

**CURRICULUM VITAE
JO-ANNE THOMAS**

Profession : Environmental Consultant
Specialisation : Environmental Management; Strategic environmental advice;
Environmental compliance advice & monitoring; Environmental Impact
Assessments; Policy, strategy & guideline formulation; Project
Management; General Ecology and Overall Quality Representative.
Years experience : Nineteen (19) years in the environmental field

KEY RESPONSIBILITIES

Provide technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Key focus on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management; review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation.

Undertaking of numerous environmental management studies has resulted in a good working knowledge of environmental legislation and policy requirements. Recent projects have been undertaken for both the public- and private-sector, including compliance advice and monitoring, electricity generation and transmission projects, various types of linear developments (such as National Road, local roads and power lines), waste management projects (landfills), mining rights and permits, policy, strategy and guideline development, as well as general environmental planning, development and management.

SKILLS BASE AND CORE COMPETENCIES

- Project management for a range of projects
- Identification and assessment of potential negative environmental impacts and benefits through the review and manipulation of data and specialist studies
- Identification of practical and achievable mitigation and management measures and the development of appropriate management plans
- Compilation of environmental reports in accordance with relevant environmental legislative requirements
- External and peer review of environmental reports & compliance advice and monitoring
- Formulation of environmental policies, strategies and guidelines
- Strategic and regional assessments; pre-feasibility & site selection
- Public participation processes for a variety of projects
- Strategic environmental advice to a wide variety of clients both in the public and private sectors
- Working knowledge of environmental planning processes, policies, regulatory frameworks and legislation

EDUCATION AND PROFESSIONAL STATUS

Degrees:

B.Sc Earth Sciences, *University of the Witwatersrand, Johannesburg*, 1993

B.Sc Honours in Botany, *University of the Witwatersrand, Johannesburg*, 1994

M.Sc in Botany, *University of the Witwatersrand, Johannesburg*, 1996

Courses:

Environmental Impact Assessment, *Potchefstroom University*, 1998

Environmental Law, *Morgan University*, 2001

Professional Society Affiliations:

Professional Natural Scientist (Registration No 400024/00).

EMPLOYMENT

Current: Director of Savannah Environmental (Pty) Ltd. Independent specialist environmental consultant

October 1997-November 2005: Bohlweki Environmental (Pty) Ltd: Senior Environmental Scientist; Environmental Management and Project Management

January to July 1997: Junior Science Teacher, Sutherland High School, Pretoria

PROJECT EXPERIENCE

Compliance Advice and Due Diligence

- First annual Environmental and Social Monitoring Report for the Uppington Airport 10MW PV Plant (for Sublunary Trading)
- Compliance Advice for Financial Close (including environmental permits) of the Ilanga CSP Facility (for Ilangethu Solar)
- Compliance Advice for Financial Close (including biodiversity permits) of West Coast One Wind Energy Facility (for Moyeng Energy)
- Compliance Advice for Financial Close of Tsitsikamma Wind Energy Facility (for Cennergi)
- Support to Financial Close (including biodiversity permits) for the Kathu CSP Facility (for GDF Suez)
- Support to Financial Close (including biodiversity permits) for the Kathu PV Facility (for Building Energy / REISA)
- Support to Financial Close (including biodiversity permitting) for the Lephalale Solar Energy Facility (for Exxaro)
- Support to Financial Close (including biodiversity permitting) for the Kleinbegin PV Facility (for MedEnergy)
- Support to Financial Close (including biodiversity permitting) for the Sirius PV Plants (for Aurora Power Solutions)
- Support to Financial Close (including biodiversity permitting) for the Excelsior Wind Energy Facility (for BioTherm Energy)
- Support to Financial Close (including biodiversity permitting) for the Aggeneys Solar Farm Wind (for BioTherm Energy)
- Support to Financial Close (including biodiversity permitting) for the Konkoonsies Solar Farm (for BioTherm Energy)

- Environmental Due Diligence of a wind energy facility in the Western Cape (for EDPR Renewables)
- Environmental Due Diligence of a wind energy facility on the West Coast of the Western Cape (for ILF&S)

Compliance Monitoring

- Project manager and auditor - ECO compliance monitoring for the construction of the De Hoop Dam and the deviation of the R555 (for Department of Water Affairs)
- Project manager – ECO compliance at Kathu Solar Energy Facility (for GDZ Suez)
- Project manager – ECO compliance at West Coast One Wind Energy Facility (for Aurora Wind Power)
- Project manager – ECO compliance at Sishen Solar Energy Facility (for Windfall59)
- Project manager – ECO compliance monitoring for the expansion of Waterval WCW (for BPC Palace JV)
- Project manager - ECO compliance monitoring for the Mine Water Recovery Project at Duvha Power Station (for Eskom Generation)
- Project manager – ECO compliance at Dorper Wind Energy Facility (for Dorper Wind Farm)
- Project manager – ECO compliance monitoring for the !Kha CSP Facility (for Abengoa Solar)
- Project manager – ECO compliance at Gouda Energy Facility
- Project manager – ECO compliance monitoring for the KaXu! CSP facility (for Acciona)
- Project manager – ECO compliance monitoring for the Uppington Airport PV facility (for ACSA)
- Project manager – ECO compliance at RustMo1 Solar Energy Facility (for Momentous Energy)
- Project manager – Environmental Officers for Gamma-Kappa 765kV power line between Laingsburg and Beaufort West (for Trans-Africa Projects on behalf of Eskom)

Electricity Sector Projects: Coal-fired Power Stations

- Project manager for the EIA undertaken in support of a NEMA authorisation and waste management license for the proposed Independent power Producer (IPP) Coal-fired Power Station and associated infrastructure near Lephalale within the Waterberg District Municipality (for Cennergi)
- Project manager for the EIA undertaken in support of a NEMA authorisation and waste management license for the proposed Umbani Coal-fired Power Station and associated infrastructure near Kriel (for ISS Global Mining)
- Project manager for the EIA undertaken in support of a NEMA authorisation and waste management license for the proposed Transalloys Coal-fired Power Station and associated infrastructure (for Transalloys)

Electricity Sector Projects: Wind Energy

- Project manager for the EIA undertaken for the EXXARO West Coast Wind Energy Facility (for EXXARO Resources)
- Project manager for the EIA undertaken for the Oyster Bay wind energy facility, (for Renewable Energy Resources Southern Africa)
- Project manager for the EIA undertaken for the Spitskop Bay wind energy facility (for Renewable Energy Resources Southern Africa)
- EIA and EMP for the wind energy facility at a site within the Western Cape (for Eskom Generation)
- EIA and EMP for the wind energy facility at a site near Hopefield, (for Umoya Energy)
- Project manager for the Klipheuwel/Dassiesfontein wind energy facility at a site within the Overberg area (for BioTherm Energy)
- Project manager for the Rhebokfontein wind energy facility (for Moyeng Energy)
- Project manager for the Suurplaat wind energy facility (for Moyeng Energy)
- Project manager for the West Coast One wind energy Facility (for Moyeng Energy)
- Basic Assessment for Wind Monitoring Masts on a site North of Koekenaap (for EXXARO Resources)
- Basic Assessment for wind monitoring masts on a site in the Overberg area (for BioTherm Energy)

- Basic Assessment for wind monitoring masts on a site near Beaufort West (for Umoya Energy)
- Basic Assessment for wind monitoring masts on a site near Laingsburg (for Umoya Energy)

Electricity Sector Projects: Solar Energy

- Project manager for the EIA and EMP for two PV sites within the Western and Northern Cape Provinces (for INCA Energy)
- Project manager for the Basic Assessment and EMP for PV site within the Northern Cape Province (for INCA Energy)
- Project manager for the Basic Assessment and EMP for a PV site near Rustenburg (for Momentous Energy)
- Project manager for the EIA and EMP for the Project Ilanga (125MW CSP facility) near Upington (for Ilangethu Energy)
- Project manager for the EIA and EMP for two PV sites within the Northern Cape Province (for MedEnergy Global)
- Project manager for the Basic Assessment and EMP for PV sites within 4 ACSA airports within South Africa (for ACSA PV)
- Project manager for the EIA and EMP for the Waterberg PV plant (for Thupela Energy)

Electricity Sector Projects: Eskom

- Project manager for the EIA and EMP for the Mokopane Integration Project (for Eskom Transmission)
- Project manager for the transmission lines from the Koeberg-2 Nuclear Power Station site (for Eskom Transmission)
- Project manager for the Tshwane strengthening project, Phase 1 (for Eskom Transmission)
- Project manager for the EIA and EMP for the Kyalami Strengthening Project (for Eskom Transmission)
- Project manager for the EIA and EMP for the Steelpoort Integration Project (for Eskom Transmission)
- Project manager for the EIA and EMP for the conversion of the existing Open Cycle Gas Turbine (OCGT) Ankerlig Power Station (located in Atlantis Industria) to a Combined Cycle Gas Turbine (CCGT) power station, and the associated 400 kV transmission power line between Ankerlig Power Station and the Omega Substation (for Eskom Generation)
- Project manager for the EIA and EMP for the proposed conversion of the existing Open Cycle Gas Turbine (OCGT) Gourikwa Power Station (located near Mossel Bay) to a Combined Cycle Gas Turbine (CCGT) power station, and the associated 400 kV transmission power line between Gourikwa Power Station and the Proteus Substation (for Eskom Generation)
- Project manager for the EIA and EMP for the Majuba Power Station PV Installations (for Eskom Transmission)
- Project manager for the EIA and EMP for the Lethabo Power Station PV Installations (for Eskom Transmission)
- Project manager for the EIA and EMP for the Tutuka Power Station PV Installations (for Eskom Transmission)

Infrastructure Projects

- Project manager for the EIA and EMP for the bridge across the Ngotwane River located on the border of South Africa and Botswana

Strategic and Regional Assessments

- Strategic Assessment for the location of wind energy facilities within the Western Cape Province (for Western Cape Department of Environmental Affairs and Development Planning)
- Regional Assessment for wind energy developments within an identified area on the West Coast of the Western Cape (for Investec Bank Limited)
- (for Investec Bank Limited)

- Regional Assessment for wind energy developments within an identified area on the West Coast of the Western Cape (for Eskom Holdings Limited)
- Regional Assessments for wind energy developments within identified areas in the Overberg Area (for BioTherm Energy)
- Regional Assessment for wind energy developments within an identified area in the Sutherland Area

Environmental Management Tools

- Review the effectiveness and efficiency of the environmental impact management (EIA) system in South Africa (for the Department of Environmental Affairs and Tourism)
- Development of a comprehensive site-specific EMP for the construction and operation of the Braamhoek Integration Project (for Eskom)
- Compilation of Provincial Guidelines for off-road routes (for the Western Cape Province Department of Environmental Affairs and Development Planning)
- Environmental Risk Analysis (for Salbro Property Holdings)
- Water use permit applications for water use at Tiffindell Ski Resort (for Tiffindell Ski)
- Project integration and compilation of a Strategy for Sustainable Development for Gauteng Province
- Advice regarding environmental compliance of existing and future development at Tiffindell Ski (for Tiffindell Ski)
- Advice regarding environmental compliance at Salberg factory (for Salberg Concrete Products)

Peer Review

- Review of EIAs submitted in terms of the ECA for the Northern Cape Department of Tourism, Environment and Conservation, including:
 - * EIA for a new wastewater treatment works in Warrenton
 - * EIA for chicken layer houses in Kimberley
 - * EIAs for the upgrading of petrol stations in Kimberley
 - * EIA for a new up-market residential development in Kathu
 - * EIA for residential development in Kimberley
- Review of EIA and EMP for the proposed Waterfall Wedge development, Gauteng Province

Mining Sector Projects

- Amendment of Environmental Management Programme for the Waterberg (Sekoko Resources)
- Amendment of EMPR for Grootegeluk Coal Mine , to include coal transportation infrastructure between the mine and Medupi Power Station (for Eskom)
- Environmental Impact Assessment and Environmental Management Programme in terms of the MPRDA for the Elitheni Coal Mine near Indwe (for Elitheni Coal)
- Environmental Management Programmes for three borrow pits associated with the Groot Letaba River Development Project (for Iliso)

Water resources Projects

- Project manager for the EIA and EMP for the modification of the existing Hartebeestfontein Water Care Works(for ERWAT)
- Project manager for the EIA and EMP for the expansion of the existing Welgedacht Water Care Works(for ERWAT)

Projects undertaken on behalf of Bohlweki Environmental include:

Specialist projects

- Development of an Environmental Policy for the Ekurhuleni Metropolitan Municipality
- Development of an Integrated Environmental Policy for the City of Tshwane Metropolitan Municipality Environmental Opportunities and Constraints Assessment for the Wonderboom Airport
- Review of the State of the Environment Report for the North West Province

Transport sector projects

- Environmental Impact Assessment for the proposed Platinum Highway from Warmbaths via Pretoria to Skilpadhek (on the South Africa-Botswana border), including obtaining all environmental permits required.
- Environmental input to the Ekurhuleni transportation corridors study
- Environmental input to the Denneboom Local Integrated Transport Plan
- Environmental Impact Assessment and Environmental Management Plan for the proposed N2 Wild Coast Toll Road between East London (Eastern Cape) and Durban (KwaZulu-Natal)
- Environmental Scoping Study and public participation process for the upgrading of Provincial Main Road 100 between the intersection with Main Road 521 and Ndwedwe
- Environmental Management Plan for repairs of portions of the N3 and N1, Gauteng
- Environmental Scoping Study and public participation process for the Kingsway Relief Road in Maseru, Lesotho

Electricity Sector projects

- Project manager for the undertaking of an EIA and compilation of an EMP for the proposed Open Cycle Gas Turbine (OCGT) Power Station and associated 400 kV Transmission lines and substation at Atlantis, Western Cape Province
- Environmental Scoping Study for a new coal-fired power station in the Lephalale area, Limpopo Province
- Project manager for the undertaking of Environmental Scoping Study and compilation of an Environmental Management Plan for various 132 kV Sub-Transmission lines and substations within the Mpumalanga Province
- Detailed Environmental Scoping Study and public participation for the proposed Capacity Increase Project at Arnot Power Station, Mpumalanga Province
- Project manager for the undertaking of an Environmental Scoping Study and EMP for the proposed 132 kV sub-Transmission line between the GaRankuwa and Dinaledi substations, North West Province
- Project manager for the undertaking of an EIA for the proposed 765 kV Transmission line between the existing Hydra Substation (near De Aar) and the proposed Gamma Substation (near Victoria West), Northern Cape Province
- EIA & public participation for the proposed 3rd 400 kV Transmission line between the Poseidon and Grassridge Substations in the Eastern Cape Province
- EIA & public participation for the proposed new 400 kV Transmission line between Matimba Substation (near Lephalale) and Witkop Substation (near Polokwane), Limpopo Province
- EIA & public participation for the proposed new Ikaros Substation and associated 400 kV Transmission line infrastructure, North West Province
- Environmental Scoping Study public participation for the Establishment of Eskom Infrastructure for Power Supply to the C-Cut Development at Premier Mine, Cullinan, Gauteng Province
- Environmental Impact Study and public participation for the proposed 2nd 400 kV Transmission line between the Grassridge Substation and the Poseidon Substation in the Eastern Cape.

- Public Participation Process for the proposed Return-to-Service of the Camden Power Station, Mpumalanga Province
- Detailed Environmental Scoping Study and public participation for the Breyten Strengthening Project: proposed new Breyten Substation and associated 88 kV Distribution line, Mpumalanga Province
- Environmental Pre-Scoping Study for the proposed Concentrating Solar Plant, in the Northern Cape Province
- Environmental Impact Assessment public participation for the proposed new nine 132 kV power lines between the Grassridge Substation and the Coega Industrial Development Zone, Eastern Cape Province

Pipelines

- Environmental Impact Assessment for the proposed Petronet New Multi-Products Pipeline (NMPP) between Durban and Gauteng Province
- Exemption application for the construction of a gas pipeline between Majuba Mine and Majuba Power Station, Mpumalanga Province.
- Exemption application for the construction of an emergency water supply pipeline from Mamelodi to Ekandustria via Cullinan, Gauteng Province.
- Environmental Scoping Study for the installation of a new water supply pipeline from Centurion to Diepsloot, Gauteng Province.

EIAs for Technology projects

- Environmental Impact Assessment for the proposed Alternative Fuels and Resources Project at Alpha's ULCO Plant near Kimberley in the Northern Cape Province
- Environmental Impact Assessment for the proposed Alternative Fuels and Resources Project at Dudfield Plant, North West Province
- Environmental Impact Assessment for the proposed Blending Platform to be established within the Gauteng Province
- Investigation of possible alternative Scrap tyre collection and disposal strategies in Gauteng, South Africa

Mining sector projects

- Environmental Management Programme Report (EMPR) for the proposed small-scale kaolin clay mine near Ndwedwe, KwaZulu-Natal Province
- Environmental Management Programme Report (EMPR) for prospecting activities within the Premier Mine Game Farm, Cullinan for De Beers Consolidated Mines Limited
- Environmental Management Plan for the Proposed C-Cut Development at Premier Mine, Cullinan
- Environmental Management Programme Report for the Proposed C-Cut Development at Premier Mine, Cullinan
- Environmental Impact Assessment and public participation process for the Proposed C-Cut Development at Premier Mine, Cullinan

Development projects

- A detailed Environmental Scoping Study and public participation process for the Thaba ya Batswana Development on portions of the Farm Rietvlei 101 IR, Gauteng
- Environmental Scoping Report and public participation process for the development of a Community Safety Centre in Khutsong-South, Carletonville

Water resources projects

- A detailed Environmental Impact Assessment of new regional water care infrastructure in the DD5A sub-drainage district in Eastern Gauteng (adjacent to the Blesbokspruit Ramsar Site) for the East Rand Water Care Company (ERWAT)

CURRICULUM VITAE

Sarah Watson

Profession : Environmental Consultant at Savannah Environmental (Pty) Ltd
Specialisation : Environmental Assessment, Environmental Management, and Geographical Information Systems (GIS)
Years' experience : 7 years

KEY RESPONSIBILITIES

- Conducting environmental impact assessment processes
- Project management and administration
- Project research
- Report writing
- Review and integration of specialist and sub-contractors reports
- Public participation
- Key stakeholder and government engagement
- Client liaison

SKILLS BASE AND CORE COMPETENCIES

- Environmental Assessment
- Environmental Management
- Geographic Information Systems (GIS)
- Stakeholder Engagement

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B.Soc.Sci Honours Geography and Environmental Management (B.Soc.Sci Honours GEM), University of KwaZulu-Natal, 2008
- B.Soc.Sci Geography and Environmental Management (B.Soc.Sci GEM), University of KwaZulu-Natal, 2007

Professional Society Affiliations:

- South African Affiliate of the International Association for Impact Assessment South Africa (IAIASa)
- Society of South African Geographers (SSAG)

EMPLOYMENT HISTORY

- October 2016 – Present: Savannah Environmental (Pty) Ltd, Environmental Consultant
- December 2013 – December 2014: Golder Associates Africa (Pty) Ltd, Environmental Consultant
- January 2011 – November 2013: CSIR, Environmental Consultant
- April 2008 – December 2010: K2M Environmental (Pty) Ltd, Environmental Consultant

PROJECT EXPERIENCE

Environmental Impact Assessments:

- Environmental Impact Assessment (EIA) for the H2 Energy Power Station and Associated Infrastructure proposed on a site near KwaMhlanga; Mpumalanga.
- EIA for the Proposed Vopak-Reatile Terminal Richards Bay Bulk Liquid Storage and Handling Facility at the Port of Richards Bay; KwaZulu-Natal.
- Basic Assessment (BA) for site clearing and site preparation activities on Lots 4 and 5 of Portion 3 of Erf 11478 in the South Dunes Precinct of the Port of Richards Bay; KwaZulu-Natal.
- Combined EIA for the proposed Ishwati Emoyeni Wind Energy Facility and associated Eskom Transmission and Eskom Distribution Grid Connection Infrastructure near Murraysburg; Western Cape.
- Combined EIA for the proposed Betelgeuse 75 MW Photovoltaic (PV) Solar Projects 1, 2, 3 and 4 near Murraysburg; Western Cape.
- EIA for a proposed common user Marine Servitude and Pipelines in the Coega IDZ near Port Elizabeth; Eastern Cape.
- EIA for the proposed Universal Wind Energy Project in the Coega IDZ near Port Elizabeth; Eastern Cape.
- BA for the proposed Loch-Sloy Rural Subsidised Housing Development; KwaZulu-Natal.
- BA for the proposed "Living in THE PARK" Residential Development; KwaZulu-Natal.
- BA for the proposed Solheim Estate Development; KwaZulu-Natal.
- BA for the proposed Hlabisa Bulk Water Supply Scheme; KwaZulu-Natal.
- BA for the proposed construction of a Bulk Sewage Rising Main from eSikhaleni Town Pump Station to the Empangeni Sewage Treatment Plant; KwaZulu-Natal.
- BA for the proposed Residential development on the Remainder of Erf 215, Prince's Grant; KwaZulu-Natal.
- BA for the proposed Greenmeadow Lane Retirement Village; KwaZulu-Natal.
- BA for the proposed Rita Light Industrial Park Development; KwaZulu-Natal.
- BA for the development of a Light Industrial Park on Portion 10 of the Farm Balgowrie; KwaZulu-Natal.
- BAs for MTN Telecommunications Masts and associated base stations at Richards Bay Minerals, Hub 3; Felixton Mill; Simbithi Gate; Mpophomeni; Mt. Misery; Durban Wanderers Sports Club; Kliprug Farm; Bassie's Farm; Market Produce Supply Store; Lotusville Pentecostal Church; Injabulo Liquor Store; Hopewell; Mashayilanga; Cowies Hill Park; Solvista Secondary School; Mbodleni Hilltop; Ngwadini Hill; and Khangelani; KwaZulu-Natal.
- BAs for the proposed construction of new MultiChoice Water Tower Transmission Installations and associated base stations on the Malaba Hills Water Reservoir, Isipingo; and Umlazi Water Reservoir 3, and Isipingo; KwaZulu-Natal.
- BAs for the proposed construction of new MultiChoice Rooftop Transmission Installations and associated base stations on the roof of the Asoka Hotel, Reservoir Hills; Hightor Flats, Wentworth; Malvern Heights, Queensburgh; the Desmond Clarence Science Building (UKZN), Cato Manor; and Stella Maris, and Amanzimtoti; KwaZulu-Natal.
- BA for a proposed iBurst Telecommunications Mast and associated base station at Panarama Place, Kloof; KwaZulu-Natal.

Preliminary Environmental Assessments:

- Environmental Site Screening Assessment for a site development near Makhado in the Musina Local Municipality; Limpopo.
- Environmental Site Screening Assessment for PV Solar Energy Facilities in Central Region,

Malawi.

- Environmental Screening Study for the proposed Development of Pier 1 Phase 2 Container Terminal in the Port of Durban; KwaZulu-Natal.
- Environmental Screening Study of sites being investigated for Potential Wind Energy Projects in the Northern, Western and Eastern Cape.
- Preliminary Environmental Assessment for the Proposed Highflats Slum Clearance Housing Project near Ixopo; KwaZulu-Natal.
- Preliminary Environmental Assessments for the proposed Ntembisweni, Mkhwanazi, Mthonjaneni at Makhasaneni (Ward 5), Sikhonyane, Applebosch, Nxamalala, Border View, KwaDolo, Ndlangubo, Embo, and Mthandeni Rural Subsidised Housing Projects; KwaZulu-Natal.

Training:

- Capacity Building Workshop on Amended Environmental Impact Assessment Regulations and Associated Legislation Applicable to Transnet in the Port of Durban; KwaZulu-Natal.

Planning:

- Providing assistance on the Umzinyathi District Municipality's Strategic Environmental Assessment (SEA); KwaZulu-Natal.
- Providing assistance with the assessment of 2009/2010 KwaZulu-Natal IDP's as part of the Provincial MEC Assessment Panel; KwaZulu-Natal.
- Providing assistance with the applications for Planning Consent for the proposed Kwamavundla, Ngolokodo, Mdletshe Traditional Authority, Makhasaneni, Njomelwane, Umzumbe Cluster A, Ntanzi, and Abakwahlabisa Rural Subsidised Housing Developments; KwaZulu-Natal.

Compliance:

- Environmental and Social Due Diligence Report for the Roggeveld Wind Farm and Associated Infrastructure; Northern and Western Cape.
- Update of the Environmental Aspects and Impacts Register for Eskom's Hendrina Power Station; Mpumalanga.
- Environmental Control Officer for the construction of the Hlabisa Bulk Water Supply System in Hlabisa; KwaZulu-Natal.

CURRICULUM VITAE

GABRIELE WOOD

Profession : Public Participation and Social Consultant
Specialisation : Public Participation Process Implementation
Years experience : 10 years

KEY RESPONSIBILITIES

Specific responsibilities as a Public Participation and Social Consultant include professional execution of public participation consulting for a variety of projects. This includes managing and coordinating public participation processes for Environmental Impact Assessments (EIA).

