in 17 countries (16 African and one South-east Asian). Provides specialist fauna input into Environmental Impact Reports (EIAs) for developments ranging small-scale startups to large multinational corporations. Areas of expertise include avifauna and herpetofauna but extends to general fauna, wetlands and GIS-based spatial analyses and modelling. Experience in IFC PS6 standard and High Conservation Value Assessments for renewable energy projects (including bird and fauna monitoring for wind and solar), powerlines, oil palm, rubber and teak plantations, mines, housing, roads, farming, agroforestry, oil, gas and power stations.

NAME	: Tyron Ken Clark
PROFESSION	: Consulting Zoologist (Specialist Environmental Consultant)
DATE OF BIRTH	: 30-01-1987
CURRENT COMPANY	: Meraki Consulting TA Mt Meraki (PTY) Ltd
CURRENT POSITION	: Director and Principal Ecologist
YEARS Experience	: 12 years
NATIONALITY	: South African
Highest Qualification	Master of Science (MSc) Zoology (Wits University, RSA) <i>cum-laude</i>
MALE/FEMALE STATUS	: Male
CONTACTABLE REFERENCE	Dr. Caroline Lotter (caroline@iws-sa.co.za),)

TERTIARY EDUCATION (AND YEAR OBTAINED):

<i>Institution:</i>	<i>Qualification:</i>	<i>Year Started</i>	<i>Year Obtained:</i>
University of the Witwatersrand	Master of Science-Zoology (with distinction)	2016	2019
University of the Witwatersrand	Bachelor of Science (Honours) Zoology	2012	2014
UNISA	Bachelor of Science, Natural and Environmental Science (majors Zoology and Botany)	2008	2010

PROFESSIONAL QUALIFICATIONS AND TRAINING

- SACNASP (South African Council for Natural Science Professionals), Registered as Professional Natural Scientist in Zoology Field (Pr. Sci. Nat 121338)
- Professional Climbing Certification: Fall Arrest and Basic Rescue. Gravity Training (for work on Meteorological Masts such as those on wind farms)
- Full valid Medical (including occupational health and safety)
- Snake Identification and Snakebite Treatment. African Reptiles and Venom.

LANGUAGES:

	Speaking:	Reading:	Writing:
English	Superior	Superior	Superior
Afrikaans	Fair	Fair	Fair

COUNTRIES OF WORK EXPERIENCE:

- Angola x3 visits (IFC PS6 compliant impact assessments for avifauna, mammals and herpetofauna),
- Botswana x2 visits (baseline impact assessment fauna and cave survey with Botswana Defense Force),
- Cambodia x1 visit (High Conservation Value (HCV) assessment fauna)
- Cameroon x2 visits (High Conservation Value (HCV) avifauna and mammals),
- Cote d' Ivoire x1 visit (High Conservation Value (HCV) avifauna and mammals),
- Democratic Republic of Congo x1 visit (IFC PS6 compliant impact assessments avifauna and mammals)
- Ghana x1 visit (High Conservation Value (HCV) forest restoration fauna);
- Guinea x1 visit (Ecological impact assessment as part of bat relocation program on Mt Nimba)
- Kenya x1 desktop (coastal avifauna reporting and survey design)
- Lesotho x2 visits (fauna baseline and impact assessment),
- Mozambique x3 visits (IFC compliant avifauna, herpetofauna and wetlands baseline and impact assessments),

- Namibia (bats, Installation of monitoring equipment on met masts) for NAMDEB Wind Energy Facility
- Nigeria x1 visit (IFC compliant avifauna baseline and impact assessment),
- Sao-tome and Príncipe x2 visits (IFC compliant fauna and then avifauna and mammal assessments),
- Sierra Leone x4 visits (previously fauna, recently avifauna and mammals) and
- South Africa, base, (avifauna, other fauna and wetlands) numerous locations, all provinces
- Zimbabwe x1 visit, fauna assessment for Karo platinum mine (in progress)

RECENT SELECTED EXPERIENCE:

NAME OF ASSIGNMENT:	Specialist Fauna Assessment for the Chirundazi Dam, Karo Platinum, Zimbabwe.
YEAR:	2024 - Present
CLIENT & LOCATION:	OMI Solutions
POSITIONS HELD:	Fauna Specialist
ACTIVITIES PERFORMED:	Baseline fauna assessment.
NAME OF ASSIGNMENT:	Specialist Avifaunal Pre-Construction Monitoring for the Proposed Verkykerskop Wind Energy Facility Cluster, Free State, South Africa.
YEAR:	2022 - Present
CLIENT & LOCATION:	Mulilo
POSITIONS HELD:	Lead Avifaunal Specialist (team of bird specialists) for one of the largest WEF applications in the country (project area 18 000 ha, AOI 45 000 ha) in one of South Africa's most sensitive regions for birdlife.
ACTIVITIES PERFORMED:	Currently conducting two year wind energy related pre-construction monitoring in line with national and global best practice standards.
NAME OF ASSIGNMENT:	Avifaunal Baseline and Impact Assessment for the proposed Paradise Solar PV Facility, Bloemfontein, Free State.
YEAR:	2022 - 2023
CLIENT & LOCATION:	Nemai Consulting (Pty) Ltd
POSITIONS HELD:	Avifaunal Specialist
ACTIVITIES PERFORMED:	Conducted avifaunal baseline in line with global best practice standards.
NAME OF ASSIGNMENT:	Avifaunal Baseline and Impact Assessment for the proposed Parys Solar PV Facility, Parys, Free State.
YEAR:	2022 - Ongoing
CLIENT & LOCATION:	Nemai Consulting (Pty) Ltd
POSITIONS HELD:	Avifaunal Specialist
ACTIVITIES PERFORMED:	Conducted avifaunal baseline in line with global best practice standards.
NAME OF ASSIGNMENT:	Avifaunal Baseline and Impact Assessment for the proposed Altina Solar PV Facility, Vierfontein, Free State.
YEAR:	2022
CLIENT & LOCATION:	Nemai Consulting (Pty) Ltd
POSITIONS HELD:	Avifaunal Specialist
ACTIVITIES PERFORMED:	Conducted avifaunal baseline in line with global best practice standards.
NAME OF ASSIGNMENT:	High Level IFC PS6 Avifauna Review of Eight International Wind Energy Assets.
YEAR:	2022
CLIENT & LOCATION:	Ibis Consulting (Pty) Ltd
POSITIONS HELD:	Avifaunal Specialist - Review
ACTIVITIES PERFORMED:	Reviewed and audited avifaunal pre-construction and operational reports in line with global best practice standards.
NAME OF ASSIGNMENT:	Avifaunal Preconstruction Monitoring Assessment for the proposed Botterblom Wind Energy Facility located North of Loeriesfontein, Northern Cape



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

At a congregation of the University

held on 10 July 2019

Tyron Ken Clark

was admitted to the Degree of

Master of Science

(Animal, Plant and Environmental Sciences)

(with Distinction)




Acting Dean : Faculty of Science


Vice-Chancellor


Registrar



herewith certifies that

Tyron Ken Clark

Registration Number: 121338

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Zoological Science (Professional Natural Scientist)

Effective 11 March 2020

Expires 31 March 2025



A handwritten signature in black ink, appearing to read 'S. Neph', is positioned above a horizontal line.

Chairperson

A handwritten signature in black ink, appearing to read 'N. S. S. S.', is positioned above a horizontal line.

Chief Executive Officer