SKILLS BASE AND CORE COMPETENCIES

- Public Participation, Stakeholder Engagement and Stakeholder Management
- Environmental Impact Assessment (Social Processes)
- Public Speaking and Presentation Skills
- Facilitation (workshops, focus group meetings, public meetings, public open days, committees)
- Social Research (Qualitative and Quantitative)
- Social Assessments (Stakeholder Analysis / Stakeholder Mapping)
- Survey Design and Sampling
- Monitoring and Evaluation
- Community Needs Assessments
- Environmental and Social Policy
- IFC Performance Standards
- Equator Principles
- Report Writing and Quality Control

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B. Hons. Anthropology (Cum Laude): University of Johannesburg (2004 – 2005)
- B.A. Psychology: University of Johannesburg (2002 – 2004)

Courses:

- International Association for Public Participation (IAP2) Certificate in Techniques for Effective Public Participation (2015)
- International Association for Public Participation (IAP2) Certificate in Foundations of Public Participation (Planning and Communication for Effective Public Participation) (2015)
- South African Advertising Research Foundation (SAARF) living Standards Measure (LSM) Training (2010).
- Certificate in Focus Group Moderation Skills, Market Research for Africa (2007)
- Prestige Diploma in Public Relations: Allenby Campus Boksburg now Damlin College (2001)

EMPLOYMENT

May 2012 – Current: Savannah Environmental (Pty) Ltd: Public Participation and Social Consultant

March 2007 – April 2012: NMA Effective Social Strategists (Pty) Ltd: Assistant Project Manager: Public Participation and Social Research

January 2005 – March 2007 (Part-time): University of Johannesburg: Department of Anthropology and Development Studies: Student Tutor and Research Assistant

PROJECT EXPERIENCE

COAL FIRED POWER STATIONS:

- Thabametsi Coal Fired Power Station – EIA & CCIA (for Thabametsi Power Company)
- Transalloys Coal Fired Power Station – EIA (for Transalloys)
- Umbani Coal Fired Power Station – EIA (for ISS Global Mining)
- Tshivhaso Coal Fired Power Station – EIA (for Cennergi)
- H2 Energy Power Station – EIA (for H2 Clean Energy)

INTEGRATED WASTE WATER MANAGEMENT PLANS AND WATER USE LICENSE APPLICATIONS:

- IPP Thabametsi Coal Fired Power Station – IWWMP AND WULA (for Thabametsi Power Company)
- Yzermyn Coal Mine - IWWMP AND WULA (for Atha Africa Group)

GRID INFRASTRUCTURE CONNECTIONS AND SUBSTATIONS:

- Cuprum-Burchell and Burchell to Mooidraai – BA (for Eskom)
- Blackwood Power Line and Substation – BA (for VentuSA Energy)
- Iziduli Power Line and Substation – BA (for Windlab)
- 132kV Power Line for the authorised Excelsior Wind Farm (for Amstillinx)
- Saldanha Bay Network Strengthening project – EIA (for Eskom)
- Olifantshoek Substation and Power Line – BA (for Eskom)

RENEWABLE ENERGY PROJECTS:

- Garob Wind Energy Facility – EIA (for juwi Renewable Energy)
- Tatuka PV Solar Energy Facility – EIA (for Eskom)
- Majuba PV Solar Energy Facility – EIA (for Eskom)
- Lethabo PV Solar Energy Facility – EIA (for Eskom)
- Karreebosch Wind Energy Facility – EIA (for G7 Energies)
- SolarReserve Kotulo Tsatsi Energy CSP Facilities – EIA (for SolarReserve & Kotulo Tsatsi Energy)
- Buffels Solar 1 & 2 Energy Facilities – EIA (for Kabi Solar)
- Woodhouse Solar 1 & 2 Energy Facilities – EIA (Genesis Eco Energy Developers)
- Gunstfontein Wind Energy Facility – EIA (for Gunstfontein Wind Farm)
- Ilanga CSP 7, 8 and 9 Solar Facilities – EIA (for Emvelo Eco Projects)
- Sol Invictus 1 – 4 PV Solar Energy Facilities – EIA (for Cyracraft)
- 150MW Noupoort Concentrated Solar Power (CSP) Project – EIA (for CRESCO Energy)
- Hartebeest Wind Farm – EIA (for juwi Renewable Energy)

CURRICULUM VITAE

Lisa Opperman

Profession : Environmental and GIS Consultant at Savannah Environmental
Specialisation : Environmental Management and Geographical Information Systems (GIS)
Years experience : 2 Years

KEY RESPONSIBILITIES

- Execution of professional consulting services for a variety of projects
- Environmental Impact Assessment reporting
- GIS mapping
- Permitting reporting
- Public consultation
- Development of project proposals for procuring new work or projects

SKILLS BASE AND CORE COMPETENCIES

- GIS Mapping
- EIA Report Writing
- Conducting of public involvement processes.
- Administrative tasks
- Analysis and manipulation of geographical information and technical experience with the use of ArcGIS.

EDUCATION AND PROFESSIONAL STATUS

Degrees:

B.Sc. (Hons) Environmental Management (2014), North-West University, Potchefstroom.

B.A Psychology, Geography and Environmental Studies (2013), North-West University, Potchefstroom

Professional Society Affiliations:

IAIASa (Membership number: 3719)

EMPLOYMENT

16 February 2015 – Current:

Savannah Environmental (Pty) Ltd: Environmental Assessment Practitioner and GIS consultant

PROJECT EXPERIENCE

Environmental Impacts Assessments

- Basic Assessment Reports for Harmony Gold 3x PV Facilities, Welkom (BBEntropie).
- Environmental Impact Assessment Reports for Buffels PV 1 & Buffels PV 2, near Orkney (Kabi Solar).
- Environmental Impact Assessment Reports for Woodhouse Solar 1 & Woodhouse Solar 2 PV Facilities, near Vryburg (Genesis Eco-Energy Developments).
- Environmental Impact Assessment Report for the Orkney Solar Farm (Genesis Eco-Energy Developments).
- Environmental Impact Assessment Report for the Metals Industrial Cluster near Kuruman (Northern Cape Department of Economic Development and Tourism).
- Environmental Management Programme for the Nxuba Wind Farm (ACED).
- Finalisation of the Final EIA Reports for the Tewa Isitha Solar 1 and Tewa Isitha Solar 2 PV facilities near Upington (AfriCoast Energy).
- Lamberts Bay Wind Farm Screening Assessment Report (Windy World).
- Juno Wind Farm Screening Assessment Report (AMDA)
- Basic Assessment Reports for the Neopak CHP Plant and Water Treatment Plant, Rosslyn (Neopak)
- Screening, Scoping and EIA Reports for the Richards Bay Combined Cycle Gas Turbine (CCGT) power plant, near Richards Bay (Eskom)

GIS Mapping (ArcGIS 10.2)

- The Woodhouse Solar 1 & Woodhouse Solar 2 PV Facilities, near Vryburg, North West Province.
- The Orkney Solar Farm, North West Province.
- The Gunstfontein Wind Energy Facility, Northern Cape Province.
- The proposed Komsberg substation Expansion, Northern Cape.
- The proposed Soetwater switching station, 132kV double circuit overhead power line and ancillaries near Sutherland, Northern Cape.
- The Ilanga 7 and 9 facilities as well as associated infrastructure within the Karoshoek Solar Valley Development, Northern Cape.
- The construction of the Soetwater facility substation complex and ancillaries near Sutherland, Northern Cape.
- The Camco PV, Gauteng Province.
- The Sol Invictus Solar PV Development near Aggeneys, Northern Cape.
- The 132kV power line associated with the Perdekraal Wind Farm, Western Cape Province.
- The 132kV power line and substation associated with the Golden Valley Wind Farm, Eastern Cape Province.
- The Acciona Nxuba temporary concrete tower plant, Eastern Cape.
- The Bon Espirange substation and 132kV overhead power line for the authorised Roggeveld Wind Farm.
- The Gunstfontein switching station and 132kV overhead power line for the proposed Gunstfontein Wind Farm near Sutherland, Northern Cape Province.

- The Skuitdrift Solar Energy Facility, Northern Cape Province.
- The Buffels Solar 1 and Buffels Solar 2 PV Facilities, North West Province.
- The Suurplaat Wind Energy Facility, Northern Cape Province.
- The Paulputs CSP Project, Northern Cape Province.
- The Doornkop Wastewater Treatment Works, Gauteng Province.
- The proposed Ilanga Tower 1 Project within the Karoshoek Solar Valley Park, Northern Cape.
- The proposed Ilanga CSP 2 Project within the Karoshoek Solar Valley Park, Northern Cape.
- The proposed Ilanga CSP 3 Project within the Karoshoek Solar Valley Park, Northern Cape.
- The proposed Ilanga CSP 4 Project within the Karoshoek Solar Valley Park, Northern Cape.
- The proposed Ilanga CSP 5 Project within the Karoshoek Solar Valley Park, Northern Cape.
- The Saldanha Bay Network Strengthening, Western Cape Province.
- The Nxuba Wind Farm Facility, Eastern Cape.
- The proposed construction of the Eskom Karusa Switching Station, 132kV Double Circuit Overhead Power Line and Ancillaries near Sutherland, Northern Cape.
- The Kuruman Industrial Cluster near Kuruman, Northern Cape Province.
- Aggeneys Solar Energy Facility near Aggeneys, Northern Cape Province.
- The proposed construction of a 132kV Overhead Power Line and Switchyard Station for the authorised Solis Power I CSP Project near Upington, Northern Cape Province.
- The Lamberts Bay Wind Farm, Western Cape.
- The Lethabo Solar Energy Facility, Free State Province.
- The Majuba Solar Energy Facility, Mpumalanga.
- The Tutuka Solar Energy Facility, Mpumalanga.
- The Juno Wind Farm, Western Cape.

ABRIDGED CV

Riaan A. J. Robbeson (Pr.Sci.Nat.)
Ecologist - Botanist

**Personal Particulars**

Date of Birth: 13th April 1969
Nationality: South African
Address: PO Box 77448, Eldoglen, 0171
Cellular Contact: +27 (0)82 3765 933
Telephone Contact: +27 (0)12 658 5579
Email: riaan@bathusi.org

Consulting experience: 18 years
Name of Firm: Bathusi Environmental Consulting cc
Position: Member, Specialist Investigator
Years with BEC: 15 years
Profession: Environmental Scientist, Ecologist, Botanist

Education

DEGREE / DIPLOMA	FIELD	INSTITUTION
B.Sc.	Botany and Zoology (main subjects)	University of Pretoria (1987 – 1991)
B.Sc. (Hons)	Botany	University of Pretoria (1992)
M.Sc.	Plant Ecology	University of Pretoria (1994 – 1998)
Visual Basic Programming	Programming	Unischool (University of Pretoria), 1999

Key Qualifications

Riaan A.J. Robbeson is an experienced and passionate ecologist, having obtained his Masters degree in Plant Ecology at the University of Pretoria while working as a research assistant on the National Grassland Biome Project. This research included the mapping and description of the vegetation in northern KwaZulu-Natal Province, covering an area of approximately 9 300 km². His involvement in specialist environmental studies followed naturally after graduation and he has since 1996 been professionally involved in numerous projects that related to his field of expertise, ranging in size from a few hectares to provincial scale.

Extensive experience has subsequently been obtained on the status and reaction of the natural environment to development and the assessment thereof. In addition to pure scientific investigations, he has also developed and successfully implemented biodiversity monitoring programmes on mining areas. International projects include the countries of Botswana and Mozambique. Project management include the acquisition and management of other specialist investigators and the ecological integration and interpretation of biodiversity data and reports.

On a personal level, Riaan is an amateur wildlife photographer and is compiling a personal database of photographs of South African wild flowers.

Affiliations

CLASS	PROFESSIONAL SOCIETY	YEAR OF REGISTRATION
Pr.Sci.Nat.	South African Council of Natural Scientific Professions (SACNASP) (Ecological Scientist & Botanical Scientist, Reg no: 400005/03)	2003
Member	International Association for Impact Assessment (Reg no 3289)	2013
Professional Member	Grassland Society of Southern Africa	2008
Member	Succulent Society of Southern Africa	
Member	Botanical Society of Southern Africa	

Computer Skills

- MS Word
- MS Excel
- MS Access
- Arcview 3.2 (a)
- Google Earth
- Adobe Photoshop CS & Lightroom 2.6
- Visual Basic Programming

Employment Record

POSITION	COMPANY	JOB DESCRIPTION	DURATION
Research Assistant	University of Pretoria	Botanical surveys, plant identifications, data capturing, data analysis, report compilation, phytosociological descriptions, Post graduate Masters Publications	1994 - 1998
Member	EkolInfo cc	Project acquisition, site investigations, data analysis, report compilation, GIS mapping, selected peer review for publications and specialist reports	1995 - 1999
Member	Bathusi Environmental Consulting	Project acquisition, project management, site investigations, data analysis, report compilation, GIS mapping, selected peer review for publications and specialist reports, financial administration	1999 - present

Experience & Project Contributions

Riaan has contributed to more than 200 environmental assessment projects that included a range of specialist fields, including Biodiversity Impact Assessments and Scoping Evaluations, Biodiversity Fatal Flaw Assessments, Environmental Audits, Botanical Assessments, Vegetation Sampling, Classification, Description and Mapping, Development and Implementation of Environmental Monitoring Programmes, Red Data Assessments, etc.

Clients that were assisted include private developers, mining houses (gold, diamond, iron, coal, sand), Parastatals, Energy Sector (coal-fired, UCG, solar), Property Developers, etc.

Languages

English: RWS - Excellent
Afrikaans: RWS – Excellent

Brief Project History

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
2016			
Mills & Otten	Vorna Valley Biodiversity Screening Assessment	Biodiversity Screening Assessment	Residential Infrastructure
Mills & Otten	Louwardia Ext 72 Boundary Relaxation	Biodiversity Screening Assessment	Commercial Infrastructure
ATC South Africa	Assessment of potential damage to trees adjacent to ATC tower infrastructure - Waterkloof	Biodiversity Screening Assessment	Communication
Mills & Otten	Louwardia Ext 62 Ecological Screening	Biodiversity Screening Assessment	Commercial Infrastructure
Royal HaskoningDHV	Route K219 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Royal HaskoningDHV	Route K181 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Royal HaskoningDHV	Route K118 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Royal HaskoningDHV	Route K86 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Royal HaskoningDHV	Route K217 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Royal HaskoningDHV	Route K208 Ecological Screening	Biodiversity Screening Assessment	Civil Infrastructure
Mills & Otten	Zenprop Pomona Industrial Development Botanical Assessment	Botanical Impact Assessment	Industrial Infrastructure
Letseng Diamond Mine	Faunal Monitoring Survey of the Letseng Diamond Mine	Biodiversity Monitoring Protocol	Mining
Royal HaskoningDHV	Waterberg Heavy Haul Biodiversity Screening Assessment	Biodiversity Screening Assessment	Civil Infrastructure
Mills & Otten	Pretoria West Mall Biodiversity Assessment	Biodiversity Impact Assessment	Commercial Infrastructure
Mills & Otten	Skymall Seagull Monitoring	Faunal Monitoring Protocol	Commercial Infrastructure
Savannah SA	Tshivhaso Coal-Fired Power Plant Biodiversity Scoping Assessment	Biodiversity Impact Assessment	Mining
Environamic	Esther Park RD Assessment	Botanical Red Data Assessment	Civil Infrastructure
Royal HaskoningDHV	Rietspruit Dam Biodiversity Basic Assessment	Biodiversity Impact Assessment	Civil Infrastructure
Mills & Otten	Vorna Valley Botanical Impact Assessment	Biodiversity Impact Assessment	Residential Development
Mills & Otten	Ga Rankuwa Development Biodiversity Screening Assessment	Biodiversity Screening Assessment	Commercial Infrastructure
EIMS	Giyani Reservoir Protected Species Assessment	Botanical Red Data Assessment	Civil Infrastructure
Mills & Otten	Farm Witkoppie 64 IR (Skymall) Vegetation Screening	Biodiversity Screening Assessment	Commercial Infrastructure
EIMS	Kao Diamond Mine Biodiversity Inception Report	Biodiversity Survey Protocol	Mining
Greenenergy	Selcourt Filling Station Biodiversity Screening Report	Biodiversity Screening Assessment	Commercial Infrastructure

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
Mills & Otten	Remainder of Portion 7 and Portion 898 of the Farm Knopjeslaagte 385-JR (Copperleaf)	Biodiversity Impact Assessment	Residential Development
EIMS	Kao Diamond Mine West Valley Tailings Dam Biodiversity Scoping Assessment	Biodiversity Scoping Assessment	Mining
EIMS	Kao Diamond Mine Tipping Tailings Dam Expansion and Sekiring Village Biodiversity Scoping Assessment	Biodiversity Impact Assessment	Mining
Mills & Otten	Biodiversity Screening Assessment for Marapyane Shopping Center Development	Biodiversity Screening Assessment	Commercial Infrastructure
Mills & Otten	Botanical EIA Assessment for the proposed Centurion Clicks Development	Botanical Impact Assessment	Commercial Infrastructure
Mills & Otten	Erf 8 & 9 of the Farm Witkoppie 64 IR (Skymall) Vegetation Screening	Biodiversity Screening Assessment	Commercial Infrastructure
Babcock	Progress report on the marking of conservation important species for the Masa - Selomo Lines	Botanical Protected Species Assessment	Power Utility
EIMS	Kao Diamond Mine Tipping Tailings Dam Expansion and Sekiring Village Biodiversity EIA Assessment	Biodiversity Impact Assessment	Mining
Savannah SA	Tshivhaso Coal-Fired Power Plant Biodiversity EIA Assessment	Biodiversity Impact Assessment	Power Utility
Nsovo Environmental Consulting	Biodiversity Screening Assessment for Tshwane Freight Terminal	Biodiversity Screening Assessment	Civil Infrastructure
2015			
ATC South Africa	Assessment of potential damage to trees adjacent to ATC communication tower infrastructure, Gauteng Province	Botanical Opinion	Communication
Mills & Otten	Vorna Valley Housing Development Biodiversity Screening Assessment, Gauteng Province	Biodiversity Screening Assessment	Residential Infrastructure
Mills & Otten	Louwleria Ext 72 Industrial Development Servitude Relaxation, Gauteng Province	Floristic Screening Assessment	Industrial
Mills & Otten	Louwleria Ext 62 Industrial Development Ecological Screening, Gauteng Province	Floristic Screening Assessment	Industrial
Royal HaskoningDHV	K Route Ecological Screening for Road Developments in Gauteng Province	Biodiversity Screening Assessment	Civil Infrastructure
Mills & Otten	Zenprop Pomona Industrial Development Botanical Assessment, Gauteng Province	Botanical EIA Assessment	Industrial
Letseng Diamond Mine	Faunal Monitoring Survey of the Letseng Diamond Mine, Kingdom of Lesotho	Faunal Monitoring Protocol	Mining/ Biodiversity Intervention
Royal HaskoningDHV	Waterberg Heavy Haul Railway Biodiversity Screening Assessment, Limpopo, Gauteng, Mpumalanga & North-West Provinces	Biodiversity Screening Assessment	Civil Infrastructure/ Mining
Mills & Otten	Pretoria West Mall Biodiversity Assessment, Gauteng Province	Biodiversity EIA Assessment	Civil Infrastructure
Mills & Otten	Skymall Development Grey headed Seagull Monitoring Protocol, Gauteng Province	Faunal Monitoring Protocol	Civil Infrastructure/ Biodiversity Intervention
Savannah SA	Tshivhaso Coal-Fired Power Plant Biodiversity Scoping Assessment, Limpopo Province	Biodiversity Scoping Assessment	Power Utility
Environamic	Esther Park RD Assessment for the Gautrain Rapid Rail Link, Gauteng Province	Red Data Evaluation	Red Data Monitoring Protocol
Royal HaskoningDHV	Rietspruit Dam Biodiversity Basic Assessment, North-West Province	Biodiversity Basic Impact Assessment	Civil Infrastructure
2014			
Lidwala Consulting (Eskom)	Majuba Ashing Project Biodiversity Offsite Mitigation Recommendations, Mpumalanga	Biodiversity Offsite Intervention,	Power Utility/ Biodiversity

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
	Province	EMP, Mitigation Response	Intervention
GCS (Exxaro)	Matla Stooing Project Biodiversity Scoping Report, Mpumalanga Province	Biodiversity Scoping Report	Mining
Mills & Otten	Tsakane Mall Biodiversity Screening, Gauteng Province	Biodiversity Screening Report	Infrastructure
Mills & Otten	Monavoni Filling Station Biodiversity Screening, Gauteng Province	Biodiversity Screening Report	Industrial
SLR Consulting (SolarReserve SA)	Kalkaar Cumulative Impact Assessment, Northern Cape Province	Biodiversity Impact Assessment (Cumulative Impact Evaluation)	Mining
GCS (Exxaro)	Matla Stooing Project Biodiversity EIA Report, Mpumalanga Province	Biodiversity Screening Report	Mining
Mills & Otten	Essexwold Ext 2 Township Development Biodiversity Screening, Gauteng Province	Biodiversity Screening Report	Residential Infrastructure
Environamic (Bombela Gautrain)	Esther Park RD Report, Gauteng Province	Red Data Evaluation	Utilities
GCS (Exxaro)	Matla Stooing Project Biodiversity Action Programmes, Mpumalanga Province	Biodiversity Action Programmes, EMP contribution	Mining/ Biodiversity Intervention
GCS (Witkop Mining)	Witkop MRA Biodiversity EIA Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Mining
Royal HaskoningDHV (Eskom)	Apollo - Esselen 400 kV Line Biodiversity Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Power Utility
SLR Consulting (SolarReserve SA)	Kalkaar Solar Plant EIA Report, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
WSP	Frankfort Paper Mill EIA Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Industrial
GCS	Jacomynspan EIA, Northern Cape Province	Biodiversity Impact Assessment	Mining
Worley Parsons (SolarReserve SA)	Rooipunt Solar Project Biodiversity EMP Contributions, Northern Cape Province	Biodiversity Action Programmes, EMP contribution	Power Utility
Mills & Otten	The Reeds Extension Biodiversity Assessment, Gauteng Province	Biodiversity Impact Assessment	Residential Infrastructure
Royal HaskoningDHV (Eskom)	Biodiversity Assessment of the proposed Matimba Ash Conveyor Section, Limpopo Province	Biodiversity Impact Assessment	Infrastructure/ Power Utility
GCS (Eskom)	Eskom Bighorn Substation Upgrade, North-West Province	Biodiversity Impact Assessment	Power Utility
Mills & Otten	Aspen Lakes Environmental Management Plan, Gauteng Province	Biodiversity Action Programmes, EMP contribution	Residential Infrastructure
Cave Klapwijk and Associates	Peer Review of Biodiversity EIA Report, Free State & Kwa-Zulu Natal Provinces	Peer Review of Biodiversity EIA reports	Scientific Capacity
Savannah (Exxaro)	Biodiversity Assessment of the proposed IPP Power Station, Lephalale, Limpopo Province	Biodiversity Impact Assessment	Power Utility
Royal HaskoningDHV (Eskom)	Matimba Continuous Ash Biodiversity EIA Report, Limpopo Province	Biodiversity Impact Assessment	Power Utility
Environamic	N3 Toll Road Widening and Upgrade between Cedara Interchange and Umgeni, Kwa-Zulu Natal Province	Biodiversity Screening Assessment	Infrastructure
Environamic	Zeerust Weighbridge Flora Screening, North-West Province	Biodiversity Screening Assessment	Infrastructure
Mills & Otten	Aspen Lakes Ridge Assessment, Gauteng Province	GIS Evaluation	Residential Infrastructure
WSP	Frankfort Paper Mill Scoping Assessment, Mpumalanga Province	Biodiversity Scoping Assessment	Industrial
GCS (Witkop Mining)	Witkop MRA Biodiversity Scoping Assessment, Free State Province	Biodiversity Scoping Assessment	Mining

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
SLR Consulting (SolarReserve SA)	Kalkaar Solar Plant Scoping Report, Northern Cape Province	Biodiversity Scoping Assessment	Power Utility
SiVEST (SolarReserve SA)	Arriesfontein Integration Biodiversity EIA - Wilger PV Plant Power Line, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
SiVEST (SolarReserve SA)	Arriesfontein Integration Biodiversity EIA - Limestone 1 CSP 132 kV Line, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
SiVEST (SolarReserve SA)	Arriesfontein Integration Biodiversity EIA - Limestone 2 CSP 132 kV Line, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
GCS (Witkop Mining)	Witkop MRA Biodiversity Preliminary EIA Assessment, Free State Province	Biodiversity Impact Assessment	Mining
Environamic (Bombela Gautrain)	Esther Park RD Assessment, Gauteng Province	Red Data Evaluation	Infrastructure
RoyalHaskoning DHV	Biodiversity Fatal Flaw Screening Assessment for the proposed Montrose Dam, Mpumalanga Province	Biodiversity Fatal Flaw Assessment	Fatal Flaw Screening
WSP	Review of biodiversity impact reports for the Butsanani Mine, Mpumalanga Province	Peer Review of Biodiversity EIA reports	Peer Review, Mining
Mills & Otten	Digital Elevation Modelling for the Aspen Lakes Development, Gauteng Province	GIS Evaluation	GIS
RoyalHaskoning DHV (Eskom)	Biodiversity Monitoring Audit for the Ingula Pumped Storage Scheme, Free State & Kwa-Zulu Natal Provinces	Biodiversity Audit	Auditing
RoyalHaskoning DHV	Biodiversity EIA Assessment for the Valleyview Residential Development, Mpumalanga Province	Biodiversity Impact Assessment	Infrastructure
GEM Diamonds	Biodiversity Monitoring Programme for the Ghaghoo Diamond Mine, Botswana	Biodiversity Monitoring Protocol, EMP, Biodiversity Intervention	Mining
Savannah Environmental (Exxaro)	Biodiversity Winter Assessment for the proposed IPP Baseload Power Station, Limpopo Province	Biodiversity Surveys	Mining
Mills & Otten	Biodiversity EIA Assessment for the proposed Copperleaf Development, Gauteng Province	Biodiversity Impact Assessment	Infrastructure
2013			
Savannah Environmental	Biodiversity Scoping Assessment for the proposed Sekoko Coal Mine, Limpopo Province	Biodiversity Scoping Assessment	Mining
GCS	Biodiversity EIA Assessment for the Kangra Maquasa Mine, Mpumalanga Province	Biodiversity Impact Assessment	Mining
Environamic (Bombela Gautrain)	Red Data Assessment for the Gautrain Rapid Rail Link, Gauteng Province	Red Data Evaluation	Scientific Capacity
Lidwala Engineers (Eskom)	Tutuka Power Station Continuous Ash Programme, Mpumalanga Province	Biodiversity Impact Assessment	Waste Management
Lidwala Engineers (Eskom)	Majuba Power Station Continuous Ash Programme, Mpumalanga Province	Biodiversity Impact Assessment	Waste Management
GCS (Two Rivers Mine)	Two Rivers Mine Kalkfontein & Tweefontein Biodiversity EIA Assessment, Limpopo Province	Biodiversity Impact Assessment	Mining
GCS (Two Rivers Mine)	Two Rivers Mine Tailings Storage Facility Biodiversity EIA Assessment, Limpopo Province	Biodiversity Impact Assessment	Mining
RoyalHaskoning DHV (Eskom)	Matimba Continuous Ash Programme Biodiversity EIA Assessment, Limpopo Province	Biodiversity Impact Assessment	Waste Management
Lidwala	Kalbasfontein Coal Mine Expansion Biodiversity EIA Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Mining
Worley Parsons (SolarReserve SA)	Arriesfontein PV & Solar Project Biodiversity Environmental Management Programme, Northern Cape Province	Biodiversity Action Programmes, EMP contribution	Energy Utility
Savannah Environmental	IPP Baseload Power Station Biodiversity EIA Assessment	Biodiversity Impact Assessment	Energy Utility

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
(Exxaro)			
GCS	Schoongezicht Mine Biodiversity EIA Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Mining
GCS	Schurvekop Coal Mine Biodiversity EIA Assessment, Mpumalanga Province	Biodiversity Impact Assessment	Mining
GCS	Mukulu Mining Biodiversity EIA, Northern Cape Province	Biodiversity Impact Assessment	Mining
Mills & Otten	Biodiversity EIA for the proposed Highveld Mushroom Development on the farm Doornrandje, Gauteng Province	Biodiversity Impact Assessment	Farming
Envirolink	Biodiversity EIA for the proposed Lospersfontein & Groenpunt Prisons Water Treatment Plant Expansions, Free State & North-West Provinces	Biodiversity Impact Assessment	Utilities
Worley Parsons	Biodiversity EIA for the proposed Rooipunt Solar Power Plant, Northern Cape Province	Biodiversity Impact Assessment	Energy Utility
GCS	Biodiversity EIA for the proposed Wits Gold Mine, Free State Province	Biodiversity Impact Assessment	Mining
Worley Parsons (SolarReserve SA)	Biodiversity EIA for the proposed Arriesfontein Photovoltaic Plant, Northern Cape Province	Biodiversity Impact Assessment	Energy Utility
GCS (Exxaro)	Biodiversity EIA for the proposed Matla Coal Stopping and Open Cast Mine Project, Mpumalanga Province	Biodiversity Impact Assessment	Mining
Marsh Vikela	Biodiversity EIA for the Pering Mine, North-West Province	Biodiversity Impact Assessment	Mining
GCS	Biodiversity EIA for the proposed Slater Coal Witkop Mine, Free State Province	Biodiversity Impact Assessment	Mining
2012			
GEM Diamonds	Biodiversity comments on the Site Selection for Letseng Diamond Mine, Lesotho	Biodiversity Screening Assessment	Mining
Solafrica	Development of a Biodiversity Offset Programme for the Bokpoort Development, Northern Cape Province	Biodiversity Intervention, EMP, Biodiversity Action Plans	Scientific Capacity
Lidwala Consulting Engineers (Eskom)	Hendrina Ash Dam Biodiversity EIA Assessment	Biodiversity Impact Assessment	Mining
Worley Parsons	Rooipunt Solar Development Biodiversity Scoping Assessment, Northern Cape Province	Biodiversity Scoping Assessment	Power Utility
Worley Parsons (SolarReserve SA)	Survey of protected flora species on the Humansrus Solar Development, Northern Cape Province	Red Data Evaluation	Scientific Capacity
Cave Clapwijk & Associates	Peer review of the biodiversity impact assessment report of the N3 Highway upgrade	Peer Review of Biodiversity EIA reports	Scientific Capacity
SSI Environmental	Protected Species Survey at the Solar Plant development at Bokpoort, Northern Cape Province	Red Data Evaluation	Power Utility
GCS (Exxaro)	Biodiversity Scoping Assessment of the proposed mining development of the Matla Project, Mpumalanga Province	Biodiversity Scoping Assessment	Mining
GCS	Biodiversity Baseline Assessment of the proposed mining development at Eloff, Mpumalanga Province	Detailed Biodiversity Surveys	Mining
SSI Environmental	Biodiversity Scoping and EIA Assessments of the proposed Solar Plant Development on the farm Humansrus, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
Lidwala Consulting Engineers (Eskom)	Biodiversity Scoping Report for the proposed Hendrina Ash Dam development, Mpumalanga Province	Biodiversity Scoping Assessment	Mining
Momentum Energy	Biodiversity Basic Assessment of the proposed Solar Plant development on the farm Spruitfontein, North-West Province	Biodiversity Impact Assessment	Power Utility
Lidwala Consulting Engineers	Biodiversity Screening Report for the proposed Hendrina Ash Dam, Mpumalanga Province	Biodiversity Screening	Mining

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
(Eskom)		Assessment	
SSI Environmental (Eskom)	Biodiversity Basic Assessment of the proposed Kudu – Dorstfontein Power Line, Mpumalanga Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Biodiversity Basic Assessment of the proposed Paulputs – Aggeneys Power Line, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
PB Power (Eskom)	Assessment of protected tree species on the proposed Medupi Power Station Water Pipeline and Conveyor Line, Limpopo Province	Red Data Evaluation	Power Utility
GCS	Assessment of protected tree species on Der Brochen Mine, Mpumalanga Province	Red Data Evaluation	Mining
SSI Environmental	Concentrated Solar Thermal Power Plant, Northern Cape Province	Biodiversity Impact Assessment	Power Utility
Mills & Otten	Peer review of Draft Ecological report for the proposed development of Farm Zwartkop, Gauteng Province	Peer Review of Biodiversity EIA reports	Scientific Capacity
Arcus Gibb (Eskom)	Floristic walkdown of the approved Watershed-Mmabatho 88 kV line, North-West Province	Biodiversity EMP, Biodiversity Action Plans	Power Utility
SSI Environmental (Eskom)	Strategic Biodiversity Impact Assessment of the proposed Underground Gasification Plant, Mpumalanga Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Strategic Biodiversity EIA report for the proposed Matla-Jupiter-Sebenza project, Gauteng Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Strategic Biodiversity EIA report for the proposed Matla-Jupiter 400 kV Lines, Gauteng & Mpumalanga Provinces	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Terrestrial Biodiversity EIA report for the proposed Hilltop-Rest Line and Substation, Mpumalanga Province	Biodiversity Impact Assessment	Power Utility
2011			
Kwezi V3 Engineers	Terrestrial Biodiversity EIA report for the proposed Naledi Landfill Site, North-West Province	Biodiversity Impact Assessment	Waste Management
GCS	Terrestrial Biodiversity EIA report for the proposed Forzando West Underground Mine and infrastructure, Mpumalanga Province	Biodiversity Impact Assessment	Mining
Savannah Environmental (Eskom)	Strategic Terrestrial biodiversity EIA report for the proposed Mokopane Integration Project, Limpopo Province	Biodiversity Impact Assessment	Power Utility
Savannah Environmental (Eskom)	Strategic Biodiversity EIA for the proposed Medupi Conveyor & Silo, Limpopo Province	Biodiversity Impact Assessment	Mining
SSI Environmental (Eskom)	Floristic Basic Assessment for the Ivory Park – Eskom College 88 kV Line rebuild, Gauteng Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Floristic Basic Assessment for the Lulamisa 88 kV Line rebuild, Gauteng Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental	Floristic Basic Assessment for the proposed Rand Water Pipeline upgrades, Gauteng Province	Biodiversity Impact Assessment	Infrastructure
Bombela CJV	Ecological monitoring report for ecologically sensitive areas along the Gautrain Construction Route, Gauteng Province	Red Data Evaluation	Infrastructure
GCS	Biodiversity Risk Assessment & Baseline biodiversity aspects for the proposed Kangra-Kusipongo Shaft locations, Mpumalanga Province	Detailed Biodiversity Surveys	Mining
Marsh Vikela	Leeuwpoort Biodiversity Impact Assessment, Gauteng Province	Biodiversity Impact Assessment	Housing
Savannah Environmental (Eskom)	Biodiversity EIA assessment of the proposed Apollo-Verwoerdburg 400 kV Lines, Gauteng Province	Biodiversity Impact Assessment	Power Utility
Kwezi V3 Engineers (Eskom)	Ecological EIA report for the proposed Ubertas Substation, Gauteng Province	Biodiversity Impact Assessment	Power Utility

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
Savannah Environmental (Eskom)	Red Data flora assessment for the proposed Apollo-Verwoerdburg 400 kV Lines, Gauteng Province	Red Data Evaluation	Power Utility
Marsh Vikela	Biodiversity Assessment for the proposed Leeuwoort Wetland crossing, Gauteng Province	Biodiversity Impact Assessment, Biodiversity Intervention	Housing
Medupi Power Station	Chairperson for the Medupi Environmental Monitoring Committee (February – April 2010)	Biodiversity Intervention, Ecological Contribution	Power Utility
Medupi Power Station	Member of the Medupi Environmental Monitoring Committee (2007 – current)	Biodiversity Intervention, Ecological Contribution	Power Utility
Kwezi V3	Biodiversity Impact Assessment for the proposed Emfuleni Landfill project, Gauteng Province	Biodiversity Impact Assessment	Waste Management
Savannah Environmental (Eskom)	Biodiversity EIA report for the proposed Kwagga & Phoebes Substations, Gauteng Province	Biodiversity Impact Assessment	Power Utility
Savannah Environmental (Eskom)	Biodiversity EIA report for the proposed Kwagga & Phoebes Lines, Gauteng Province	Biodiversity Impact Assessment	Power Utility
PBA International (Eskom)	Biodiversity EIA report for the proposed Epsilon Substation, North-West Province	Biodiversity Impact Assessment	Power Utility
SSI Environmental (Eskom)	Strategic Biodiversity Assessment for the proposed Lupini-Lulamisa Lines, Gauteng Province	Biodiversity Impact Assessment	Power Utility
PBA International (Eskom)	Biodiversity Scoping Assessment for the proposed Mogwase Substation, North-West Province	Biodiversity Scoping Assessment	Power Utility
Marsh Vikela	Red Data flora assessment for the proposed Kameeldrift development, Gauteng Province	Red Data Evaluation	Scientific Services
Kwezi V3 (Eskom)	Honingklip Ecological EIA, Gauteng Province	Biodiversity Impact Assessment	Power Utility
Umoyo Wind Projects	Bioregional overview, Eastern Cape Province	Biodiversity Regional Overview	Power Utility
Kwezi V3 (Eskom)	Eskom College – Randjesfontein Ecological EIA	Biodiversity Impact Assessment	Power Utility
Marsh Vikela	Kameeldrift Red Data flora assessment	Red Data Evaluation	Urban Development
Other Projects of Interest			
Ghaghoo Mine	Biodiversity Monitoring Programme for the Ghaghoo Diamond Mine	Biodiversity Monitoring Protocol, EMP, Biodiversity Intervention	Botswana (Central Kalahari Game Reserve)
GEM Diamonds	Site Selection Process & Biodiversity Surveys for Tailings Facility for Lletseng Mine (Lesotho)	Biodiversity Impact Assessment, Biodiversity Intervention	Mining
Eskom	Biodiversity Surveys for the proposed Mmamabula Power Line (Botswana)	Detailed Biodiversity Surveys	Power Utility
Institute for Soil, Climate & Water	Provincial floristic surveys for the purposed of GIS Degradation Assessments (Gauteng Province)	Detailed Biodiversity Surveys	Research
Institute for Soil, Climate & Water	Provincial floristic surveys for the purposed of GIS Degradation Assessments (Mpumalanga Province)	Detailed Biodiversity Surveys	Research
Private Developers	Biodiversity Surveys for the proposed development of a private game lodge in the Okavango Delta (Botswana)	Detailed Biodiversity Surveys	Tourism
Private Developers	Biodiversity Surveys for the proposed development of a hunting concession lodge in the Okavango Delta (Botswana)	Detailed Biodiversity Surveys	Tourism
ARC	Floristic Monitoring for the environmental control of Quelea birds (2001 - 2004)	Floristic Monitoring Protocol	Research
Woestalleen Mine	Biodiversity Monitoring Programme for the Woestalleen Mining Sites (1998 - 2010)	Biodiversity Monitoring Protocol	Mining/ Biodiversity Monitoring
Blesbokspruit	Floristic Monitoring Programme in Blesbokspruit as part of disaster management (1998 -	Biodiversity Monitoring Protocol	Mining/ Biodiversity

CLIENT	PROJECT DESCRIPTION	Project Type	COMMODITY
	2010)		Monitoring
<i>Deneys Reitz Attorneys</i>	<i>Floristic Assessment of damages resulting from accidental fires</i>	<i>Detailed Biodiversity Surveys</i>	<i>Research</i>
<i>Private Developers</i>	<i>Floristic Impact Assessment of a private lodge (Inhassorho, Mozambique)</i>	<i>Biodiversity Impact Assessment</i>	<i>Tourism</i>
<i>GEM Diamonds</i>	<i>Biodiversity Impact Assessment of the proposed Ghaghoo Diamond Mine (Central Kalahari Game Reserve, Botswana)</i>	<i>Biodiversity Impact Assessment</i>	<i>Mining</i>

Certification

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications and experience.

A handwritten signature in black ink, appearing to read 'Riaan A.J. Robbeson', written over a light grey rectangular background.

Riaan A.J. Robbeson (Pr.Sci.Nat.)
2016-10-19



Curriculum Vitae Dewald Kamffer



A. Personal

Surname	Kamffer
Full Names	Dewald
Date of Birth	17 December 1974
Place of Birth	Pretoria, South Africa
Profession	Biodiversity specialist
Nationality	South African
Languages	Afrikaans & English
E-mail	ecocheck@ee-sa.com
Cellular	+27 82 419 0196

B. Education

Qualification	Year	Place
Matric Certificate	1992	Waterkloof High School, Pretoria
B.Sc. (Zoology & Entomology)	1995	University of Pretoria
B.Sc. (Hons.) (Entomology)	1996	University of Pretoria
M.Sc. (Grassland Conservation Ecology)	2004	University of Pretoria
Bats & Wind Energy Course	2013	Endangered Wildlife Trust

C. Professional Association

Council	Categories	Period	Reg. Number
South African Council for Natural Scientific Professions	Ecology & Zoology	2004-2015	400204/05

D. Publications

Publication	Year	Source
Community-level effects of fragmentation of the afro-montane grassland of the escarpment region of Mpumalanga	2005	Dissertation – University of Pretoria
Omgewingswetgewing en Landbou in 2015 – 'n nuwe era	2015	SUBTROP Quarterly Journal: first edition 2015 VOL 9

E. Employment

Period	Employer	Position
01/2001 – 10/2001	Mala-Mala Private Game Reserve	Game Ranger
01/2002 - present	Ecocheck*	Director & Principal Biodiversity Specialist

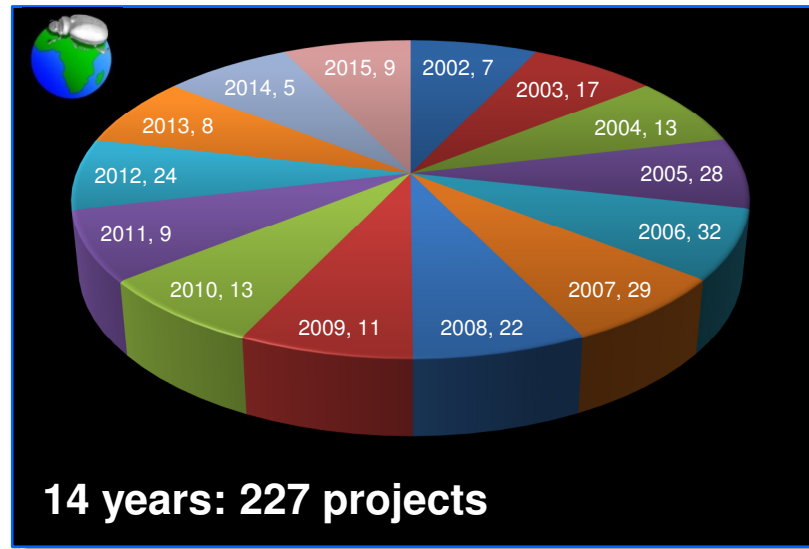
* Dewald Kamffer started the biodiversity consulting company, Ecocheck Environmental Services, in 2002.

F. Summary of Ecocheck's Projects

Years	14
Clients	51
Sectors	10
South African Provinces	9
African Countries	5
Number of projects	227

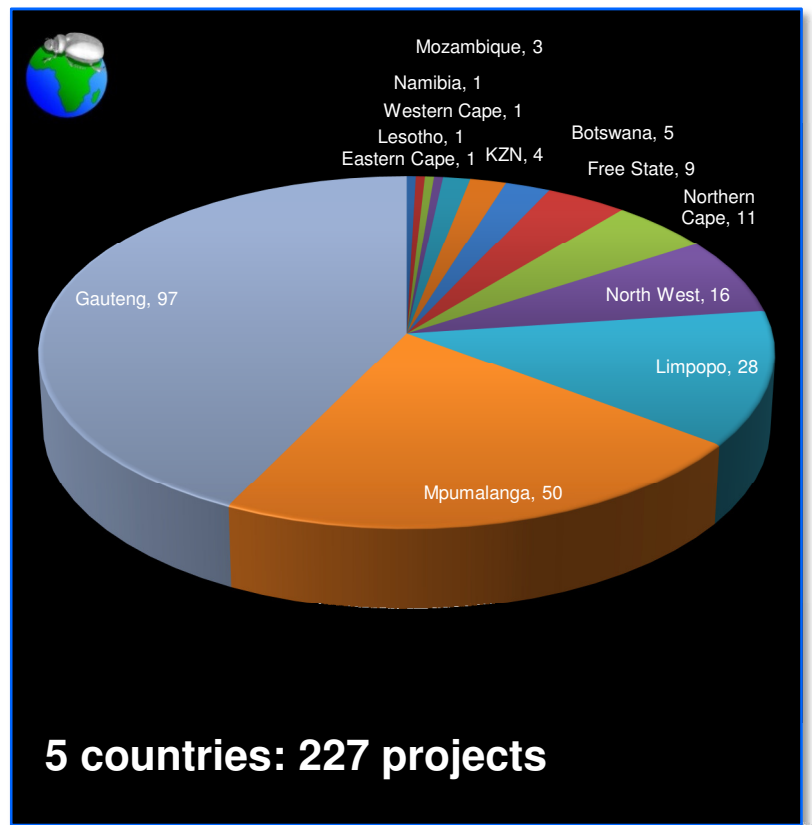
G. Projects: year-by-year

Year	# Projects
2002	7
2003	17
2004	13
2005	28
2006	32
2007	29
2008	22
2009	11
2010	13
2011	9
2012	24
2013	8
2014	5
2015	9



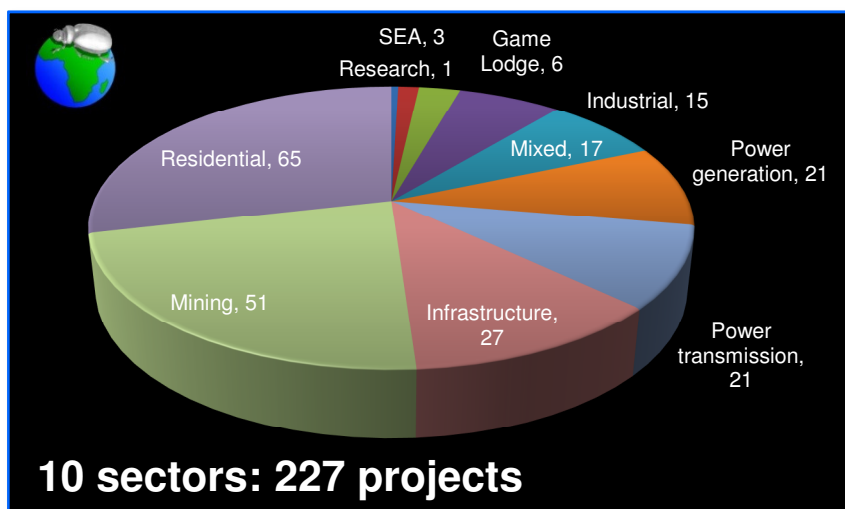
H. Projects: Countries

Locality	# Projects
Botswana: Central District	2
Botswana: CKGR	1
Botswana: Francistown	2
Mozambique: Lower Zambezi	1
Mozambique: Tete	1
Mozambique: Inhassoro	1
Lesotho: Mokhotlong	1
Namibia: Namib Desert	1
South Africa: Western Cape	1
South Africa: Eastern Cape	1
South Africa: KZN	4
South Africa: Free State	9
South Africa: Northern Cape	11
South Africa: North West	16
South Africa: Limpopo	28
South Africa: Mpumalanga	50
South Africa: Gauteng	97



I. Projects: Sectors

Sector	# Projects
Research	1
Strategic	3
Game Lodge	6
Industrial	15
Mixed	17
Power Generation	21
Power Transmission	21
Infrastructure	27
Mining	51
Residential	65



J. International projects

Country	Year	Client	Project
Botswana	2006	Ekolnfo	Mmamabula Opencast Coal Mine – EIA faunal assessment
Botswana	2007	Marsh Vikela	TATI Nickel Mine Expansion – EIA faunal assessment
Botswana	2007	AGES SA	Selkirk Lionore Mine Expansion – EIA faunal assessment
Botswana	2008	Marsh Vikela	Gope Diamond Mine – EIA faunal assessment
Botswana	2013	Gem Diamonds	Gaghoo Diamond Mining Project – Faunal monitoring
Mozambique	2005	Ekolnfo	Lula Lodge, Inhassoro – Faunal assessment
Mozambique	2010	Impacto	Mphanda Nkuwa Dam – EIA invertebrate assessment
Mozambique	2012	Coffee International	Tete Iron Mine – Scoping invertebrate assessment
Lesotho	2011	Gem Diamonds	Letšeng Diamond Mine Expansion – faunal assessment
Namibia	2013	Reptile Uranium Namibia	Reptile Uranium Mine – invertebrate assessment assistant

K. South African projects

1) Research

Region	Year	Client	Project
Free State	2004	Agricultural Research Council	Reitz Quelea Research Project - invertebrates

2) Strategic Environmental Assessments (SEA)

Region	Year	Client	Project
Northern Cape	2004	Ekolnfo	Frances Baard District Municipality
Gauteng	2005	Ekolnfo	Klapperkop Region, Pretoria
Free State	2006	African EPA	Vredefort Dome Region



3) Resort & Lodge Developments

Region	Year	Client	Project
Limpopo	2004	EkoInfo	BJF Game Lodge Development
North West	2004	Sun International	Sun City Vacation Club II Development
Mozambique	2005	EkoInfo	Lula Lodge, Inhassoro
Limpopo	2005	EkoInfo	Leopard's Bend Game Lodge Development
Limpopo	2005	EkoInfo	Kololo Game Lodge Development
Limpopo	2006	EkoInfo	Kapama Game Lodge Expansion
Limpopo	2006	EkoInfo	Koedoesfontein Game Lodge Development
Limpopo	2009	EkoInfo	Leopard's Bend Game Lodge Expansions

4) Industrial Developments

Region	Year	Client	Project
Gauteng	2002	EkoInfo	Willows Development
Gauteng	2002	Tribal Consultants	Supplier Park Development
Gauteng	2003	EkoInfo	Featherwood Development
Gauteng	2003	EkoInfo	Cradle-of-Humankind Development
Gauteng	2003	EkoInfo	Amandasig Development
Gauteng	2003	EkoInfo	Sterrewag Development
Gauteng	2003	EkoInfo	Bordeaux Development
Gauteng	2003	EkoInfo	Randjiesfontein Development
Gauteng	2003	Tribal Consultants	Summerset Development
Gauteng	2003	Tribal Consultants	Olienhoutbosch Development
Gauteng	2003	Tribal Consultants	Irene Development
Gauteng	2003	Tribal Consultants	Brakfontein Development
Gauteng	2003	Tribal Consultants	Valley View Development
Gauteng	2003	Tribal Consultants	Supplier Park II Development
Gauteng	2015	Mills & Otten	Pretoria West Mall Development

5) Mixed Developments

Region	Year	Client	Project
Gauteng	2005	BEC	Wallmansthal Development
Gauteng	2005	EkoInfo	Lion Park Development
Gauteng	2006	Ekurhuleni Municipality	Zesfontein Landfill Site
Gauteng	2006	Germiston Uitgewers	SWM Development
Gauteng	2006	EkoInfo	Voortrekker Monument Development
Gauteng	2006	EkoInfo	Fountains Valley Development
Gauteng	2007	Kenric Investments	Kliprivier Development
Gauteng	2008	EkoInfo	Ingwenya Development
Gauteng	2008	BEC	Greenfields Expansion Development
Gauteng	2012	BEC	Randpark Golf Club Development
Limpopo	2007	BEC	Vhurivhuri Tribal Development
Mpumalanga	2003	Eco Assessments	Highlands Gate Golf Estate
Mpumalanga	2005	African EPA	Lakenvlei Development
Mpumalanga	2008	BEC	Kusipongo Development
North West	2008	Sun International	Sun City Golf Course Development



6) Power Generation

Region	Year	Client	Project
Free State	2012	BEC	Photo Voltaic Power Plant Project
Free State	2013	BEC	Kalkaar Photo Voltaic Power Plant Project
Gauteng	2015	Eskom	Decommissioning of the Atlas Substation
KZN	2012	Eskom	Ingula Pumped Storage Scheme
Limpopo	2005	Eskom	Medupi Power Station
Limpopo	2008	BEC	Medupi Borrow Pits Project
Limpopo	2012	Eskom	Matimba Power Station Ashing Facility Expansion
Limpopo	2015	Savannah Environmental	Tshivhaso Coal-fired Power Plant
Mozambique	2010	Impacto	Mphanda Nkuwa Dam & Hydro-electrical
Mpumalanga	2008	Eskom	Majuba Power Generation Plant Project
Mpumalanga	2010	Eskom	Majuba Underground Gasification Project
Mpumalanga	2011	Eskom	Hendrina Ashing Facility Expansion Project
Mpumalanga	2012	BEC	Photo Voltaic Power Plant Project
Mpumalanga	2012	Eskom	Tutuka Power Station Ashing Facility Expansion
Mpumalanga	2012	Eskom	Majuba Power Station Ashing Facility Expansion
Northern Cape	2010	BEC	CSP Solar Power Project
Northern Cape	2011	BEC	Rooipunt Solar Plant Project
Northern Cape	2012	BEC	Rooipunt Photo Voltaic Power Plant Project
North West	2011	BEC	Momentum Solar Energy Plant Project
North West	2012	BEC	Photo Voltaic Power Plant Project
Western Cape	2012	Eskom	Nuclear 1 Power Station Project

7) Power Transmission

Region	Year	Client	Project
Free State	2006	Eskom	Perseus – Hydra Power Line Project
Gauteng	2007	Eskom	Marang Power Line Project
Gauteng	2009	Eskom	Glockner – Kookfontein Power Lines Project
Gauteng	2014	Eskom	Apollo – Esselen Power Line Project
KZN	2008	Eskom	Majuba – Venus Power Line Project
KZN	2010	Eskom	Ariadne – Venus Power Line Project
Limpopo	2007	Eskom	Dinaledi Power Line Project
Limpopo	2007	Eskom	Mmamabula – Delta Power Line Project
Limpopo	2009	Eskom	Delta – Epsilom Power Lines Project
Limpopo	2010	Eskom	Mokopane Power Line Integration Project
Limpopo	2010	Eskom	Medupi – Spitskop Protected Trees Project
Mpumalanga	2008	Eskom	Boulders – Malelane Power Lines Project
Mpumalanga	2010	Eskom	Hilltop Rest Power Lines Project
Mpumalanga	2010	Eskom	Matla – Jupiter Power Lines Project
Mpumalanga	2010	Eskom	Kudu – Dorstfontein Power Lines Project
Mpumalanga	2015	Eskom	Mpumalanga Waterlogged Towers Project
Northern Cape	2008	Eskom	Perseus Hydra Walkdown Project
Northern Cape	2010	Eskom	Aggeneis – Paulputs Power Lines Project
Northern Cape	2014	Eskom	Arriesfontein Power Lines Project
Northern Cape	2015	Eskom	Ferrum – Nieuwehoop Walkdown Project
North West	2008	Eskom	Watershed – Mmabatho Power Line Project



8) Infrastructure

Region	Year	Client	Project
Free State	2012	BEC	Groenpunt Water Treatment Facility Expansion
Gauteng	2005	BEC	Simon Vermooten Road Expansion Project
Gauteng	2007	BEC	Gautrain Project
Gauteng	2007	BEC	Petronet Multipurpose Pipeline Project
Gauteng	2007	EkolInfo	The Hills Road Project
Gauteng	2008	Enviro-Namic	Klipdrift Water Works Expansion Project
Gauteng	2008	Magalies Water	Klipdrift Weir Project
Gauteng	2008	Arcus Gibb	Fairlands Road Project
Gauteng	2008	Jeffares & Green	KWV3 Road Project
Gauteng	2009	EIMS (Pty) Ltd	NECSA Pipeline Project
Gauteng	2015	Royal Haskoning DHV	Gauteng K-routes Development Project
Limpopo	2006	BEC	Messina N1 Weigh Bridge Project
Limpopo	2010	Eskom	Medupi Power Station Conveyor Project
Limpopo	2015	Royal Haskoning DHV	Waterberg Heavy Haul Railway Project
Mpumalanga	2004	EIMS (Pty) Ltd	Maruladal Project
Mpumalanga	2004	EIMS (Pty) Ltd	Craigavon Project
Mpumalanga	2004	EIMS (Pty) Ltd	Witkoppen Project
Mpumalanga	2004	EIMS (Pty) Ltd	Broadacres Project
Mpumalanga	2004	EkolInfo	Heaven-on-Earth Project
Mpumalanga	2004	Plan Practice	Valley Farm Project
Mpumalanga	2004	KV3 Engineers	Olienhoutbosch Road Project
Mpumalanga	2007	BEC	Nelspruit – Baberton R40 Road Expansion Project
Mpumalanga	2009	Sasol	GNP Sasol Pipeline Project
Mpumalanga	2015	EIMS (Pty) Ltd	Overvaal Railway Tunnel Expansion Project
North West	2010	BEC	Naledi Landfill Site Project
North West	2012	BEC	Lospersfontein Water Treatment Facility Expansion
North West	2015	Royal Haskoning DHV	Rietspruit Dam Rehabilitation Project



9) Mining

Region	Year	Client	Project
Botswana	2006	EkolInfo	Mmamabula Coal Mine Project
Botswana	2007	Marsh Vikela	Tati Nickel Mine Expansion Project
Botswana	2008	Marsh Vikela	Gope Diamond Mine Project
Botswana	2008	AGES SA	Selkirk Lionore Mine Expansion Project
Botswana	2013	Gem Diamonds	Gaghoo Diamond Mine Monitoring Project
Eastern Cape	2007	Pachnoda Consulting	Xolobeni Coastal Dune Mining Project
Free State	2011	BEC	Witkop Colliery Project
Free State	2013	BEC	Witkop Mining Project
Free State	2013	BEC	Frankfort Mining Project
Gauteng	2012	BEC	Steynol Coal Mining Project
KZN	2003	GCS	Utreght Mining Project
Lesotho	2011	Gem Diamonds	Letšeng Diamond Mine Expansion Project
Limpopo	2006	ERM	Soutpansberg Mining Exploration Project
Limpopo	2007	AGES SA	Thornclyff Mining Project
Limpopo	2007	BEC	Rockdale Ferrochrome Mining Project
Limpopo	2012	Exxaro	Gravelotte Iron Mining Project
Limpopo	2012	Exxaro	Grootegeeluk Coal Mine IPP Baseload Project
Limpopo	2012	BEC	Two Rivers Platinum Mining Project
Limpopo	2013	Exxaro	Zonderwater Coal Mining Project
Limpopo	2014	EkolInfo	Blouberg Mine Risk Assessment
Mozambique	2012	Coffee International	Tete Iron Mining Project
Mpumalanga	2002	Tribal Consultants	Carlswald Coal Mining Project
Mpumalanga	2002	Tribal Consultants	CMB Coal Mining Project
Mpumalanga	2002	Eco-Afrika Consulting	Hartbeesfontein Coal Mining Project
Mpumalanga	2003	Eco-Afrika Consulting	Roosenekal Coal Mining Project
Mpumalanga	2004	African EPA	Schoonoord Coal Mining Project
Mpumalanga	2005	African EPA	Middelkraal Coal Mining Project
Mpumalanga	2006	Xstrata Coal	Xstrata Coal Mining Project
Mpumalanga	2006	BEC	Mareesburg Coal Mining Project
Mpumalanga	2007	BEC	Steelpoort Mining Project
Mpumalanga	2008	GCS	Dorstfontein Coal Mining Project
Mpumalanga	2009	BEC	Kangra Site Selection Project
Mpumalanga	2009	BEC	Maquasa West Coal Mining Project
Mpumalanga	2010	BEC	Forzando Coal Mining Project
Mpumalanga	2011	Pachnoda Consulting	Glisa South Coal Mining Project
Mpumalanga	2011	BEC	Matla Coal Mining Project
Mpumalanga	2011	BEC	Eloff Coal Mining Project
Mpumalanga	2012	EkolInfo	Carolina Vuna Coal Mining Project
Mpumalanga	2012	BEC	Kangra Maquasa Coal Mining Project
Mpumalanga	2012	BEC	Schurvekop Coal Mining Project
Mpumalanga	2012	BEC	Inyanda Coal Mining Project
Mpumalanga	2012	BEC	Schoongezicht Coal Mining Project
Mpumalanga	2013	Anglo American	Elders Coal Mining Project
Namibia	2013	Reptile Uranium Namibia	Reptile Uranium Mining Project
Northern Cape	2011	BEC	Pering Mining Project
Northern Cape	2012	BEC	Mukulu Mining Project
Northern Cape	2012	BEC	Jacomynspan Mining Project
North West	2002	Helio Alliance	Brakspruit Granite Mining Project
North West	2003	Helio Alliance	Frontier Granite Mining Project
North West	2007	Oryx Environmental	PTM Platinum Mining Project
North West	2008	EkolInfo	Lonmin Mining Project



10) Residential Developments

Region	Year	Client	Project
Gauteng	2002	Giel van der Berg Trust	Giel van der Berg Development
Gauteng	2003	Eco Assessments	Kromdraai Development
Gauteng	2004	Tribal Consultants	Louwardia Development
Gauteng	2005	BEC	Silverton Development
Gauteng	2005	BEC	Cashan Development
Gauteng	2005	BEC	Waterkloof Heights Development
Gauteng	2005	BEC	Beau Rivage Development
Gauteng	2005	BEC	Le Chateau Development
Gauteng	2005	BEC	Garsfontein Development
Gauteng	2005	Ekoinfo	Honingklip Development
Gauteng	2005	Ekoinfo	Modderfontein Development
Gauteng	2005	Ekoinfo	Rietvallei Development
Gauteng	2005	Ekoinfo	The Hills Development
Gauteng	2005	Ekoinfo	Rooihuiskraal Development
Gauteng	2005	Landev (Pty) Ltd	Paardeplaats Development
Gauteng	2005	Tswelopele Environmental	North Riding Development
Gauteng	2005	Zuicker Property Trust	Zuickerboschfontein Development
Gauteng	2006	BEC	Doornkraal Development
Gauteng	2006	BEC	Zwartkoppies Development
Gauteng	2006	BEC	Donkerhoek Development
Gauteng	2006	BEC	Jameson Field Development
Gauteng	2006	BEC	Olympus Development
Gauteng	2006	BEC	Willows Development
Gauteng	2006	Ekoinfo	Sedibeng Development
Gauteng	2006	Ekoinfo	Cullinan Development
Gauteng	2006	Ekoinfo	Bronberg South Development
Gauteng	2006	Ekoinfo	Zambezi Development
Gauteng	2006	Ekoinfo	Midrand Development
Gauteng	2006	Viking Properties 330	Schurveberg Development
Gauteng	2006	Viking Properties 331	Boschkop Development
Gauteng	2006	ASG Rental Solutions	Equestria Development
Gauteng	2006	Vexma Properties	Willowbrae Development
Gauteng	2006	Ekoinfo	Rigel Development
Gauteng	2007	BEC	Ashlea Gardens Development
Gauteng	2007	BEC	Rabie Ridge Development
Gauteng	2007	BEC	Newmarket Development
Gauteng	2007	BEC	Leeupoort Development
Gauteng	2007	BEC	Bultfontein Development
Gauteng	2007	BEC	Klipdrift Development
Gauteng	2007	BEC	Selcourt Development
Gauteng	2007	Ekoinfo	Shoshanguve Development
Gauteng	2007	Ekoinfo	Kievietskroon Development
Gauteng	2007	Ekoinfo	Raslouw Development
Gauteng	2007	Golden Creek Investments	Dainfern Development
Gauteng	2007	Krysanthe Properties	Pienaarspoort Development
Gauteng	2007	Pachnoda Consulting	Mooiplaats Development
Gauteng	2008	BEC	Crystal Park Development
Gauteng	2008	BEC	Houtkop Development
Gauteng	2008	Zotec Developments	Willow Park Development
Gauteng	2009	BEC	Elandsfontein Development
Gauteng	2009	BEC	Springvalley Development



Gauteng	2009	BEC	Klipfontein Development
Gauteng	2009	First Land Developments	Doornpoort Development
Gauteng	2013	Ekolnfo	Proteadal Mogale City Development
Gauteng	2014	BEC	The Reeds Development
Gauteng	2014	Seaton Thomson & Associates	Doornpoort Extensions 44-46 Development
Limpopo	2008	Polygon Enviro Planners	Cooyong Development
Mpumalanga	2005	Ekolnfo	Impomelelo Development
Mpumalanga	2006	BEC	Zone-of-Integration Development
Mpumalanga	2006	Prohibio	Trichardt Development
Mpumalanga	2007	GO EnviroScience	Schoemanskloof Development
North West	2005	BEC	Amarosa Development
North West	2005	BEC	Waterval Development
North West	2005	Ekolnfo	Elandsfontein Development
North West	2006	BEC	De Rust Development



CURRICULUM VITAE

Name: **LUKAS JURIE NIEMAND**
Company: Pachnoda Consulting cc (Director)
Date of Birth: 1974-03-12
Nationality: South African
Languages: English and Afrikaans

EDUCATIONAL QUALIFICATIONS

1992 Hoërskool Hartbeespoort, Hartbeespoort - Senior Certificate.
1996 University of Pretoria, Pretoria - B.Sc. (Zoology and Entomology).
1997 University of Pretoria, Pretoria - B.Sc. (Hons) (Entomology).
2001 University of Pretoria, Pretoria - M.Sc. (Restoration Ecology/Zoology).

MEMBERSHIP IN PROFESSIONAL SOCIETY

- Professional Natural Scientist (Pr. Sci. Nat.) (Reg. no. 400095/06)
 - BirdLife South Africa
 - Hartbeespoort Natural Heritage Society
-

EXPERIENCE

A. Work conducted in South Africa

- **1. General Ecological Assessments** (Fauna, Flora and Red Data Scans, including both functional and compositional aspects):
- Belvedere Trust, Proposed retirement village on Amorosa Agricultural Holdings, Roodepoort, Gauteng (2004);
- City of Joburg Property Development Company, Proposed upgrade and development of the Orlando Dam Intersection, Soweto, Gauteng (2004);
- PDNA, Proposed NASREC development, Johannesburg, Gauteng (2004);

- 17 Shaft Conference and Education Centre, Proposed establishment of the Veteran's Heritage Education Centre, Crown Mines, Gauteng (2004);
- GAUTRANS, Proposed re-alignment of Road D781 and construction of a road bridge over the Rietvleispruit, Kempton Park, Gauteng (2004);
- Mr. N. Lang, Ecological Opinion on the proposed establishment of a township, Muldersdrift, Gauteng (2004);
- AGES, Proposed Equestrian Centre, Leeufontein 299 IR, Gauteng (2004);
- PDNA, Proposed new bridge and re-alignment of a portion of provincial road P101-2 (R51), Laversburg, Gauteng (2004);
- Blenneerville Investment (Pty) Ltd, Proposed construction of a residential and commercial development on of Paradiso Estate, Tweefontein 372 JR, Gauteng (2004);
- Les Roches (Pty) Ltd, Proposed zoning of holdings 1, 2 & 3 of Hyde Park Agricultural Holdings, Gauteng (2004);
- Transnet Limited, Terrestrial Faunal Ecological Opinion: Phase 1B expansion of the Sishen-Saldanha Iron ore export corridor, Saldanha Bay, Western Cape (2005);
- Celebration North Riding (Pty) Ltd, Proposed mixed land-use development, North Riding, Gauteng (2005);
- Wilderness Safaris, Proposed upgrade of the Manzengwenya Dive Camp, Greater St. Lucia Wetlands Park, KwaZulu-Natal (2005);
- Wilderness Safaris, Proposed upgrade of the Rocktail Bay Camp, Greater St. Lucia Wetlands Park, KwaZulu-Natal (2005);
- GAEA Projects, Corridor Assessment for the proposed Sibaya Precinct, KwaZulu-Natal (2005);
- Computer Domain Holdings (Pty) Ltd, Red Data Floral Scan on portion 3 of the farm Elandshoek, portions 12 & 27 of the farm Groot Suikerboschkop, and portions 5 & 10 of the farm Palmietfontein, Dullstroom (2005);
- Zong's Property Investments, Proposed establishment of a residential development on a portion of Pomona Estates Agricultural Holdings, Pomona, Gauteng (2005);
- GJ van Zyl Trust, Proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2005);
- Mr. Howard Walker, Proposed subdivision of the Farm Lunsklip 105 JT, and the Farm Morgenzon 122 JT, for the establishment of a private resort, Dullstroom, Mpumalanga (2005);
- Lavender Manor cc, Proposed establishment of a retail, commercial and Lavender Manor Township on part of farm Rietfontein 189 IQ, Muldersdrift, Gauteng (2005);

- Geo Pollution Technologies, Proposed establishment of a residential development: Noordwyk Ext 65 & 80 on Erand Agricultural Holdings, Midrand, Gauteng (2005);
 - Mr. A. Le Roux, Proposed Cradle View Country Estate, Muldersdrift, Gauteng (2006);
 - Viking Bay Development Company (Pty) Ltd, Proposed Viking Bay freshwater marina and hotel development, Vaal Dam, Gauteng (2006);
 - Land for Africa (Pty) Ltd, Ecological Opinion for the proposed establishment of a residential township on holding 122 Erand Agricultural Holding Extension 1, Halfway House, Midrand, Gauteng (2006);
 - Brickot Developments cc, Ecological opinion for the proposed Bethal Retirement Village on the remainder of portion 3 of the farm Mooifontein 108 IS, Bethal, Mpumalanga (2006);
 - Brawild (Pty) Ltd, Red Data Scan for the proposed Annlin Ex 117, Pretoria, Gauteng (2006);
 - Mbombela Local Municipality, Ecological Opinion for the proposed extension of the Lowveld Botanical Gardens, Nelspruit, Mpumalanga (2006);
 - Natural Scientific Services cc, Botanical survey for the SASOL Mafutha coal project near Lephalale, Limpopo Province, RSA (2008);
 - SRK Consulting, Ecological assessment on Vlakfontein area, NW of Ogies, Mpumalanga. Report compiled in association with EKOInfo (2009); and
 - Aurecon, Desktop biodiversity assessment and wetland scan: upgrade of the River View waste water treatment works, eMalahleni, Mpumalanga province. Report compiled in association with Imperata Consulting (2009).
-
- 2. Mining and Industrial related projects (ecological):
 - Lonmin Platinum (Western Platinum Limited), Ecological Assessment for the proposed MK3 Shaft Complex on the farm Wonderkop 400 JQ, Rustenburg, North West Province (2004);
 - Impala Platinum Limited, Ecological Assessment for prospecting SEMP's on the farms Buffelshoek 386 KT, Kalkfontein 367 KT, Spitskop 333 KT, Steelpoortpark 366 Kt and Tweefontein 360 KT and Hackney 116 KT (all Sekhukhuneland), Mpumalanga and Limpopo Province (2004);
 - Trans-Caledon Tunnel Authority (TCTA), Ecological Assessment for borrow pit SEMP's on the TCTA pipeline, Vaal Marina to Secunda (2005);
 - Boynton Platinum (Pty) Ltd, Ecological Assessment for the proposed establishment of platinum mines on the farms Tuschenkomst 135 JP, Witkleifontein 136 JP and Ruighoek 169 JP, North West Province (2005);
 - Impala Platinum Holdings, Ecological Assessment for prospecting SEMP's on the Impala Platinum Bafokeng Mining Complex, North West Province (2005);

- Ceramic Industries Limited, Ecological Assessment of the Rietspruit Clay Quarries, Vanderbijlpark, Gauteng (2005);
- Ekurhuleni Metropolitan Municipality, Ecological Assessment Report for the proposed GLB Landfill Site on the farm Zesfontein 27 IR, Benoni, Gauteng (peer reviewed, 2006);
- Ceramic Industries Limited, Ecological Assessment of the Leeukuil Clay Quarries, Vanderbijlpark, Gauteng (2006);
- Council for Geoscience, Habitat sensitivity assessment scoping report for Bon Accord quarry on a portion of the farm de Onderstepoort 300-JR, Tshwane, Gauteng (2007);
- Fraser Alexander, Biodiversity action plan for Lonmin Limpopo & Platinum, North West & Limpopo Province, RSA (2008-2009);
- Envirolution Consulting (Pty) Ltd., Ecological screening report and site selection process for an Eskom general landfill and hazardous waste storage facility near Lephalale, Limpopo Province, RSA (2009);
- Envirolution Consulting (Pty) Ltd., Ecological assessment for the proposed construction of an Eskom general landfill and hazardous waste storage facility at the Matimba Power Station, Limpopo Province, RSA (2009);
- Shangoni/Vergenoeg Mining Company, Ecological assessment for the proposed construction of a slurry pipeline and waste rock dump at the Vergenoeg Mine, Gauteng (2011);
- ENVASS, An ecological evaluation (vertebrate & avifaunal component) for the proposed alternative energy plant on Portion 3, 4 & 5 of the Farm Groenwater 453, Northern cape (2012); and
- ENVASS, Ecological evaluation (vertebrate & avifaunal component) for the proposed alternative energy plant on !xun & khwe, Northern cape (2012).

3. Avifaunal and Invertebrate Assessments:

- Lavender Manor cc, Red Data Bird Assessment for the proposed establishment of a retail, commercial and Lavender Manor Township on part of the farm Rietfontein 189 IQ, Muldersdrift, Gauteng (2004);
- Helga Schneider & Associates, Avifaunal & Invertebrate Red Data Assessment for the proposed rezoning & subdivision on Erf 6486 Orange Farm Ext 2, Johannesburg, Gauteng (2005);
- TOWNDEV, Avifaunal and Arachnid Assessment for the proposed subdivision of Grootfontein 349 JR, Rievlei Dam, Gauteng (2006);
- Prof. Van Rensburg, Red Data Invertebrate Scan for the proposed Rietvalleirand Extension 59, Gauteng (2006);

- Group Five Property Development, Invertebrate Assessment for the proposed Buccleuch Ex 1, Gauteng (2006);
- Zong's Property Investments, Avifaunal and *Metisella meninx* assessment for the establishment of a residential development on a portion of Pomona Estates Agricultural Holdings, Pomona, Gauteng (2006);
- Waterval Islamic Institute, Avifaunal and Invertebrate Assessment for the proposed Northern Golf Course Development, Midrand, Gauteng (2006);
- Ekurhuleni Metropolitan Municipality, Avifaunal & Invertebrate Red Data Assessment for the proposed low-cost housing development on Olifantsfontein 410 JR, Gauteng (2006);
- City of Tshwane Metropolitan Municipality, Invertebrate Red Data Scan for the proposed flood remediation and river upgrade at Soshanguve, Gauteng (2006);
- AGES, Invertebrate assessment for the proposed mining activities on the farm Thorncliffe 374 KT, Xstrata Eastern Mines, Mpumalanga (2007)
- AGES, Mammal and invertebrate assessment for the proposed Kalplats project, Stella, North West Province (2007)
- Exigent Engineering Consultants, Invertebrate assessment for the proposed Derdepoort X 11, Derdepoort, Gauteng (2007);
- Exigent Engineering Consultants, Invertebrate and Avifaunal scan for the proposed Cutty Sark hotel extension, Scottburgh, Kwazulu-Natal (2007);
- Strategic Environmental Focus, African Grass Owl assessment on the proposed Cradle View country estate on portion 60 of the farm Driefontein 179 IQ, Muldersdrift, Gauteng (2007);
- GEOLAB, Ecological assessment for the West Rand Gold Operations (WERGO) Witfontein tailings disposal facility, Mintails, Gauteng, RSA (2008);
- Coastal Environmental Services, Avifaunal Assessment for the proposed mining of heavy minerals at Port Durnford (Exxaro KZN-Sands), KwaZulu-Natal (2008);
- SRK & Natural Scientific Services cc, A feasibility study for the mining of coal north of the Limpopo Province. Avifaunal & invertebrate assessment, Rio Tinto Exploration, Limpopo Province, RSA (2009);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal & faunal component) for the proposed Dinaledi - Spitskop 400 kV transmission line, North West Province (2010);
- Eskom/Baagi Environmental, An avifaunal impact report for the proposed 400 kV Ariadne-Venus transmission line between Estcourt and Pietermaritzburg, KwaZulu-Natal (2010);
- Eskom/Baagi Environmental, An avifaunal impact assessment report for a 275 kV power line between the substations of Glockner and Kookfontein, Vanderbijlpark, Gauteng (2010);

- Groundwater Consulting Services (Pty) Ltd/EkolInfo, An invertebrate and avifaunal specialist report for the proposed expansion of Exxaro's Glisa coal mine, Belfast, Mpumalanga (2010);
- Eskom/Baagi Environmental, An environmental management plan (avifauna component) for the proposed 400 kV Medupi-Massa transmission lines, Limpopo Province (2011);
- Eskom/Baagi Environmental, An avifaunal and fauna impact assessment report for the proposed 400 kV Arnott-Gumeni transmission line, Mpumalanga Province (2012);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed 400 kV Ngwedi transmission line and substation, North West Province (2012);
- Exxaro/EkolInfo, An avifaunal and invertebrate assessment (as part of a Biodiversity Assessment and action plan) for the Gravelotte MagVanTi Mining Area, Limpopo Province (2012);
- Groundwater Consulting Services (Pty) Ltd/EkolInfo, An invertebrate and avifaunal specialist report for the proposed Paardeplaats coal mine area, Belfast, Mpumalanga (2012);
- Groundwater Consulting Services (Pty) Ltd/EkolInfo, An invertebrate and avifaunal specialist report for the proposed Leeuwpan coal mine area, Belfast, Mpumalanga (2013);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Medupi - Borutho 400 kV transmission line, Limpopo Province (2012);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Gromis - Oranjemund 400 kV transmission line, Northern Cape (2013);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Ariadne - Eros 400 kV transmission line, KwaZulu-Natal (2014);
- Eskom/Baagi Environmental, An avifaunal and fauna impact assessment report for the proposed 400 kV Nzhelele - Triangle Project, Musina, Limpopo Province (2014);
- Exxaro/EkolInfo, An avifauna and invertebrate investigation for the proposed Zonderwater Coal Project, Lephalale, Limpopo Province (2014);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Everest - Merapi 400 kV transmission line, Free State Province (2015); and
- Malelane Safari Resort Investments, An avifaunal investigation for the proposed safari lodge near Malelane Gate, Kruger National Park (2015).
-
- 4. Other Assessments:
- Facilitation, project management and conduction of environmental scoping exercises, Environmental Impact Assessments, Environmental Management Plans, Feasibility Reports, for a range of projects and issues such as:
 - Housing Projects (West Rand Housing Projects) for the Gauteng Department of Housing;
 - Planning and facilitation of environmental awareness workshops (Winterveldt Workshops for the Department of Environmental Affairs and Tourism);

- Compilation and evaluation of EIA reports and Environmental Management Plans (EMPs) for both the private and public sector (e.g. Scoping Report for the relocation of oxidation ponds for the Mqohaka Local Municipality and the installation of an underground additive tank for Sasol Oil (Pty) Ltd).
- Urban Renewal Projects: Bekkersdal Urban Renewal Project and the Greater Evaton Urban Renewal Project for the Gauteng Department of Housing.
- Douglas Collieries (Inkwe Collieries), Biodiversity Assessment and database compilation of the Douglas Collieries (2005);
- Orion Group, Ecological Sensitivity Map for the proposed golf course and related facilities, Mont-Aux-Sources (2005);
- City of Joburg Property Development Company, Specialist *Lepidium mossii* assessment for the proposed upgrade and development of the Orlando Dam intersection, Soweto, Gauteng (2005);
- Johannesburg Roads Agency, Alien Eradication and Rehabilitation Programme for the proposed upgrade of 14th Avenue, Randburg, Gauteng (2006);
- City of Joburg Property Development Company, Ecological Management Plan for the Orlando Dam intersection, Soweto, Gauteng (2006);
- GJ van Zyl Trust, Alien Eradication Programme for the proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2006);
- GJ van Zyl Trust, Fire Management Plan for the proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2006); and
- Khutala Collieries (Inkwe Collieries), Biodiversity Assessment and database compilation (2006)
-
- 5. Linear Assessments:
- Johannesburg Roads Agency, Ecological Assessment for the Proposed upgrade of 14th Avenue, Randburg, Gauteng (2004).
- Trans-Caledon Tunnel Authority (TCTA), Proposed Vaal River Eastern Subsystem Augmentation (VRESAP) pipeline from Vaal Marina to Secunda (2005);
- PBA International (in association with Bathusi EC), Ecological Scoping Report for the proposed Eskom Delta-Epsilon 765 kV Transmission lines (2007);
- Bohlweki Environmental (in association with Bathusi EC), Ecological Scoping Report for the proposed Eskom Malelane-Boulders 132 kV Distribution line (2007);
- Bohlweki Environmental (in association with Bathusi EC), Ecological Scoping Report for the proposed Eskom Marathon-Delta 132 kV Distribution line (2007);

- Strategic Environmental Focus, Avifaunal EIA Report for the proposed Eskom Hendrina-Prairie-Marathon 400 kV Transmission line, Mpumalanga (2007);
- Natural Scientific Services cc, Botanical survey for the proposed upgrade of the Transnet railway line between Hotazel, Northern Cape and the Port of Ngqura, Eastern Cape, RSA (2008);
- Envirolution Consulting (Pty) Ltd, Ecological Report for the proposed Eskom Apollo-Lepini 400kV transmission line (2009);
- Arcus Gibb, An ecological investigation for the Tumelo 132 kV distribution line and power line near Kagiso, Gauteng (2010);
- Ekoinfo/SANRAL, Faunal investigation for the upgrade of the N3 highway (2011); and
- Aurecon (Pty) Ltd, Baseline vegetation survey for the Mokolo – Crocodile River Augmentation Project (MCWAP) pipeline from Mokolo Dam to Thabazimbi (2011).

B. Work conducted in other African countries:

- Rural Maintenance, Invertebrate study for four mini-hydroelectric generation plants, Northern Malawi, Africa (2010);
- Impacto, An avifaunal study (Phase 1) for the proposed Mpanda Nkwua Dam in the Zambezi River, Mozambique, Tete Province (2010);
- Conseil Régional des Pays de la Loire, An avifaunal investigation of the Rusizi and Ruvubu National Parks (Burundi), and the feasibility of establishing an avi-tourism network with specific emphasis on the protection of important flyways used by Palearctic birds - of - prey (2010);
- Impacto, An avifaunal study (Phase 2) for the proposed Mpanda Nkwua Dam in the Zambezi River, Mozambique, Tete Province (2011);
- Rural Maintenance, Invertebrate scan for the expansion of coal mining activities at Kayelekera, Northern Malawi, Africa (2011);
- Rural Maintenance, Invertebrate study for a mini-hydroelectric plant at the Chisanga Falls, Nyika National Park, Malawi (2011);
- Impacto/ERM/Enviro-Insight, Avifaunal investigation for the proposed Ncondezi Coal Mine, Tete Province, Mozambique (2011);
- Enviro-Insight, Avifaunal investigation for the Riversdale Coal Mine complex, Tete Province, Mozambique (2011);
- Anadarko Petroleum/ERM/Enviro-Insight, Avifaunal investigation for the proposed Anadarko Mozambique Area 1 Liquefied Natural Gas plant in northern Mozambique, Cabo Delgado Province, Mozambique (2012);

- Coffey Environments/EkoInfo, Avifaunal investigation for the mining of iron ore by Baobab Resources, Tete Province, Mozambique (a scoping-level assessment); and
- SRK/Flora, Fauna and Man Ecological Services, An avifaunal and invertebrate assessment for the establishment of a potash mine at Konkoati, Republic of the Congo (2012);
- China Union/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore in Bong County, Liberia (2012);
- SRK/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the mining of iron ore by DMC Congo Mining/Exxaro at Mayoko, Republic of the Congo (2012);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Bomi Hills, Bomi County, Liberia (2013);
- SRK/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the establishment of an ecological offset for the DMC Congo Mining/Exxaro Iron Ore Mine at Mayoko, Republic of the Congo (2013);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Bea Mountain, Grand Cape Mount County, Liberia (2013);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Mano River, Grand Cape Mount County, Liberia (2013);
- Anadarko Petroleum/ERM/Enviro-Insight, DUAT Area Terrestrial Ecology Baseline Augmentation: Avifaunal Component with emphasis on determining important flyways for emblematic non-passerine birds where the potential risk of avian collisions to approaching aircraft is eminent during the establishment of an airstrip, Cabo Delgado Province, Mozambique (2012);
- Anadarko Petroleum/ERM/Enviro-Insight, Regional Terrestrial Baseline Report, Avifaunal Component for the Mozambique Gas development with emphasis on critical habitat as per the IFC PS6, Cabo Delgado Province, Mozambique (2012);
- WSP/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the establishment of a phosphate mine, Hinda Phosphate Project, Republic of the Congo (2014);
- De Beers/Bathusi Environmental, An avifaunal monitoring report for the Letseng Diamond Mine, Lesotho (2015);
- Aureus Mine/Enviro-Insight, An avifaunal investigation for the proposed mining of gold at the New Liberty Gold Mine, Liberia (current);

C. Additional Experience:

- Monitoring and evaluation of the rehabilitation programme for the mining company Richards Bay Minerals (RBM) with special reference to vegetation, bird, small mammal and millipede assemblages.

- Other responsibilities include assessment of the ecological standard operating procedures (SOP) according to RBM's environmental management programme in compliance with ISO 14001 environmental standards accreditation process.
- Participated in the annual relief programme on the S.A Agulhas voyage to Subantarctic Marion Island (Prins Edward group). Took part in the research to estimate the population dynamics and demography of the alien house mouse (*Mus musculus*) on the island (under supervision of the University of Pretoria).
- Participated in the preparation of a conservation management plan for a game and trout farm in conjunction with Mpumalanga Parks Board (in charge of the bird section) for the farm Nu-Scotland Bavaria.
- Lead a successful professional bird tour (party of 12) to the Eastern Zimbabwean highlands and adjacent Mashonaland Plato (10 days).
- Lead a successful professional bird tour (party of 9) to the Cape Peninsula, Karoo and West Coast (10 days).
- Lead a successful professional bird tour (party of 12) to the Swaziland and Northern Zululand (10 days).
- Lead a successful professional bird tour (party of 15) to the Namibia (10 days).
- Lead a successful professional bird tour (party of 14) to the Eastern Drakensberg and Lesotho (10 days).

Employment History:

March 2007 – Current: of Director of Pachnoda Consulting cc

2004- January 2007: Strategic Environmental Focus (Pty) - Terrestrial Ecologist

2003 – 2004: Enviro-Afrik (Pty) Ltd– Environmental Consultant

2001 – 2003: University of Pretoria - Research Assistant

PUBLICATIONS:

- McEWAN, K.L., ALEXANDER, G.J., NIEMAND, L.J. & BREDIN, I.P. 2007. The effect of land transformation on diversity and abundance of reptiles. Paper presented at the 50th Anniversary Conference of the Zoological Society of Southern Africa.

- NIEMAND, L. 1997. Distribution and consumption of a rust fungus *Ravenelia macowaniana* by micro-lepidopteran larvae across an urban gradient: spatial autocorrelation and impact assessment. Hons publication, University of Pretoria, Pretoria
- NIEMAND, L. 2001. The contribution of the bird community of the regenerating coastal dunes at Richards Bay to regional diversity. MSc Thesis, University of Pretoria, Pretoria.
- VAN AARDE, R.J., WASSENAAR, T.D., NIEMAND, L., KNOWLES, T., FERREIRA, S. 2004. Coastal dune forest rehabilitation: a case study on small mammal and bird assemblages in northern KwaZulu-Natal, South Africa. In: Martínez, M.L. & Psuty, N. (Eds.) *Coastal sand dunes: Ecology and Restoration*. Springer-Verlag, Heidelberg.
- VAN AARDE, R., DELPORT, J. & NIEMAND, L. 1999. Of frogs and men. *Mechanical Technology*, June: 32-33.
- VAN AARDE, R., DELPORT, J. & NIEMAND, L. 1999. Gone Frogging. *Getaway*, January: 80-83.

PRESENTATIONS & CONFERENCES:

- Co-presenter at the Wetland Training Course (30 July – 3 August 2007) entitled: "Wetland-associated fauna". University of Pretoria, Pretoria.
- Co-presenter and lecturer of the pre-conference training course (entitled "Can rehabilitation contribute towards biodiversity?") at the 3rd Annual LaRSSA (Land Rehabilitation Society of Southern Africa) Conference (8-11 September 2015), Glenburn Lodge, Muldersdrift, Gauteng.

MARK ZUNCKEL



Firm : uMoya-NILU (Pty) Ltd
Profession : Air quality consultant
Specialization : Air quality assessment, air quality management planning, air dispersion modelling, boundary layer meteorology, project management
Position in Firm : Managing director and senior consultant
Years with Firm : New firm started on 1 August 2007
Nationality : South African
Year of Birth : 1959
Language Proficiency : English and Afrikaans

EDUCATION AND PROFESSIONAL STATUS

Qualification	Institution	Year
National Diploma (Meteorology)	Technikon Pretoria	1980
BSc (Meteorology)	Univ. of Pretoria	1984
BSc Hons (Meteorology)	Univ. of Pretoria	1988
MSc	Univ. of Natal	1992
PhD	Univ. Witwatersrand	1999

Registered Natural Scientist: South African Society for Natural Scientific Professionals
Council Member: National Association for Clean Air
Member: African Meteorological Society
Member: Air and Waste Management Association

EMPLOYMENT AND EXPERIENCE RECORD

Period	Organisation details and responsibilities/roles
1976 – May 1992	<i>South African Weather Bureau</i> : Observer, junior forecaster, senior forecast, researcher, assistant director
June 1992 – July 2007	<i>CSIR</i> : Consultant and researcher, Research group Leader: Atmospheric Impacts
August 2007 to	<i>uMoya-NILU Consulting</i> : Managing Director and senior air quality

present

consultant

Key and Recent Project Experience:

1996	Project leader & Principal researcher: Atmospheric impact assessment for the proposed Mozal aluminium smelter in Maputo, Mozambique.
1996	Project leader & Principal researcher: Dry sulphur deposition during the Ben MacDhui High Altitude Trace Gas and Transport Experiment (BATTEX) in the Eastern Cape.
1997	Project leader & Principal researcher: Atmospheric impact assessment of the proposed capacity expansion project for Alusaf in Richards Bay.
1997	Project leader & Principal researcher: The Uruguayan ambient air quality project with LATU.
1997	Principal researcher on the Air quality specialist study for the Strategic Environmental Assessment on the industrial and urban hinterland of Richards Bay.
1997	Project leader & Principal researcher: Feasibility study for the implementation of a fog detection system in the Cape Metropolitan area: Meteorological aspects.
2001	Project leader & Principal researcher: Air quality specialist study for the Environmental Impact Assessment for the proposed expansion of the Hillside Aluminium Smelter, Richards Bay.
2001-2003	Researcher: The Cross Border air Pollution Impact (CAPIA) project. A 3-year modelling and impacts study in the SADC region.
2002	Project leader & Principal researcher: Air quality assessment specialist study for the proposed Pechiney Smelter at Coega.
2002	Project leader & Principal researcher: Air quality assessment specialist study for the proposed N2 Wild Coast Toll Road.
2002-2005	Project leader on the NRF project – development of a dynamic air pollution prediction system
2004	Project leader on the specialist study for expansion at the Natal Portland Cement plant at Simuma, KwaZulu-Natal.
2004-2005	Researcher: National Air Quality Management Plan implementation project for Department Environmental Affairs and Tourism.
2005	Researcher in the assessment of air quality impacts associated with the expansion of the Natal Portland Cement plant at Port Shepstone.
2005	Technical assistance to the Department of Environment Affairs and Tourism in the implementation of the Air Quality Act
2006-2007	Project team leader of a multi-national team to develop the National

	Framework for Air Quality Management for the Department of Environment Affairs and Tourism
2007	Air quality assessment for Mutla Early Production System in Uganda for ERM Southern Africa on behalf of Tullow Oil.
2007-2010	Lead consultant on the development of a dust mitigation strategy fro the Bulk Terminal Saldanha and an ambient guideline for Fe ₂ O ₃ dust for Transnet Projects and on-going monitoring.
2008	Lead consultant on the Air quality status quo assessment and scoping for the EIA for the Sonangol Refinery
2008-09	Lead consultant on the development of the air quality management plan for the Western Cape Provincial. Department of Environmental Affairs and Development Planning.
2008-10	Lead consultant on the development of the Highveld Priority Area air quality management plan for the Department of Environmental Affairs and Tourism.
2008	Lead consultant in the development of an odour management and implementation strategy for eThekwi.
2008 & 2010	Lead consultant on the Air Quality Specialist Study for the EIA for the proposed Kalagadi Manganese Smelter at Coega
2008	Lead consultant on the Air Quality Assessment for the Proposed Construction and Operation of a Second Cement Mill at NPC-Cimpor, Simuma near Port Shepstone.
2008	Lead consultant on the Air Quality Specialist Study Report for the New Multi-Purpose Pipeline Project (NMPP) for Transnet Pipelines.
2008	Lead consultant on the Air quality assessment for the proposed UTE Power Plant and RMDZ coal mine at Moatize, Mozambique for Vale.
2009	Lead consultant on the Air quality assessment for the development of the ETA STAR coal mine at Moatize, Mozambique for Impacto.
2008-09	Lead consultant on the Dust source apportionment study for the Coedmore region in Durban for NPC-Cimpor.
2009	Consultant on the Air quality specialist study for the upgrade of the Kwadukuza Landfill, KwaZulu-Natal
2009-10	Lead consultant on the Audit of ambient air quality monitoring programme and air quality training for air quality personnel at PetroSA
2010	Lead consultant on the Qualitative assessment of impact of dust on solar power station at Saldanha Bay
2010	Lead consultant on the Air quality specialist study for the EIA for the Kalagadi Manganese Smelter at Coega
2010	Lead consultant on the Qualitative air quality assessment for the EIA for the Sechaba Asphalt plant, Ferrobank

2009 – 2010	Lead consultant on the Air quality specialist study for the Environmental Management Framework for the Port of Richards Bay
2010	Lead consultant on the Air quality status quo assessment and abatement planning at Idwala Carbonates, Port Shepstone
2010	Lead consultant on the Air quality status quo assessment and abatement planning at Sappi Tugela, Mandeni
2010 – 2011	Air quality status quo assessment and revision of the Air Quality Management Plan for City of Johannesburg
2010	Lead consultant on the Air quality status quo assessment and abatement planning at First Quantum Mining’s Bwana Mkubwa and Kansanshi mines, Zambia
2010 – 2011	Lead consultant on the Air quality specialist study for the EIA for the Alternative Fuel and Resources Project at Simuma, Port Shepstone
2010 – 2011	Lead consultant on the Air quality specialist study for the EIA for the Coke Oven re-commissioning at ArcelorMittal Newcastle
2010	Qualitative air quality assessment for the EIA for the Mozpel sugar to ethanol project , Mozambique
2011	Development of the South African Air Quality Information System – Phase II The National Emission Inventory
2011	Ambient baseline monitoring for Riversdale’s Zambeze Coal Project in Tete, Mozambique
2010 - 2011	Ambient quality baseline assessment for the Ncondeze Coal Project, Tete Mozambique
2011-12	Air quality assessment for the mining and processing facilities at Longmin Platinum in Marikana
2012	Air quality assessment for the proposed LNG and OLNG plants in Mozambique
2012	Modelling study in Abu Dhabi for the transport and deposition of radio nuclides
2012	Air quality assessment for the proposed manganese ore terminal at the Ngqura Port
2012-13	Air quality management plan development for Stellenbosch Municipality
2012-12	Air quality management plan development for the Eastern Cape Province

PUBLICATIONS

Author and co-author of 34 articles in scientific journals, chapters in books and conference proceedings. Author and co-author of more than 100 technical reports and presented 47 papers at local and international conferences. A full publications list is available on request.

CURRICULUM VITAE

Family name: Louw
 First names: Robert Truter
 Date of birth: April 06, 1960
 Gender: Male
 Nationality: South African
 Civil status: Married

Education:

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
University of South Africa (1984 – 1988)	B Com (Hons) (Economics)
University of Pretoria (1979 – 1982)	Bachelor of Science in Engineering (Chemical)

Language skills: Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	1	1	1
Afrikaans	1	1	1

Membership of professional bodies: Institute of Directors in South Africa (IoDSA), South African Institute of Mining and Metallurgy

Other skills:

General: Microsoft office proficiency

Revision of CDM methodologies: AMS-II.D. Energy efficiency and fuel switching measures for industrial facilities (inclusion of mining sector projects), ACM0017 Production of biodiesel for use as fuel (inclusion of seed-oil as feedstock).

GHG mitigation methodology development: Wrote and acted as team leader for the writing of CDM methodologies – AM0064 Capture and utilisation or destruction of mine methane (excluding coal mines) or non-mine methane, AMS-II.K. Installation of co-generation or tri-generation systems supplying

energy to commercial building, AMS-III.W. Methane capture and destruction in non-hydrocarbon mining activities.

Carbon credits: 2008, 2009 and 2014 Public course on carbon credits – presenter at annual two day training course

2010 Industrial Development Corporation – presenter at two day training course on carbon financing

Numerous in-house training events for clients on carbon trading, carbon neutrality, credible baselines and offset projects

Present position: Director and founding member, Promethium Carbon

Years within the firm: 12 years

Key qualifications: B Com (Hons) (Economics), Bachelor of Science in Engineering (Chemical)

Specific experience in the region:

Robbie is the founder and director of Promethium Carbon. He has 10 years of experience in the climate change industry. His experience over a period of 28 years covers the chemical, mining, minerals process and energy fields, in which he was, involved in R&D, project, operational and management levels.

- Climate change: he has been active in the development of CDM projects since 2003.
 - Clean Development Mechanism (CDM): He was the leader of the team that produced 3 CDM methodologies and registered 11 CDM projects and 4 CDM Programmes of Activity.
 - Carbon foot printing: He has extensive experience in carbon foot printing. The team under his leadership has performed carbon footprint calculations for major international corporations operating complex businesses in multiple jurisdictions and on multiple continents. Some examples include farming operations (ex. Backsberg Wine Estate), agro-processing (ex. Tongaat Hulett Starch) and other industrial and mining clients.
 - Terrestrial carbon stock impact assessments: He was team leader on a number of projects that estimated the impact on carbon stocks following the impact of the implementation of land based projects. Examples include: REDD+ project in Uganda, large scale biofuel farming in Zambia, large scale opencast mining operations in Gabon and Congo (Brazzaville).
 - Carbon strategy development: He has developed carbon and climate change strategies for major international corporations including Anglo American, Gold Fields and Harmony Gold.
 - Carbon Disclosure Project (CDP): He has managed the CDP disclosure for major international corporations. The Climate Disclosure leadership index scores (2014) of these companies

include Gold Fields – 100%, Anglo American Platinum – 99%, Kumba Iron Ore – 98% and Harmony Gold – 98%

- Project Development: He has extensive experience in project development in the energy, chemical and mining industries. This covers the scope from project identification, feasibility studies to project implementation. Some examples include carbon sequestration projects focussed on the restoration of impacted grasslands and mining impacted land at Gold Fields and Harmony Gold and GHG mitigation projects in many industries including farming, mine land restoration and bio-energy production.
- Team leader for the data and framework development under the Integrated Energy Plan for South Africa. The development of the Reference Energy System and the compilation of supply side data was an integral part of our project and quality controlled by the CSIR.
- Carbon trading systems: Leader author for numerous publications on the design of a potential carbon trading system for South Africa, including *Carbon Trading in South Africa - Trading Offsets Against The Proposed Carbon Tax* (March 2014) and *Potential Alignment Between The Proposed South African Carbon Offset Trading Scheme And The Carbon Budget Approach* (September 2014).

Country	Date from - Date to
South Africa	Projects throughout the country – office in Johannesburg
Kenya	Projects started Oct 2007 – ongoing (CDM project development as well as drafting of standardised baseline for the electricity system grid emission factor)
Zambia	(Desk top) project started Jan 2009- completed May 2009
Ghana	Project started 2006 - ongoing
Namibia	2011-2013

Professional experience

Date from - Date to	Location	Company & reference person ¹ (name & contact details)	Position	Description
2009 – Present	South Africa Pretoria	Steenkampskraal Thorium Ltd Reference Trevor Blench (trevor.blench@thorium100.com)	Co-founder and non-executive director	The company is commercialising low carbon energy alternatives base on the utilisation of thorium as fuel.
1995 - 1999	South Africa – Cape Town	Rare Earth Extraction Company Ltd Reference Trevor Blench (trevor.blench@thorium100.com)	Managing director	Mining company listed on venture capital board of the JSE
1999 – 2010	South Africa – Cape Town	Rare Earth Extraction Company Ltd Reference Trevor Blench (trevor.blench@thorium100.com)	Non-executive director	Mining company listed on venture capital board of the JSE
1992 - 1995	South Africa – Heidelberg	Chromachem	Founder and managing director	Pigment manufacturing business

1989 – 1992	South Africa – Johannesburg	Process and Mining Consultants	R&D Manager	Manager of R&D laboratory focussed on the development of mineral separation processes.
1984 – 1989	South Africa – Johannesburg	National Chemical Products	Development Manager	R&D in the nuclear fuels industry

Other relevant information (e.g., Publications)

Robbie is the lead author of numerous Promethium Carbon publications including:

- *Climate Change in Integrated Reporting, Complementary Disclosure Practices for a Sustainable Future* (March 2012) – this document mapped the reporting needs for climate change issues against the reporting framework of the International Integrated Reporting Council.
- *Carbon Pricing Scenarios* (July 2013) – this document summarised the global trends in carbon market developments worldwide.
- *Carbon Trading in South Africa - Trading Offsets Against The Proposed Carbon Tax* (March 2014)
- *Potential Alignment Between The Proposed South African Carbon Offset Trading Scheme And The Carbon Budget Approach* (September 2014)

CURRICULUM VITAE

Proposed role in the project:

Family name: Immink
 First names: Harmke
 Date of birth: January 27, 1972
 Gender: Female
 Nationality: South African
 Civil status: Married

Education:

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
University of Stellenbosch 2014-present	Currently enrolled for doctoral studies at the Centre for Renewable and Sustainable Energy Studies (CRSES) in the Faculty of Engineering. <i>Approved title: Greenhouse Gas forecasting and target setting using an ex-post analysis</i>
Chalmers Technical University 1998 – 2000	Masters degree in Environmental Measurement Techniques (MSc) with distinction
University of Pretoria 1990 – 1994	Bachelor of Science in Engineering (Chemical)

Language skills: Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	1	1	1
Afrikaans	1	1	1

Membership of professional bodies:

Institute of Directors in South Africa (IoDSA);

South African Clean Development Mechanism Industry Association (SA CDM IA);

Director, Carbon Protocol of SA

Member, Environmental Management Committee, ISO 14000 TC207 SABS;

South African Bureau of Standards, Technical Committee TC207 National coordinator – Environmental Performance Evaluation ISO 14031

Other skills: (e.g. Computer literacy, etc.)

Microsoft office proficiency

ISO Guide 25 Introduction and Implementation ISO Guide 25 certificate from Inspectorate, 24-26 March 1997

Quality Auditor Training from Technikon Pretoria, 8-15 September 1997

ISO 9000 Certified ISO 9000 training from Technikon Pretoria for Quality Management Systems, 28 July – 1 August 1997

ISO 9001 Completed an introductory course for ISO 9001:2000 through PricewaterhouseCoopers via Allied Business International 18-19 April 2006

ISO 14001 Completed an Environmental Management Systems Lead Auditor Training Course from Afrocare, QSI Holdings 10-13 April 2006

ISO14065 Accreditation assessor, technical expert training, 10-14 December 2012

2008, 2009 and 2014 Public course on carbon credits – presenter at annual two day training course

2010 Industrial Development Corporation – presenter at two day training course on carbon financing

2011 COP17 MRV event on cement case study and ISO technical infrastructure for DEA

2012 COP18 panellist on offsetting and voluntary markets in developing countries for IETA

2013 and 2014 Presenter at the Africa Carbon Forum on Programme of Activities

2015 Presenter at the WRI Target Setting Workshop in Addis Ababa

2015- present. Co-convenor for development of ISO 14067 Carbon Footprint of Products

2016 Presenter at the Climate Technology Climate Network (CTCN) as a member in Nairobi

Numerous in-house training events for clients on carbon awareness, carbon neutrality, credible baselines and offset projects

Present position: Director, Promethium Carbon

Years within the firm: 9 years

Key qualifications:

The climate change expertise of Harmke is developed from environmental life cycle assessments (LCA), environmental audits and technical performance evaluation. She has experience across industry sectors through a variety of technical surveys and industry roadmaps. She participated in the technical audit of the Eskom non-financial report assurance and a silicon smelter greenhouse gas baseline audit. In addition she managed the feasibility study for a Cleaner Production and Remediation fund in Gauteng, a project for the Development Bank of Southern Africa. Life Cycle Assessment studies included ferromanganese, silicomanganese, brick making and the platinum group metals. Harmke was the South African contributor to the "Wells to Wheels" LCA study which supported a Sasol application for meeting future fuel specifications. She was on the FRIDGE (fund for research into industrial development, growth and equity) steering committee for the project aimed at delivering a strategy for the South African Environmental Goods and Services Industry.

The climate change related services to date included GHG baseline evaluations, a survey for practical sustainable development indicators for CDM projects, initial verifications as well as development of an early biocarbon fund proposal for "Food and Trees for Africa". As part of a Designated Operational Entity (DOE) a small scale validation and large scale verification was performed. Moving into the consulting side and management of a carbon team the project experience includes registered projects and issued carbon credits. Carbon neutral strategies were developed for clove oil in Zanzibar, cheese factory in Paarl, Wine estates, office chair importer and Konica Minolta printers. Policy advisory services include the development of Monitoring and Reporting and Verification frameworks and international reporting under the UNFCCC.

Harmke is the South African representative for ISO technical committee 207 on GHG standards, including eco-labelling and carbon footprint of products. She also formed part of World Resource Institute technical development team for the GHG Protocol standard on accounting for goals and targets

Recent project leader work and stakeholder management include a framework for Monitoring, Reporting and Verification (MRV) in South Africa and Swaziland, the INDC development for Swaziland and the development of Technical GHG Reporting Guidelines.

Experience in developing and revising CDM methodologies, including the preparation and/or submission of CDM applications to the UNFCCC:

- Revision of small scale methodology II D Energy efficiency and fuel switching measures for industrial facilities
- Development of new small scale methodology III.W. Methane capture and destruction in non-hydrocarbon mining activities
- Development of large scale methodology AM0064 "Methodology for methane capture and utilisation or destruction in underground, hard rock, precious and base metal mines"
- Revision of large scale methodology AM0047 "Production of biodiesel based on waste oils and/or waste fats from biogenic origin and/or oil from oilseeds for use as fuel"
- Development of new small scale methodology II.K "Installation of co-generation or tri-generation systems supplying energy to commercial buildings"

Harmke was involved with the following registered CDM projects with Promethium Carbon:

- UNFCCC 177: Lawley Fuel Switch Project – verification and re-validation.
- UNFCCC 795: Tugela Mill Fuel Switching Project (Tugela CFB10 Conversion from Coal to Bark Fired): Verification
- UNFCCC 2692: Bethlehem Hydroelectric project – verification.
- UNFCCC 2975: Olkaria III Phase 2 Geothermal Expansion Project in Kenya – validation, expansion and verification.
- UNFCCC 3398: Fuel switch project on the Gluten 20 dryer of Tongaat Hulett Starch Pty (Ltd) Germiston Mill – Validation and verification
- UNFCCC 4728: The Capture and Utilisation of Methane at the GFI Mining South Africa owned Beatrix Mine in South Africa – methodology development, registration, revisions and verification.
- UNFCCC5884: Use of waste gas at Namakwa Sands in South Africa – validation.
- UNFCCC 7535: Methane Recovery and Power generation at the Kupferberg Landfill in Namibia – validation
- UNFCCC 7816: Hopefield wind energy facility in South Africa – validation
- UNFCCC 7841: Bokpoort CSP (Concentrating Solar Power) Project, South Africa - validation.
- UNFCCC9238: Installation of energy efficient ventilation fans at South Deep and Beatrix Gold Mines in South Africa – validation.
- UNFCCC 9310: Power generation from biogas in Windhoek, Namibia – validation

- UNFCCC 9412: Trigenation at Mobile Telephone Networks (MTN), 14th Avenue Commercial Site South Africa - methodology development and validation.

In addition Promethium Carbon supports the Programmatic CDM as a means of scaling up mitigation action while reducing the cost. Promethium Carbon has been involved in the following Program of Activities (POAs) for Coordinating Managing Entities (CMEs):

- UNFCCC 7877: NuPlanet small scale hydropower PoA – validation.
- UNFCCC 8535: Solar Energy Programme for South Africa – validation and setting up CME.
- UNFCCC 8630: Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities – validation and setting up CME.
- UNFCCC 8742: South African Wind Power Projects – validation and setting up CME.

UNFCCC 9437: Trigenation at Mobile Telephone Networks (MTN), 14th Avenue Commercial Site South Africa – validation and setting up CME

Specific experience in the region:

The key experience is in Southern Africa including projects in South Africa (climate change strategies and carbon credits), Zambia (biodiesel calculations and deforestation calculations), Namibia (landfill and waste water projects), Zimbabwe (waste water and hydro feasibility studies) and Mozambique (cookstoves). East African projects included geothermal energy in Kenya and Clove oil in Zanzibar. Promethium Carbon was involved in the Grid Emission Factor Calculations of both the Southern African Power Pool and Kenya.

Specific experience in the region:

Country	Date from - Date to
South Africa	Projects throughout the country – offices in Johannesburg
Kenya	Project started Oct 2007 - ongoing
Zambia	(Desk top) project started Jan 2009- completed May 2009
Ghana	Project started 2006 - ongoing
Namibia	2011-2013

Professional experience

Date from - Date to	Location	Company	Position	Description
2007 - 2014	South Africa	Promethium Carbon	Director	Climate change advisory services. Carbon credit documentation and methodology development
2001 - 2006	South Africa - Johannesburg	Pricewaterhouse Coopers	Sustainable Business Solutions Manager	Life Cycle Assessments and sustainability/climate change auditing
1995 – 2001	South Africa - Pretoria	CSIR – Division of Manufacturing and Materials	Environmental Engineer	<ul style="list-style-type: none"> • Life Cycle Assessments • Future Fuels – South Africa 2000 • Textile Industry Impact – South Africa 1999 • Process evaluations

Other relevant information (e.g., Publications)

Emission rights- is it all just hot air again? Accountancy SA Nov –Dec 2003

Hot stuff: South Africa and carbon trading Engineering News March 11-17 2005

Climate Change driving business Change in Africa African Oil and Gas: The new Horizon Sept 2005

Treasury barriers for CDM projects Carbon Finance for Africa- and investors guide, Africa Practice Feb 2006

Pyrometallurgy for Carbon Credits Southern African Pyrometallurgy 2006 international conference abstracts

Climate Change- hard times ahead for Africa Developing Africa, first quarter 2006

Various newspaper articles and published interviews

CURRICULUM VITAE

Proposed role in the project:

Family name: Vosper
 First names: Sam
 Date of birth: 3 August 1990
 Nationality: South African/British
 Civil status: Single

Education:

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
University of Cambridge (2014-2015)	MPhil Environmental Policy Attained with First Class Pass Modules included: Energy & Climate Change, Environmental Economics, Research Methodologies, Climate Change Policy, Environmental Values, Urban & Environmental Planning, Policy Assessment & Evaluation, International Environmental Law
Rhodes University (2013)	Bachelor of Science (Honours) Attained with Distinction Modules included: Stochastic Processes, Ecological Modelling, Climate Change & Adaptability, General Linear Models
Rhodes University (2009 - 2012)	Bachelor of Science Major subjects included: Environmental Science, Mathematical Statistics, Mathematics, Economics

Language skills: Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	1	1	1
isiZulu	5	5	5

Membership of professional bodies:

Other skills:

I am proficient in the following programs; Microsoft Word, PowerPoint, Excel, MatLab, SPSS, Gretl, Stella, Statistica, R and ArcGIS. I am also practiced in developing research methodologies and have extensive experience in the reading, writing and presentation of academic materials.

I am also capable of developing infographics to easily communicate information.

Present position: Carbon Advisor Level 1

Years within the firm: 1 Year

Key qualifications: (Relevant to the project)

MPhil Environmental Policy

Bachelor of Science (Honours)

Bachelor of Science (Major subjects: Environmental Science, Mathematical Statistics, Mathematics, and Economics)

Other Courses:

The Greenhouse Gas Protocol's Corporate Standard Training.

The NCPCC Two Day Energy Management Systems Training.

Specific experience in the region:

Country	Date from - Date to
South Africa	2016-2017
Swaziland	2016
India	2015

Currently I am working on a project to develop a business case for the implementation of Carbon Capture and Storage technology in South Africa. This research is for a division of the Department of Energy in South Africa.

I am also currently helping to develop parameter sheets on hydrogen electricity generation and storage technologies for the Department of Science and Technology to include in the Integrated Resource Plan modelling.

At present I am assisting the Chamber of Mines in South Africa to register their hydrogen fuel cell with the UNFCCC under an established CDM Program of Activities (PoA). This is a technical and administrative process.

I have drafted carbon tax and offset policy recommendations on behalf of the Independent Power Producers Office. The recommendations are with regards to the inclusion of renewable energy projects in the proposed carbon offset scheme.

I contributed to a study which conducted a valuation of two CDM Programmes of Activity (PoAs) for a large project developer. This study included an assessment of the current CDM projects within South Africa.

I was active in assessing the impact of the projects funded by South Africa's Green Fund. This work was conducted for the GIZ and Department of environmental Affairs. I was responsible for assessing the impacts of the research projects and developed a number of the infographics used in the final report.

I was involved in the development of a Monitoring Reporting and Verification (MRV) system for the Swaziland National Government to track their Intended Nationally Determined Contribution (INDC). This involved running a stakeholder engagement workshop in Swaziland.

I have conducted three specialist climate change assessments for large fossil fuel fired power plants under development in South Africa. These studies were techno-economic assessments of the plants' operations.

I have been active in researching and writing aspects of the Carbon Disclosure Project (CDP) reports for large mining companies such as Gold Fields, Harmony Gold and Kumba Iron Ore in 2016.

I was the co-author of the South African carbon trading case study report that was submitted to the International Emission Trading Association (IETA).

I conducted research and took part in organising an information sharing workshop for the South African Iron and Steel Institute on an industry performance benchmark for the proposed carbon tax policy.

I have conducted research on Special Underdeveloped Zones (SUZs) in South Africa as part of drafting a methodology revision request to the Clean Development Mechanism (CDM).

I have also conducted research on the Integrated Development Plans (IDPs) of all South Africa's local municipalities for the country's Third National Communication to the UNFCCC.

I have completed a carbon footprint for the Sanlam Marathon.

Professional experience:

Date from - Date to	Location	Company & reference person ¹ (name & contact details)	Position	Description
Feb 2016 – present	South Africa Johannesburg	Promethium Carbon Harmke Immink Director +27 11 706 8185 Harmke@promethium.co.za	Carbon Advisor Level 1	Currently work as an climate change, energy and carbon emissions consultant specializing in services which include: <ul style="list-style-type: none"> • Carbon tax assessments. • Techno-economic studies. • Specialist climate change assessments as a part of EIAs. • Drafting climate change reports and policy recommendations. • Carbon footprints and water footprints. • Registering CDM projects.
September 2015 – November 2016	Dehradun, India	Centre for Ecological Development and Research Vishal Singh Research Group Leader +27 76 215 9119 vishal.the.1st@gmail.com	Volunteer Researcher	Worked as a researcher on a water supply and catchment sustainability project for the hill town of Mussoorie in the Himalayan foothills. The project involved amalgamating and mapping data on; forest composition, climate change, infrastructural upgrades and land use.

Other relevant information (e.g., Publications):

Refereed Journal Articles:

VOSPER, S.J. and MERCURE, J.-F. Assessing the effectiveness of South Africa's emissions-based purchase tax for private passenger vehicles: A consumer choice modelling approach. *J. energy South. Afr.* [online]. 2016, vol.27, n.4, pp.25-37. ISSN 2413-3051. <http://dx.doi.org/10.17159/2413-3051/2016/v27i4a1436>.



DIGBY WELLS

ENVIRONMENTAL

Mr. Nathan Cook
Biophysical Department
Digby Wells Environmental

1 Education

2016: Bachelors of Science Degree in Environmental Sciences (University of Pretoria)

2017: Currently studying towards a BSC Honours Degree in Aquatic ecosystem Health

2 Language Skills

- English (1st language); and
- Afrikaans (2nd language)

3 Employment

- 2016 – *Present*: Digby Wells Environmental – Aquatics Specialist

4 Experience

Nathan Cook is a certified SASS5 practitioner with a BSc in environmental sciences. He is currently working towards a BSc honors degree in Aquatic Ecosystem Health through North West University. Nathan has completed numerous aquatic ecology assessments in South Africa and has surveyed in Senegal, West Africa, as well as in the Zambezi and Chobe rivers in Botswana, Zambia and Namibia. He has a good technical understanding of the variable conditions within South African rivers as well as their biological compositions, especially in the Highveld ecoregion. The following specific skills applied in the projects are highlighted below:

- Baseline aquatic ecology assessments;
- Impact assessments on aquatic ecology;
- Biological monitoring using aquatic ecology;
- Water and sediment sample analysis/interpretation; and
- Sampling and identification of aquatic macroinvertebrates and fish species.

5 Project Experience

Since joining Digby Wells, Nathan has conducted site visits, undertaken data collection and compiled Aquatic Reports. Nathan's project experience is summarised below:

Digby Wells and Associates (South Africa) (Pty) Ltd. Co. Reg. No. 2010/008577/07. Tumberry Office Park, 48 Grosvenor Road, Bryanston, 2191. Private Bag X10046, Randburg, 2125, South Africa
Tel: +27 11 789 9495, Fax: +27 11 069 6801, info@digbywells.com, www.digbywells.com

Directors: AJ Reynolds (Chairman) (British)*, GE Trusler (C.E.O), GB Beringer, LF Koeslag, J Leaver*, NA Mehlomakulu, MJ Morifi*, DJ Otto

*Non-Executive

- Sasol Mining (Pty) Ltd Thubelisha section 102 Amendment application;
- Ergo Mining (Pty) Ltd dump reclamation project alongside the Blesbokspruit;
- Platreef Resources (Pty) Ltd biannual aquatic biomonitoring for the Platreef Mining Operation, Limpopo Province;**Error! Reference source not found.**
- HCI Coal PTY (Ltd) aquatic biomonitoring at the Mbali Colliery;
- HCI Coal PTY (Ltd) aquatic biomonitoring at the Palesa Colliery;
- HCI Coal PTY (Ltd) aquatic biomonitoring at the Nokuhle Colliery;
- Msobo Coal (Pty) Ltd bi-annual aquatic biomonitoring for the Tselentis and Spitzkop Collieries;
- Glencore Operations South Africa (Pty) Ltd Goedgevonden Aquatic Biomonitoring;
- Rangold Resources Masawa ESIA for a gold mine in Senegal;
- Exxaro Coal Mpumalanga (Pty) Ltd Annual Aquatic Ecology Biomonitoring Project 2016/2017; and
- KBC Joint Venture comprising Nippon Koei Co. Limited, Chodi Co. Ltd, Arcus GIBB (Pty) Limited, Bothakga Burrow Botswana (Pty), CPP Botswana (Pty) and Zulu Burrow Development Consultants Ltd 7th and 8th Quarterly Aquatic Ecology Monitoring Report for the Environmental Monitoring for the Kazungula Bridge Project;

6 Professional Affiliations

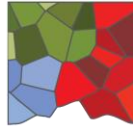
Currently registering as a candidate of the South African Council for Natural Scientific Professions.

7 Professional Registration

Accredited SASS5 macroinvertebrate practitioner.

8 Publications

None.



DIGBY WELLS

ENVIRONMENTAL

Mr. Rudolph Greffrath

Manager: Biodiversity, Senior Terrestrial Ecology specialist

Biophysical Department

Digby Wells Environmental

1 Education

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

1.1 Courses

- African Reptiles and Venom: Venomous Snake Handling, 2014.
- African Reptiles and Venom: Snake identification and Snakebite Treatment, 2014.
- Dr Phil Tanner: Land Rehabilitation Seminar, 2014.
- Executrain: Microsoft Excel, 2012.
- Executrain: Microsoft Word, 2012.
- Measurements of Biodiversity at the University of the Free State, by Prof. M. T. Seaman. September 2008.
- Bird Identification course, by Ettiene Marais November 2009.
- Introduction to VEGRAI and Eco-classification, by Dr. James Mackenzie December 2009.
- Rehabilitation of Mine impacted areas, with Fritz van Oudshoorn, Dr Wayne Truter and Gustav le Roux 2011.

2 Language Skills

English : Fluent

Afrikaans : Fluent

3 Employment

- 2006 – Present: Digby Wells Environmental, Johannesburg, South Africa.
- 2002 - 2003: Shamwari Game Reserve, Eastern Cape, South Africa.

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Tel: +27 11 789 9495, Fax: +27 11 789 9498, info@digbywells.com, www.digbywells.com

Directors: AJ Reynolds (Chairman) (British)*, GE Trusler (C.E.O), GB Beringer, LF Koeslag, J Leaver*, NA Mehlomakulu, DJ Otto

*Non-Executive

- 2001: Kop-Kop Geotechnical instrumentation specialists, Johannesburg, South Africa.

4 Experience

Senior Ecologist

Rudi's current role is that of a terrestrial ecology, specifically fauna and flora specialist, in this capacity he is responsible for planning and conducting fauna and flora surveys/studies that are either completed in support of environmental authorisations or are focused specialist studies which meet local and international standards. In addition to this, Rudi is responsible for compiling Biodiversity Land Management Programs where different specialist studies are collated into a working document for clients in order to aid in pre or post mining management. He is also involved in rehabilitation studies which entail the planning, implementation and monitoring of vegetative rehabilitation in designated areas on mines. Rudi 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.

Rudi is also involved in the acquisition of permits for mines, 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 Rudi includes 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);
- Environmental pre-feasibility studies for gold tailings reclamation and iron ore mining projects;
- International Finance Corporation (IFC) related projects across Africa, applying performance standards and Equator Principles on the Environmental Health and Safety Guidelines set down by the IFC;
- Environmental and Social Impact Assessments (ESIA) for Environmental Authorisation;
- Biodiversity Assessments including Mammalia, Avifauna, Herpetofauna and Arthropoda;
- Impact assessments based on the terrestrial environment;
- Biodiversity and Land Management Programs;
- Protected plant species management strategies planning and implementation;

- Monitoring of rehabilitation success through vegetation establishment;
- Rehabilitation planning;
- Environmental auditing of rehabilitated areas;
- Project management of ecological specialist studies;
- No Net Loss (NNL) and Net Positive Impact on Biodiversity (NPI) strategies and implementation;
- Planning and design of Rehabilitation off-set strategies.

Biodiversity Manager

Rudi is also responsible for the team of specialists within the fauna, flora and wetlands department, in the capacity of workload planning and execution. Project planning, reviewing of project reports and field work plans. The management and planning of each individual in the departments further studies, Key Performance Indicators and subsequent performance reviews. A more detailed list of roles and responsibilities are given in the table below.

Task
Workload delegation
Timesheet control
Inter-departmental projects coordination
Up-to-date schedule of projects and proposals
Formal and on-the job training
Bi-annual Staff reviews
Salary and Bonus review
Preparation and presentation of budget – monitoring
Recruitment of new staff
Disciplinary procedures
Quality of work and review of documents
Employee leave and administration
Management Committee (MANCO) member



Proposals compilation, review, submission

Feedback from employees

5 Project Experience

Project	Location	Client	Main project features	Positions held	Activities performed
Mmamabula Energy Project (MEP).	Botswana	CIC energy	Construction of a railway, opencast mine, wellfield, conveyors, addits, housing.	Technical Specialist Ecologist	IFC level specialist studies, Fauna and Flora surveys for the project features, including impact assessments, management plans. Alien eradication plans.
Orlight Solar PV Power Project	South Africa	Orlight SA	Environmental Impact Assessment (EIA) process for five proposed Solar Photovoltaic (PV) Power Plants	Technical Specialist Ecologist	EIA Terrestrial Biodiversity studies, IFC level specialist studies
Twenty Nine Capitol	South Africa	CSIR	Photovoltaic Power stations	Technical Specialist Ecologist	EIA Terrestrial Biodiversity studies, in support of the EIA report, IFC level specialist



					studies
Tongan Biodiversity Land Management Plan	Ivory Coast	Randgold	Design, compilation and implementation of the BLMP	Technical Specialist Ecologist, Project Manager	Fauna and Flora surveys for the BLMP, compilation of BLMP. Alien eradication plans. IFC level specialist studies
Kibali Gold mine	DRC Congo	Randgold	Gold mine infrastructure	Technical Specialist Ecologist	Technical specialist, fauna and flora, for the Kibali ESIA. IFC level specialist studies
Kibali Gold mine	DRC Congo	Randgold	ESIA Update	Technical Specialist Ecologist	Technical specialist, fauna and flora, for the Kibali ESIA. IFC level specialist studies
Nzoro Hydroelectric station	DRC Congo	Randgold	Hydroelectric plant	Technical Specialist Ecologist	Technical specialist, fauna and flora, for the Nzoro ESIA. IFC level specialist studies.
Loulo	Mali	Randgold	Design,	Technical	Fauna and



Biodiversity Land Management Plan			compilation and implementation of the BLMP	Specialist Ecologist, Project Manager	Flora surveys for the project features, compilation of BLMP.
Koidu Diamond Mine	Sierra Leone	Koidu Resources	Construction of new open pit	Technical Specialist Ecologist	Technical specialist, fauna and flora, for the Koidu ESIA. IFC level specialist studies, terrestrial ecology management plans
Resource Generation	South Africa	Temo Coal	Coal mine/Railway Line	Technical Specialist Ecologist	Fauna and Flora surveys, Protected plant species management plans, Permitting and Rehabilitation design.
Impunzi Rehabilitation monitoring	South Africa	Glencore	Monitoring of rehabilitation success and suggested management measures	Technical Specialist Flora specialist, Project manager	Vegetation surveys, rehabilitation monitoring. Alien eradication plan.

6 Professional Affiliations

- Birdlife International;
- Endangered Wildlife Trust (EWT);

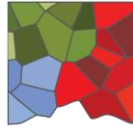
- Grassland Society of Southern Africa.
- Botanical Society of South Africa;

7 Professional Registration

- South African Council for Natural Scientific Professions, *Professional Natural Scientist in the field of practice Conservation Science, registration number is 400018/17.*
- IAIA, International Association for Impact assessments;
- The Land Rehabilitation Society of Southern Africa, LARSA (Membership No. 0085);

8 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.



DIGBY WELLS

ENVIRONMENTAL

Ms Renée van Aardt

Divisional Manager: Mine Closure and Rehabilitation

Technical Services

Digby Wells Environmental

1 Education

- 2003 BSc (Hons) Ecology, Environment and Conservation
- 2002 BSc Ecology, Environment and Conservation, and Zoology

2 Language Skills

- English – Reading, writing, speaking (Excellent)
- Afrikaans – Reading, writing, speaking (Excellent)

3 Employment

- January 2014 to present: Digby Wells Environmental
- January 2011 to October 2013: African Barrick Gold
- August 2009 to December 2010: Foskor
- February 2008 to July 2009: Fraser Alexander Tailings
- August 2007 to January 2008: WSP Environmental
- March 2006 to April 2007: Nemaï Consulting

4 Experience

Renée is the Divisional Manager: Mine Closure and Rehabilitation and has been appointed to assist with the management and co-ordination of all activities relevant to mine closure, rehabilitation and soil assessments. Renée's specialization is compilation of mine closure plans and developing closure liability assessments through the mine life cycle. Renée has extensive expertise in rehabilitation and several years' experience in the implementation of closure plans as well as negotiating closure criteria and financial provisions in both South Africa and Tanzania.

Prior to her appointment, she was a technical specialist at African Barrick Gold and provided support to exploration and operational sites in Tanzania. In addition to the closure support Renée provided, she was also involved in sustainability reporting, EIA/EMP compilation and biodiversity management.

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Tel: +27 11 789 9495, Fax: +27 11 789 9498, info@digbywells.com, www.digbywells.com

Directors: AJ Reynolds (Chairman) (British)*, GE Trusler (C.E.O.), GB Beringer, LF Koeslag, J Leaver*, NA Mehlomakulu, DJ Otto

*Non-Executive



5 Project Experience

Year	Client	Project	Responsibility	Location
2015	Harmony Gold Mining Company	Annual Environmental Liability Assessment	Project Manager	South Africa
2015	Geo Soil Water	Noise Monitoring Survey	Project Sponsor	South Africa
2015	Sasol Mining (Pty) Ltd	Sigma EPAR and Closure Gap Analysis	Project Manager	South Africa
2015	Sasol Mining (Pty) Ltd	Twistdraai Legal Audit	Project Manager	South Africa
2015	Harmony Gold Mining Company	Kalgold Analysis of PM10 Data	Project Sponsor	South Africa
2015	Ivanplats (Pty) Ltd	Environmental and Blasting Noise Monitoring	Project Sponsor	South Africa
2014	Bokoni Platinum Mines (Pty) Ltd	Financial Provision Technical Review	Project Manager	South Africa
2014	South32 SA Coal Holdings (Pty) Ltd	KPSX: South Environmental Authorisations	Project Manager	South Africa
2014	South32 SA Coal Holdings (Pty) Ltd	KPSX: Weltevreden Environmental Authorisations	Project Manager	South Africa
2014	South32 SA Coal Holdings (Pty) Ltd	KPSX Substation Basic Assessment Report	Project Manager	South Africa
2014	Bokoni Platinum Mines (Pty) Ltd	Financial Provision Technical Review	Project Manager	South Africa
2014	Exxaro Coal (Pty) Ltd	Tshikondeni Closure EMP	Project Manager	South Africa
2014	Venmym Deloitte	Project Eagle	Project Manager	South Africa
2014	Mashala Resources (Pty) Ltd	Ferreira Closure Plan	Project Manager	South Africa
2014	Anglo Coal	Greenside Mine Closure Plan	Project Sponsor	South Africa
2014	Foskor (Pty) Ltd	Stormwater Management Plan	Project Sponsor	South Africa



2014	Metorex (Pty) Ltd	Metorex Group Closure Cost Assessment	Project Manager	DRC, Zambia
2014	Kalgold Goldridge Mining Company Ltd	Kalgold ISO14001 Audit	Project Sponsor	South Africa
2014	KPMG Services (Pty) Ltd	Ncondenzi Closure Cost Assessment	Project Manager	Mozambique
2014	Rangold Resource (Pty) Ltd	Kibali Closure Costing	Project Manager	DRC
2013	African Barrick Gold	Tuluwaka Mine Closure Plan	Project Manager and Technical Specialist	Tanzania
2011-2013	African Barrick Gold	Conceptual Mine Closure Plans for Bulyanhulu, North Mara and Buzwagi Gold Mines	Project Manager	Tanzania
2011-2012	African Barrick Gold	Mine Closure Liability Assessments	Project Manager and Technical Specialist	Tanzania
2011	African Barrick Gold	Buzwagi BAP	Project Manager and Technical Specialist	Tanzania
2011	African Barrick Gold	Golden Ridge Feasibility Closure Plan and Liability	Technical Specialist	Tanzania
2010	Foskor	Tailings Rehabilitation Implementation	Production Superintendent	South Africa
2009	Royal Bafokeng Holdings	Royal Bafokeng Nation Mined Land Strategic Environmental Assessment (2008/09)	Technical Specialist	South Africa
2008	Lonmin Platinum	Rehabilitation for Western Platinum tailings dams	Project Manager	South Africa
2008	Lonmin Platinum	Lonmin BAP	Project Manager	South Africa
2008	Lonmin Platinum	Biodiversity Monitoring Framework	Project Manager	South Africa
2008	Lonmin Platinum	Rehabilitation Guidelines	Technical Specialist	South Africa
2006-2007	National Department of Minerals and Energy	Rehabilitation of Derelict and Ownerless Asbestos Mines	Project Manager and Technical Specialist	South Africa

6 Professional Affiliations

- Institute of Business Management of Southern Africa, Member no: IBM2012/93510.



DIGBY WELLS

ENVIRONMENTAL

Mr. Lusanda Patrick Matee
Ecology intern: Fauna and Flora
Biophysical Department
Digby Wells Environmental

1 Education

- 2012 :BSc. Biological Sciences University of KwaZulu-Natal
Research Project: "Mapping the distribution of selected Southern African bat species"
- 2013 : BSc. (Honours) Biological Sciences (Zoology) University of KwaZulu-Natal
Research Project: "Sleeping patterns in selected South African avian species: Ring-necked Parakeets (*Psittacula krameri*), and Red-winged Starling (*Onychognathus morio*)"
- 2016: MSc by Research Biological Sciences University of KwaZulu-Natal
Research Project: "Lichen photobiology in relation to climate change: Protection in Peltigeralean lichens against excess ultraviolet (UV) radiation using induced melanins and the effects of UV on melanin synthesizing enzymes"
Master of Science (Masters by Research in Biological Sciences (Botany) SANCOOP Project, collaboration with Norwegian University of Life Sciences Department of Ecology and Natural Resource Management

2 Language Skills

- English: 1st Language
- isiXhosa: Home language
- isiNdebele: Conversational and written command
- isiZulu : Conversational and written command

3 Employment

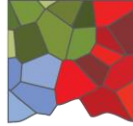
- June 2017- Present: Digby Wells Environmental Biophysical Intern (Ecology intern: Fauna and Flora)
- 2011-2016 : Laboratory demonstrator & Teaching Assistant University of KwaZulu-Natal
- 2012-2013: DNA Bar-coding Research Intern at the South African National Biodiversity institute (SANBI)

4 Experience

Lusanda Matee is an Ecology intern in the Biophysical department. He has Working knowledge of environmental planning processes, policies, regulatory frameworks, and legislation. He is also competent in Compilation of environmental reports in accordance with relevant environmental legislative requirements. His role in the company is assisting with all projects related to Fauna and Flora.

5 Publications

- Matee, L. P., Beckett, R. P., Solhaug, K. A., & Minibayeva, F. V. (2016). Characterization and role of tyrosinases in the lichen *Lobaria pulmonaria* (L.) Hoffm. *The Lichenologist*, 48(4), 311-322.



DIGBY WELLS

ENVIRONMENTAL

Mr Mashudu Rafundisani
Hydrologist
Water Geo-Sciences Department
Digby Wells Environmental

1 Education

1.1 Formal

- Bsc (Hons) Environmental Management (University of Venda).

1.2 Courses

- 2015: 2D – Free Surface Water Flow Modelling (New HEC-RAS version 5.0) (University of Pretoria)
- 2016: Project Management (Primeserv Group Limited)

2 Language Skills

Tshivenda: Excellent

English: Excellent

Zulu: Fair

Tsonga: Fair

Sepedi: Fair

3 Employment

- 2013 - Present: Hydrologist at Digby Wells Environmental.

4 General Experience

- Baseline hydrological studies by reviewing literature and analyzing data such as rainfall, temperature, humidity, wind speed, Stream flows, soils, etc. of a study area to obtain the existing hydrological conditions. This includes report writing and summarizing the above data into graphs, tables and figures.
- Conducting hydrological studies into the impacts that developments (mostly mining) may have on the surface water environment. This includes using an adopted impact assessment methodology to determine the significance of the impacts. Reports



include the description of the methods used and the results obtained as well as to provide mitigation measures for identified impacts.

- Water quality sampling and the interpretation of water quality results by summarizing results into tables, graphs and figures. This includes the generation of a report describing the sampling methods used and results obtained, and identification of possible sources of pollution, as well as suggesting mitigation measures to reduce the pollution.
- Setup of water quality monitoring networks.
- Streamflow monitoring and the interpretation of flow monitoring measurements.
- Floodline modelling using HEC-RAS software to determine flood water elevations. This includes delineating catchments using GIS software, determining the flood peaks for the delineated catchments by analyzing rainfall, land use, slope, soils, etc., and using an appropriate method to determine the flood peaks.
- Development of storm water management plans according to GN704 to separate clean and dirty water at development sites.
- Development of water and salt balances in order to manage mine water.

5 Software Experience

- Utility Program for Drainage (UPD)
- ArcGIS
- HEC-RAS
- WRSM2000



DIGBY WELLS

ENVIRONMENTAL

Mr. André van Coller

Divisional Manager: Water Services (Hydrogeologist)

Technical Services

Digby Wells Environmental

1 Education

- MSc Geohydrology, IGS (UFS) Bloemfontein, South Africa, 2013
- BSc Hons (Geohydrology), IGS (UFS) Bloemfontein, South Africa, 2010
- BSc Geology, University of Pretoria, Pretoria, South Africa, 2009

2 Language Skills

- Afrikaans – Speak, read and write (First language); and
- English – Speak, read and write (Second language).

3 Employment

- Divisional Manager: Water Services – Digby Wells Environmental, Johannesburg, August 2017-present.
- Unit Manager: Geochemistry and Waste Management: Digby Wells Environmental, Johannesburg. July 2016-July 2017
- Senior Hydrogeologist: Digby Wells Environmental, Johannesburg. October 2012-present
- Hydrogeologist: AGES Gauteng (Pty) Ltd, Pretoria, South Africa. January 2010 – October 2012
- Geologist: AGES (Pty) Ltd, Pretoria, South Africa. January 2008 – December 2009

4 Experience

André has ± 10 years (end 2017) of experience in the field of hydrogeology. Before moving to Digby Wells Environmental he had ± 4 years of experience in the Environmental and mining industry at AGES (Pty) Ltd (now Exigo (Pty) Ltd) working as a hydrogeologist. In recent years his main project focus has been geochemical and waste classification assessments but has continued to be widely involved in all aspects of hydrogeology.

He executed and managed different hydrogeological aspects within projects, focusing on aspects such as community water supply programs, geophysical investigations,

characterisation of aquifers, hydrochemical analyses and water quality assessments, field surveys, groundwater drilling, aquifer tests, numerical groundwater flow modelling, geochemical modelling, environmental mine site water balances, double-ring infiltrometer tests and the technical reporting on all aspects.

His experience includes the Southern African mining sectors where he investigates groundwater resource evaluations, as well as conceptualising and quantification of groundwater flow/contaminant transport to specialist groundwater investigations for input to Environmental Management Plan Reports (EMPRs), Bankable Feasibility Studies (BFSs) and mine dewatering.

André has experience across Africa and Asia and has been involved with and completed projects in South Africa, Namibia, Botswana, Mozambique, Malawi, DRC, Mali, Sierra Leone, Zambia, Liberia, Ghana and Pakistan.

Fields of competence include:

- Hydrocensus for environmental and groundwater specialist projects;
- Well field design mainly in water supply projects in the mining industry;
- Geophysical surveys and data interpretation for groundwater exploration using Electro-magnetic, Proton Magnetic, DC Resistivity, Aeromagnetic and Gravitational methods and data;
- Drilling supervision (Air percussion, Odex, mud rotary and direct push drilling) and well design;
- Borehole logging;
- Aquifer test supervision and data analysis and interpretations;
- Hydrogeological specialist studies and investigations for water supply, Environmental Impact Assessments, mining right applications and community water supply projects;
- Groundwater reserve and resource determinations and validation studies;
- GIS and map compilation using various software packages (ArcGIS, Surfer, Global mapper and Planet GIS);
- Environmental mine water balances (individual and integrated mines);
- Groundwater and surface water monitoring network design, sampling and reporting;
- Numerical groundwater flow models for water supply and groundwater reserve determination projects using both Feflow and Modflow software packages;
- Analytical models and calculations on hydrogeological data;
- Hydrogeochemical and water quality assessments and reporting;
- Geochemical modelling of groundwater systems and interactions using various software packages (Phreeqc and Geochemists workbench);

- Waste Classifications of mine and industrial waste under new NEM: WA regulations;
- Double-Ring Infiltrometer Tests (Tests, data interpretations and calculations);
- Project management and sub-consultant management;
- Writing of project proposals and technical reports for environmental and mining industry projects;

5 Project Experience

Water supply and mine dewatering projects

Includes hydrocensus, sampling, GIS and map compilation, hydrogeochemical assessments, aquifer classification, geophysics, well field design, drilling, aquifer testing, monitoring network design and technical reporting. Also involved in the management of field teams and sub-consultants on various levels of the projects.

- Boynton investments (Pty) Ltd - Boynton Pilanesberg Platinum Mines groundwater supply and pit dewatering project (North West province, South Africa)
- Boynton investments (Pty) Ltd - Boynton Magazynskraal BFS groundwater specialist investigation (North West province, South Africa)
- Lonmin South Africa - Lonmin Akanani Water supply project (Limpopo province, South Africa)
- Lesego Platinum - Lesego Platinum Water Supply project (Limpopo province, South Africa)
- Platinum Australia - Rooderand Platinum Mine Groundwater Study (North West province, South Africa)
- Tsipi Borwa Manganese project (Northern Cape province, South Africa)
- Talbot Australia - Revuboe Coal Mine project Groundwater specialist investigation and water supply (Tete, Tete Province, Mozambique)
- Anglo Dalyshope – EIA and Water Supply Study in the Limpopo Coal Fields
- Vedanta IPP – EIA and Water Supply Study in the Limpopo Coal Fields
- Thar Water Master Plan – Water Supply Study in Pakistan.

Environmental mine and industry projects

Includes hydrocensus, sampling, GIS and map compilation, hydrogeochemical assessments, aquifer classification, geophysics, well field design, drilling, aquifer testing, monitoring network design and technical reporting on gehydrological and legislation aspects. Also involved in the management of field teams and sub-consultants on various levels of the projects.

- Platinum Australia - Rooderand Platinum Mine EIA Groundwater specialist investigation (North West province, South Africa)
- Aquarella Investments 389 – Ceramic Industries Cyferfontein Baseline geohydrological study (Gauteng province, South Africa)
- Lesego Platinum - Lesego Platinum EIA Groundwater Specialist investigation (Limpopo province, South Africa)
- Arengo (Pty) Ltd – Cradock Ethanol Water Supply EIA (Eastern Cape province, South Africa)
- Umbono (Pty) Ltd - Umbono Ermelo Coal Bed Methane Exploration EIA Geohydrological Specialist investigation (Mpumalanga province, South Africa)
- SA Fluorite (Pty) Ltd – Doornhoek Quarterly monitoring
- Anglo Coal (Pty) Ltd Dalyshope – EIA and Water Supply Study in the Limpopo Coal Fields
- Vedanta IPP – EIA and Water Supply Study in the Limpopo Coal Fields
- Putu Iron Ore Mining (Liberia) – Groundwater Specialist study for EIA

Environmental Mine Site Water Balances

Analytical modelling of the mine water balances including water consumption in mining processes, plant processes, domestic water supply, water loss and consumption in the tailings and waste disposal facilities, return water calculations, dust suppression, storm water calculations and reporting. Transient mine make-up water requirements is also modelled for Life of Mine based on projected tonnage profiles and daily rainfall data.

- Aureus Mining NLGM Gold Project (Liberia) – Integrated Water Management Plan and Site Wide Water Balance
- Aureus Mining NLGM Gold Project (Liberia) – Cyanide and Arsenic Dilution Models and Balance
- Obuasi Gold Mine (Ghana) – Water Balance Review and Gap Analysis
- Eskom Kriel – Salt mass balance for open pits
- Boynton investments (Pty) Ltd – Ruighoek Platinum Mine Individual Site Water Balance (North West province, South Africa)
- Boynton investments (Pty) Ltd – PPM Extended Tuschenkomst Platinum Mine Site Water Balance (North West province, South Africa)
- Boynton investments (Pty) Ltd – Magazynskraal and Sedibelo Underground Platinum Mines Site Water Balance (North West province, South Africa)
- Boynton investments (Pty) Ltd – Sedibelo Central Open Pit Platinum Mine Site Water Balance (North West province, South Africa)

- Boynton investments (Pty) Ltd – Boynton Chrome project Site water balance for Wet and Dry processes (North West province, South Africa)
- Boynton investments (Pty) Ltd – Integrated mine water balances for Six Boynton Pilanesberg mining operations (North West province, South Africa)
- Platinum Australia - Rooderand Platinum Mine EIA Groundwater specialist investigation (North West province, South Africa)

Geochemical Modelling

Modelling of groundwater chemistry and geochemical interactions of groundwater with pollution sources and geology. Includes speciation models, weathering models, interpretations of ABA results and TCLP leachate results. XRF and XRD data interpretation and modelling. Modelling of pit flooding with simulations predicting pit lake hydrochemistry.

- Boynton investments (Pty) Ltd - Boynton Magazynskraal BFS groundwater specialist investigation (North West province, South Africa)
- Kumba Iron Ore Company – Kumba Zandrivierspoort Groundwater Specialist Study (Limpopo province, South Africa)
- Anglo Coal (Pty) Ltd Dalyshope - Geochemical Modelling of Ash backfilling as a post-closure option
- MSc thesis and project focuses mainly on geochemical modelling of pit flooding as a post closure method for the mining industry
- Loulo Gold Mine (Randgold, Mali) – TSF geochemical model
- Kipoi Mine (DRC) – Geochemical study and model

Numerical Groundwater Flow Modelling

Modelling of steady state and transient state groundwater systems and simulating the effect and impact of water supply on the system.

- SKA Africa – SKA Meerkat Groundwater Study and Model (Northern Cape province, South Africa)
- Department of Water Affairs – Lusikisiki groundwater supply and reserve determination study and numerical model (Eastern Cape, South Africa)
- Lesego Platinum - Lesego Platinum EIA Groundwater Specialist investigation (Limpopo province, South Africa)

Waste Classification Projects

- Exxaro (Pty) Ltd Zeeland Waste Water Treatment Sewage Sludge Classification
- Matsopa (Pty) Ltd Inert Mineral Overrun Waste classification

- Sasol Sigma (Pty) Ltd Geochemical and Waste Classification of Ash material to be used in the underground backfilling process
- Vedanta IPP Ash Classification

Geochemistry Projects

- Sasol Sigma (Pty) Ltd Geochemical and Waste Classification of Ash material to be used in the underground backfilling process
- Anglo Coal (Pty) Ltd Dalyshope - Geochemical Modelling of Ash backfilling as a post-closure option
- Msobo (Pty) Ltd EIA – Environmental Geochemical Assessment on waste and ore products from proposed operations
- Balama Graphite Mine (Mozambique) – Environmental Geochemical Assessment forming part of the larger EIA

Other projects with extensive field work and technical involvement - Current and historical projects

- Kumba Iron Ore - Hydrogeological Investigation (Northern Cape province, South Africa).
- Department of water Affairs - Mkomazi Groundwater Reserve Determination (Kwa-Zulu Natal province, South Africa).
- MSA (Pty) Ltd - MSA Sierra Leone Gold Mine Project (Sierra Leone)
- Sephaku (Pty) Ltd - Sephaku Nokeng Fluorspar Mine Water Supply (Limpopo Province, South Africa)
- SMC (Pty) Ltd – Otjikoto Gold Mine Groundwater Study (Otjikoto, Namibia)
- Department of Water Affairs - Lower Vaal Water Management Area Groundwater Reserve Determination (Northern Cape province, South Africa)
- Council for Geo Science – CGS East Rand Basin Source Apportionment

6 Professional Affiliations

- International Mine Water Association (IMWA)
- International Association of Hydrogeologists (IAH)
- Groundwater Division of the Geological Society of South Africa (GWD of GSSA)

CURRICULUM VITAE: D G Paterson

SURNAME: PATERSON
FIRST NAME(S): David Garry
KNOWN AS: Garry
DATE OF BIRTH: 25-08-1959 in Bellshill, Scotland
NATIONALITY: South African
I.D. No.: 5908255258088
LANGUAGE PROFICIENCY: English, Afrikaans (both fluent), French (poor)
MARITAL STATUS: Married, one son

ADDRESS: Institute for Soil, Climate and Water **TEL.:** (012) 310 2601
Private Bag X79 083 556 2458
Pretoria 0001
Republic of South Africa **FAX:** (012) 323 1157

E-MAIL ADDRESS: garry@arc.agric.za

ACADEMIC QUALIFICATIONS:

- Matriculated: 1976, Dalziel High School, Motherwell, Scotland
- BSc (Hons) Geography, 1980, University of Strathclyde, Glasgow, Scotland
- MSc (Soil Science) *cum laude*, 1998, University of Pretoria
- PhD (Soil Science), 2014, University of Pretoria

PROFESSIONAL CAREER:

- 1981-1987: Soil Scientist: Soil and Irrigation Research Institute, Pretoria
- 1987-1992: Senior Soil Scientist: Soil and Irrigation Research Institute, Pretoria
- 1992-present: Senior Soil Scientist: ARC-Institute for Soil, Climate & Water

FIELDS OF SPECIALITY AND COMPETENCE:

- Soil classification and mapping
- Soil interpretations
- Soil survey project management
- Environmental assessment
- Soil survey and land capability course presentation
- Ground penetrating radar

PUBLICATIONS (see attached list):

- Three refereed articles (S.A. Journal of Plant and Soil)
- Nine Congress papers/posters
- S.A. Soil Classification (1991) (Member of working group)
- Seven 1:250 000 Land Type Maps
- Three Land Type Memoirs
- More than 200 soil survey reports and/or maps

COURSES COMPLETED:

- Course in Project Management (University of Stellenbosch)
- Course in Junior Personnel Management (Dept of Agriculture)
- Course in Handling of Grievances and Complaints (Dept of Agriculture)
- Course in Marketing (ARC-ISCW)
- Course in National Qualifications Framework Assessment, ARC-CO
- Training Course in Ground Penetrating Radar (GSSI, USA)
- Introduction to ArcGIS 8, GIMS, 2004

PROFESSIONAL STATUS:

- Registered Natural Scientist: Soil Science (SA National Council for Natural Scientific Professions) – registration number 400463/04
- Member of South African Soil Classification Working Group, 1990-present
- Convenor of South African Soil Classification Working Group, 2013-
- Member of Soil Science Society of South Africa (1982-present)
- President of Soil Science Society of South Africa (2005-2007)
- Member of South African Soil Survey Organisation (2000-present)
- Council Member of South African Soil Survey Organisation (2002-2003)
- Member of International Erosion Control Association
- Scientific Referee, S.A. Journal for Plant and Soil
- External Examiner, University of Pretoria, University of Witwatersrand, University of Venda

AWARDS:

Best article on Soil Science, South African Journal for Plant and Soil, 2011

MISCELLANEOUS:

- Editor, Soil Science Society newsletter, 1993-present
- Member, Clapham High School (Pretoria) Governing Body 1998-2002
- Member, Northern Gauteng Football Referee's Association
- Committee Member, Rosslyn Golf Club (Club Champion 2002 and 2007)

INTERESTS:

Sport, especially golf and soccer; wildlife; reading; music

REFEREES:

Mr T.E. Dohse, ARC-Institute for Soil, Climate and Water.
Tel: 082 324 5389

Prof Robin Barnard, ARC-Institute for Soil, Climate and Water
Tel: 012 310 2549

Prof M.C. Laker (retired), (012) 361-2900; 082 785 5295

PUBLICATIONS LIST:

Refereed Articles:

BÜHMANN, C., KIRSTEN, W.F.A., PATERSON, D.G. & SOBCZYK, M.E., 1993. Pedogenic differences between two adjacent basalt-derived profiles. 1. Textural and chemical characteristics. *S. Afr. J. Plant & Soil*, 10: 155-161

BÜHMANN, C., KIRSTEN, W.F.A., PATERSON, D.G. & SOBCZYK, M.E., 1994. Pedogenic differences between two adjacent basalt-derived profiles. 2. Mineralogical characteristics. *S. Afr. J. Plant & Soil*, 11: 5-11

PATERSON, D.G. & LAKER, M.C., 1999. Using ground penetrating radar to investigate spoil layers in rehabilitated mine soils. *S. Afr. J. Plant & Soil*, 16:131-134.

PATERSON, D.G., BÜHMANN, C., PIENAAR, G.M.E. & BARNARD, R.O., 2011. Beneficial effect of palm geotextiles on inter-rill erosion in South African soils and mine dam tailings: a rainfall simulator study. *S. Afr. J. Plant & Soil*, 28: 181-189.

PATERSON, D.G. & BARNARD, R.O., 2011. Beneficial effect of palm geotextiles on inter-rill erosion in South African soils. *S. Afr. J. Plant & Soil*, 28: 190-197.

BHATTACHARRYA, R., FULLEN, M.A., BOOTH, C.A., KERTESZ, A., TOTH, A., SZALAI, Z., JAKAB, G., KOZMA, K., JANKAUSKAS, B., JANKAUSKIENE, G., BÜHMANN, C., PATERSON, D.G., MULIBANA, N.E., NELL, J.P., VAN DER MERWE, G.M.E., GUERRA, A.J.T., MENDONCA, J.K.S., GUERRA, T.T., SATHLER, R., BEZERRA, J.F.R., PERES, S.M., ZHENG YI, LI YONGMEI, TANG LI, PANOMTARANICHAGUL, M., PEUKRAI, S., THU, D.C., CUONG, T.H., TOAN, T.T., 2011. Effectiveness of biological geotextiles for soil and water conservation in different agro-environments. *Land Degradation and Development*, 22: 495-504.

FULLEN, M.A., SUBEDI, M., BOOTH, C.A., SARSBY, R.W., DAVIES, K., BHATTACHARRYA, R., KUGAN, R., LUCKHURST, D.A., CHAN, K., BLACK, A.W., TOWNROW, D., JAMES, T., POESEN, J., SMETS, T., KERTESZ, A., TOTH, A., SZALAI, Z., JAKAB, G., JANKAUSKAS, B., JANKAUSKIENE, G., BÜHMANN, C., PATERSON, D.G., MULIBANA, N.E., NELL, J.P., VAN DER MERWE, G.M.E., GUERRA, A.J.T., MENDONCA, J.K.S., GUERRA, T.T., SATHLER, R., BEZERRA, J.F.R., PERES, S.M., ZHENG YI, LI YONGMEI, TANG LI, PANOMTARANICHAGUL, M., PEUKRAI, S., THU, D.C., CUONG, T.H., TOAN, T.T., JONSYN-ELLIS, F., SYLVA, J.T., COLE, A., MULHOLLAND, B., DERALOVE, M., CORKILL, C. & TOMLINSON, P., 2011. Utilising biological geotextiles: introduction to the Borassus Project and global perspectives. *Land Degradation and Development*, 22: 453-462.

SMETS, T., POESEN, J., BHATTACHARRYA, R., FULLEN, M.A., SUBEDI, M., BOOTH, C.A., KERTESZ, A., SZALAI, Z., TOTH, A., JANKAUSKAS, B., JANKAUSKIENE, G., GUERRA, A.J.T., BEZERRA, J.F.R., ZHENG YI, PANOMTARANICHAGUL, M., BÜHMANN, C. & PATERSON, D.G., 2011. Evaluation of biological geotextiles for reducing runoff and soil loss under various environmental conditions using laboratory and field data. *Land Degradation and Development*, 22: 480-494.

NETHONONDA, L.O., ODHIAMBO, J.J.O. & PATERSON, D.G., 2012. Indigenous knowledge of climatic conditions for sustainable crop production under resource-poor farming conditions using participatory techniques. *Sustainable Agriculture Research*, 2 (1), 26-31.

NETHONONDA, L.O., ODHIAMBO, J.J.O. & PATERSON, D.G., 2012. Assessment of spatial

variability of selected soil chemical properties in a communal irrigation scheme under resource-poor farming conditions in Vhembe District of Limpopo Province, South Africa. *African J. Agric. Res.* 7 (39), 5445-5492.

PATERSON, D.G., SMITH. H.J. & VAN GREUNEN, A., 2013. Evaluation of soil conservation measures on a highly erodible soil in the Free State province, South Africa. *S. Afr. J. Plant & Soil*, 30: 213-217.

PATERSON, D.G., TURNER, D.P., WIESE, L.D., VAN ZIJL, G.M., CLARKE, C.E. & VAN TOL, J., 2014. Spatial soil information in South Africa – situational analysis, limitations and challenges. *S. Afr. J. Science* (in press).

Books:

PATERSON, D.G. & MUSHIA, N.M., 2012. Chapter 32. Soil databases in Africa. *In: Handbook of Soil Science: Resource Management and Environmental Impacts (2nd Edn)*. Eds. P.M. Huang, Y Li & M.E. Sumner. CRC Press, Boca Raton FL.

SOIL CLASSIFICATION WORKING GROUP*, 1991. Soil classification. A taxonomic system for South Africa. Institute for Soil, Climate & Water, Pretoria.

* Co-author as member of Working Group

Theses:

PATERSON, D.G., 1998. The use of ground penetrating radar to investigate subsurface features in selected South African soils. Unpublished MSc Thesis, University of Pretoria.

PATERSON, D.G., 2014. The use of palm leaf mats in soil erosion control. Unpublished PhD Thesis, University of Pretoria.

Congress Papers:

PATERSON, D.G., 1987. The relationship between geology and soil type in the northern Kruger National Park. 14th Congress of the Soil Science Society of S.A. Nelspruit, 14-17 July 1987.

PATERSON, D.G., 1990. A study of black and red clay soils on basalt in the northern Kruger National Park. 16th Congress of the Soil Science Society of S.A. Pretoria, 9-12 July 1990.

PATERSON, D.G., 1992. The potential of ground penetrating radar as an aid to soil investigation. 17th Congress of the Soil Science Society of S.A. Stellenbosch, 28-30 Jan. 1992.

PATERSON, D.G., 1995. The complex soil mantle of South Africa. ARC Wise Land Use Symposium, Pretoria, 26-27 Oct. 1995

PATERSON, D.G. & LAKER, M.C., 1998. Locating subsoil features with ground penetrating radar. 21st Congress of the Soil Science Society of S.A. Alpine Heath, 20-22 Jan. 1998.

PATERSON, D.G., 2000. Mapping rehabilitated coal mine soils in South Africa using ground penetrating radar. Eighth International Conference on Ground Penetrating Radar, Gold Coast, Australia, 23-26 May 2000.

PATERSON, D.G. & VAN DER WALT, M., 2003. The soils of South Africa from the Land Type Survey. 24th Congress of the Soil Science Society of S.A., Stellenbosch, 20-24 Jan. 2003.

Land Type Maps:

PATERSON, D.G., 1990. 1:250 000 scale land type map 2230 Messina. Dept. Agriculture, Pretoria.

PATERSON, D.G. & HAARHOFF, D., 1989. 1:250 000 scale land type map 2326 Ellisras. Dept. Agriculture, Pretoria.

PATERSON, D.G., PLATH, B.L. & SMITH, H.W., 1987. 1:250 000 scale land type map 2428 Nylstroom. Dept. Agriculture, Pretoria.

PATERSON, D.G. & ROSS, P.G., 1989. 1:250 000 scale land type map 2330 Tzaneen. Dept. Agriculture, Pretoria.

PLATH, B.L. & PATERSON, D.G., 1987. 1:250 000 scale land type map 2426 Thabazimbi. Dept. Agriculture, Pretoria.

Land Type Memoirs:

PATERSON, D.G., PLATH, B.L. & SMITH, H.W., 1988. Field Investigation. In: *Land types of the maps 2426 Thabazimbi & 2428 Nylstroom. Mem. Agric. Nat. Res. S. Afr.* No. 10. Dept. Agriculture, Pretoria.

PATERSON, D.G., SCHOEMAN, J.L., TURNER, D.P., GEERS, B.C. & ROSS, P.G., 1989. Field Investigation. In: *Land types of the maps 2330 Tzaneen & 2430 Pilgrim's Rest. Mem. Agric. Nat. Res. S. Afr.* No. 12. Dept. Agriculture, Pretoria.

PATERSON, D.G., 1999. 1:250 000 land type survey of the former Ciskei (Unpublished). ISCW Report GW/A/99/24.

Also:

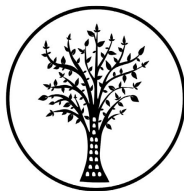
PATERSON, D.G., 1992. Ground penetrating radar applications in USA and South Africa. Report on an official study tour to USA, 13-29 July, 1991. ISCW Report GW/A/92/8.

PATERSON, D.G., 2000. Report on official overseas visit to GPR2000 Conference, Broadbeach, Australia, 23-26 May, 2000. ISCW Report GW/A/2000/40.

Plus ARC-ISCW Reports on:

- Ground penetrating radar investigations in: Kruger National Park; Enseleni, Natal; Weatherly, Maclear; Kleinkopje Mine
- Soil survey investigations at: Roodeplaat, Kathu, Steelpoort River, Palala River, Zeekoegat (Roodeplaat), Limpopo River, Lydenburg, Kendal, Clewer Sand (Witbank), Botha Sand (Witbank), Balmoral Colliery, Bafokeng (Rustenburg), Towoomba (Warmbaths), Hoefeld Stene (Middelburg), Quality Bricks (Witbank), Visagie Sand (Middelburg), Rosslyn, Coalbrook (Sasolburg), Stewart Coal (Delmas), Forzando Coal (Hendrina), Vaalgro (Vereeniging), Ratanda (Heidelberg), Elspark (Boksburg), Thorncliffe Mine (Steelpoort), Jan Smuts Quarry (Boksburg), Ennerdale (Phase I & II), Thokoza, North Riding, Natalspruit (Alberton), Arnot, Kroondal (Phase I & II), Ga-Rankuwa, Hartebeespoort Dam,

Kosmos, Assen, Grasmere, Magalies Moot (Pretoria), Valpre (Paulpietersburg), Cargo Carriers (Sasolburg), Waterval (Rustenburg), Rayton, Bronkhorstspuit, Zwavelpoort (Pretoria), Pietersburg, Trojan Mine (Steelpoort), Platinum Highway (Rustenburg), Moutse, Centurion, Salique (Klaserie), Northam, Greenside Colliery (Witbank), South Deep Mine (Westonaria), Bank Colliery, Steelpoort Platinum, Gautrain Route (Pta/Jbg), Rietspruit Mine (Ogies), Potgietersrus Platinum, Atok Mine (Lebowa), Blue Ridge Mine (Groblersdal), Ngodwana, Estancia (Breyton), Twickenham Mine (Steelpoort), Marikana.



CTS HERITAGE

CURRICULUM VITAE

Katie Smuts

Tel: 072 796 7754 (c); 021 013 0131 (w)
E-mail address: katie.smuts@ctsheritage.com
ID number: 7806200125089

EDUCATION:

Tertiary

- 2012 M.Phil in Archaeology (University of Cape Town)
Title: *An Archaeology of the Eighteenth and Nineteenth Century Cape Wine Economy from the Perspective of Solms Delta and Babylonstoren*
- 1999 B.A. Honours. with Distinction in Archaeology and Historical Studies of the Western Cape (University of Cape Town)
Title: *Painting People: an analysis of the depiction of human figures in a sample of procession and group scenes from the rock art of the South Western Cape, South Africa.*
- 1998 B.A. Archaeology (University of Cape Town)
B.A. Classics (University of Cape Town)

Secondary

1991-1999 Wynberg Girls High School Dux Pupil.

Continuing Professional Development

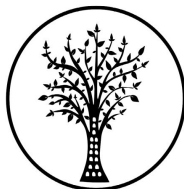
- 2016 Antiquities Trafficking and Art Crime (University of Glasgow, Online Course)
- 2010 Continued Professional Development Course in Architecture and Urban Conservation Part I: Theory and Development and Part II: Skills Development (University of Cape Town)

EMPLOYMENT HISTORY:

- February 2017 – Present : CTS Heritage
Position : Heritage Specialist
Responsibilities :
- Heritage consulting
 - Production of Heritage Screeners,
 - Drafting integrated HIAs, heritage reports and management plans
 - GIS mapping and interpretation of spatial data
 - Proposal writing
 - Project management.
- October 2013 - December 2016 : South African Heritage Resources Agency
Cape Town, South Africa
Position : Manager of the National Inventory

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Tel: (021) 0130131 Email: info@ctsheritage.com Web: www.ctsheritage.com



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Responsibilities

:

- Management of the National Inventory and responsible for the maintenance of the South African Heritage Resources Information System (SAHRIS);
- Coordinated the National Audit Project, which assists museums, galleries and other repositories to digitise their collections for inclusion in the national inventory and hosting on SAHRIS.
- Responsible for all strategic and operational planning, risk planning and management, budgeting, project formulation and execution; appointment, management and performance review of staff; and reporting on Unit activities to Executive for audit purposes.
- Organised workshops, seminars and training sessions around the country to promote heritage and roll out SAHRIS
- Responsible for maintaining the SAHRIS Facebook page and Twitter account.

May 2012 - October 2013

:

SAHRA

Cape Town, South Africa

Position

:

Heritage Officer, Archaeology,

Palaeontology and Meteorites Unit

Responsibilities

:

- Assessing Heritage Impact Assessments submitted to SAHRA, in terms of Section 38 of the NHRA, for development and mining applications in the Northern Cape and North West Province.
- Stakeholder management with state departments, heritage authorities and heritage associations to further heritage management in South Africa.
- Initiated the declaration of the Kathu Complex of Archaeological Sites as National Heritage Sites.

March 2009 - May 2012

:

Self-employed

Cape Town, South Africa

Position

:

Principal Investigator

Responsibilities

:

- Site excavation and survey, as well as building fabric analysis on several historic Western Cape farmsteads.
- Submission of permit applications, permit reports and Archaeological Impact Assessments to Heritage Authorities in terms of Sections 35 and 38 of the NHRA.

August 2006 – October 2006

:

Butrint Foundation

Butrint, Albania

Position

:

Sector Manager

Responsibilities

:

- Management of excavations in a designated area of the GrecoRoman temple in the Butrint World Heritage Site, Albania.

February 2006 – February 2009

:

ACO Associates

Cape Town, South Africa

Position

:

Field Assistant/Director

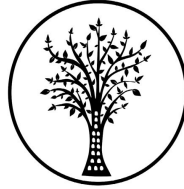
Responsibilities

:

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- Field Assistant or Field Director on a variety of projects, including archaeological survey, building analysis and excavation.
- Assisted with the writing, synthesis and editing of Heritage Impact Assessments, Archaeological Impact Assessments and field reports.

- October 2004 - January 2006 : Various Contract Firms
United Kingdom
Position : Field Assistant
Responsibilities :
 - Survey and excavation of a variety of UK archaeological sites for various commercial archaeology units.
- June 2003 - March 2004 : ACO Associates
Cape Town, South Africa
Position : Field Assistant
Responsibilities :
 - Assisting on rescue excavations of informal human burial site, Prestwich Place, Cape Town.
- January 2000 - December 2000 : Clanwilliam Living Landscape Project
Clanwilliam, South Africa
Position : Co-director
Responsibilities :
 - Initiated and coordinated the CLLP programme with Professor John Parkington, which uses archaeological methodology and practical experiences to teach maths and science principles and application to rural school children.
 - Liaised with teachers and representatives of the Department of Education to create curricula and teaching materials.
 - Projects included collecting, recording and analysing archaeological material from the Clanwilliam Dam for a Heritage Day display, statistical analysis of gravestones, rock art recording and scientific investigation of cultural landscapes.
- January 1999 - May 2000 : University of Cape Town
Cape Town, South Africa
Position : Student Lecturer and tutor
Responsibilities :
 - Tutored first and second year Archaeology students for Prof. Judith Sealy.
 - Devised and taught lectures, and set and marked exams for first year semester course on South African, French and Australian rock art for Prof. Parkington.

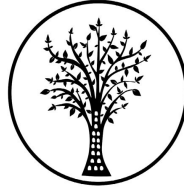
AFFILIATIONS:

- 2017 - present: Executive Committee Member of Association of Southern African Professional Archaeologists (ASAPA) and Co-Chair of the Cultural Resource Management (CRM) Subcommittee
- 2017 - present: Member of the Stanford Heritage Committee (SHC)
- 2016 - present: Member of the Overstrand Heritage and Aesthetics Committee (OHAC)

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- 2015 - present:** Member of Association of Professional Heritage (APHP);
2015 - 2016: Executive Committee Member of APHP and Chairperson of APHP Accreditation Committee
- 2015 - present:** Treasurer of the Heritage Association of Southern Africa (HASA)
2013 - present: Member of the South African Museums Association (SAMA)
2012 - present: Member of the Vernacular Architecture Society of South Africa (VASSA)
2008 - present: CRM accredited member of ASAPA: accreditation in Rock Art, Coastal Shell Middens, Stone Age Archaeology and Grave Relocation

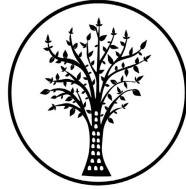
SELECTED PUBLICATIONS:

- Smuts, K., Mlungwana, N And Wiltshire, N. In press. Sahris: South Africa's web-based, integrated Heritage Management System. *Journal of Cultural Heritage Management And Sustainable Development*, 2016. United Kingdom: Emerald Group Publishing.
- Smuts, K. In press. SAHRIS: using the South African Heritage Register to report, track and monitor heritage crime. *ISPRS Annals of the Annual CIPA Congress*. 2015. Taipei: International Archives of the Photogrammetry, Remote Sensing and Spatial Information
- Smuts, K. In press. SAHRIS as a Tool for Reporting, Tracking and Managing Cases of Heritage Crime in South Africa. *South African Museums Association Bulletin*. 2015. Johannesburg: South African Museums Association.
- Smuts, K. and Wiltshire, N. 2016. Heritage Management and the World Wide Web: South African Challenges. In Sadr, K., Esterhuysen, A. and Sievers, C. (eds). *African Archaeology without Frontiers: Papers from the 2014 PanAfrican Archaeological Association Congress*. Johannesburg: Wits University Press, pp. 165-177.
- Smuts, K. 2012: An Archaeology of the Eighteenth and Nineteenth Century Cape Wine Economy from the Perspective of Solms Delta and Babylonstoren. UCT: unpublished MPhil dissertation.
- Smuts, K. 2008: A Troy in Miniature: excavations at Butrint, Albania. *The Digging Stick* 25(2): 59. Johannesburg: Wits University Press.
- Smuts, K. 1999: Painting People: an analysis of the depiction of human figures in a sample of procession and group scenes from the rock art of the South Western Cape, South Africa. UCT: unpublished BA Honours thesis.

REFERENCES

1. Executive Officer, SAHRA
Mr Dumisani Sibayi
Tel: 021 462 4502
Email: dsibayi@sahra.org.za
2. Deputy Director, Heritage Western Cape
Mrs Colette Scheermeyer
Tel: 021 483 9682

CTS Heritage



CTS HERITAGE

Email: colette.scheermeyer@westerncape.gov.za

3. Director of ACO Associates

Mr Tim Hart

Tel: 021 706 4104

Email: tim.hart@acoassociates.com

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CEDAR TOWER
SERVICES

CURRICULUM VITAE



Jenna Lavin

Tel: 083 619 0854 (c); 013 0131 (w)
E-mail address: jenna.lavin@cedartower.co.za
ID number: 8512050014089

EDUCATION:

Tertiary

- 2014 - M.Phil in Conservation of the Built Environment (University of Cape Town)
Ongoing - expected to graduate in 2015
- 2011 Continued Professional Development Course in Urban Conservation Management (University of Cape Town) Part I and Part II
- 2010 M.Sc. with Distinction in Archaeology (University of Cape Town)
Title: *Palaeoecology of the KBS member of the Koobi Fora Formation: Implications for Pleistocene Hominin Behaviour.*
- 2007 B.Sc. Honours in Archaeology (University of Cape Town)
Title: *The Lost Tribes of the Peninsula: An Investigation into the historical distribution of Chacma baboons (*Papio ursinus*) at the Cape Peninsula, South Africa.*
Koobi Fora Field School, Rutgers University (U.S.A.)/ National Museums of Kenya
- 2006 B.Sc. Archaeology (University of Cape Town)
B.Sc. Environmental and Geographic Science (University of Cape Town)

Secondary

- 1999-2003 Rustenburg High School for Girls
Firsts in English, Afrikaans, Mathematics HG, Biology HG, History HG, Entrepreneurship.



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EMPLOYMENT HISTORY:

PROFESSIONAL DEVELOPMENT

Environmental and Heritage Management:

- Head of Heritage Operations for Heritage CTS Consultants and member of OpenHeritage NPC.
July 2016 to present
- Assistant Director for Policy, Research and Planning at Heritage Western Cape.
August 2014 to June 2016

Responsibilities include drafting of new heritage related policy, the grading and declaration of Provincial Heritage Sites, the development of Conservation Management Plans, facilitating the development of inventories of heritage resources through local authorities as well as managing the development of the Western Cape's Heritage Information Management System (HIMS).

Acting Deputy Director from April to December 2015.

- Heritage Officer for Palaeontology and for the Mpumalanga Province at the South African Heritage Resources Agency (SAHRA).
January 2013 to June 2014

Responsibilities include dealing with palaeontological permit applications in terms of Section 35 of the NHRA and development applications in terms of Section 38 of the NHRA. Projects included the development of a National Palaeotechnic Report identifying significant palaeontological deposits throughout SA, as well as developing professional relationships between SAHRA and the Palaeontological Society of South Africa (PSSA) and the Geological Society of South Africa (GSSA). During this time, I was part of the team that developed the digitised National Palaeontological Sensitivity Map (<http://www.sahra.org.za/about/news/nov2013/palaeosensitivitymap>), the first of its kind in the world.

- Heritage Officer for Archaeology, Palaeontology and Meteorites at Heritage Western Cape (HWC).
September 2010 to December 2012

HWC is a Public Entity that forms part of the Heritage Resource Management Component of the Provincial Governments' Department of Cultural Affairs and Sport (DCAS). Projects included the declaration of Pinnacle Point and the West Coast Fossil Park as Provincial Heritage Sites (PHS), the management of the development of the Baboon Point PHS Conservation Management Plan as well as an educational outreach program as part of the DCAS MOD Centre Project.



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- Heritage Officer for the Archaeology, Palaeontology and Meteorites Unit of the South African Heritage Resources Agency (SAHRA) as part of a three month contract.
January 2010 to March 2010
- Environmental Control Officer, Amathemba Environmental Management Consulting
Part time: 2007 to 2009

Other

My private experience as a traveler in South Africa, Tanzania, Kenya, Namibia, Zambia, Malawi and Mozambique has inspired a passion for the conservation of environmental and heritage resources. I am passionate about sustainable living, with my Bachelor of Science in Environmental and Geographical Science providing a framework on which to base my values.

With a friend, I established the fundraising initiative, Chicks4Change, through which we managed to organize a number of successful events and raise R40 000 for Project Rhino to assist with anti-poaching initiatives.

In 2013 I was asked to join the panel of judges for the Ministerial awards for Heritage in the Western Cape. From 2013 to July 2014, I was a member of the Heritage Western Cape Archaeology, Palaeontology and Meteorites Committee. In July 2014, I presented at the Conference for the Palaeontological Society of South Africa on the use of GIS in the management of palaeontological resources in the face of increased development pressures. In April 2015 I participated in a conference on Landscape Archaeology hosted by the Leakey Foundation in San Fransisco, presenting on the management of archaeological landscapes in South Africa. In April 2016, I presented at the ICAHM Conference in Salalah, Oman on the management of archaeological heritage in South Africa.

In November 2013, I was awarded a bursary from the Department of Arts and Culture to complete the Masters in Philosophy in Conservation of the Built Environment through the UCT Faculty of Engineering and the Built Environment in 2014 and 2015.

I am a paid up member of the Association for Southern African Professional Archaeologists (ASAPA), the Association of Professional Heritage Practitioners (APHP), the Palaeontological Society of South Africa (PSSA) and ICOMOS South Africa, for which I am Vice-President of the Board. I am also a member of the International Committee for Archaeological Heritage Management (ICAHM).



CEDAR TOWER
SERVICES

CURRICULUM VITAE



KYLA BLUFF

Tel: 076 650 9814(c); 021 685 1824 (w)
E-mail address: kyla.bluff@openheritage.org.za

EDUCATION:

- **B.Soc.Sc. (Honours), Archeology** - University of Cape Town (2010)
- **B.Soc.Sc., Archeology, Religious Studies** - University of Cape Town (2008)

Current Studies: M.Sc., Archeology - University of Cape Town (2013-present)

EMPLOYMENT HISTORY:

June 2014 – present : **Cedar Tower Services**
Position : **Cape Town, South Africa**
Responsibilities : **Associate**

- Sales and Communication
- Compilation of Heritage Screeners
- Heritage Consulting and Research
- Software Training and Support
- Systems Administration
- Data Capturing and Documentation of Archaeological sites and Artefacts
- General Business Development
- Oversight and Management of Interns at CTS



CEDAR TOWER
SERVICES

April 2015 - present : **OpenHeritage**
Cape Town, South Africa
Position : **Director**
Responsibilities :

- Fundraising
- Digitisation and moderation of heritage records
- Training in newly developed systems
- Communications

February 2013 - May 2014 : **The Bluffs Property Consultants**
Position : **Administrator**
Responsibilities :

- Marketing
- Rental Administration
- Show-house sitting

SPECIFIC ARCHEOLOGICAL EXPERIENCE:

Archaeological Surveys:

- 2014-present: Numerous surveys with eCRAG (eastern Cederberg Rock Art Group) to locate, record and digitise rock art and artefact sites
- 2010-2011: Numerous surveys of paleontological, archaeological and historical sites with the ACO, including: identification of survey zones on the landscape; identification of specific archaeological sites; recording of sites and artefacts

Excavations:

- Mar and Oct 2014: Mertenhof, seasons 3 and 4, Alex Mackay
- Feb and Oct 2013: Mertenhof, seasons 1 and 2, Alex Mackay
- Aug and Oct 2012: Klipfonteinrand, season 4/5, Alex Mackay
- May 2012: Klipfonteinrand, season 3, Alex Mackay
- April 2012: Bree Street historical excavation, Katie Smuts
- June 2011: Bethlehem Farm excavation, Hugo Pinto
- Oct 2011: Klipfonteinrand, season 2, Alex Mackay
- May 2011: Solms Delta Wine Estate historical excavation, Hugo Pinto
- April 2011: De Meule historical excavation, ACO
- Mar-Apr 2011: Klipfonteinrand, season 1, Alex Mackay
- Jan 2011: Putslaagte, Alex Mackay



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SERVICES

- Nov 2010 and May 2011: Pinnacle Point (volunteer), Curtis Marean
- Mar-May 2010: MCRM project, Charles Arthur
- Jan 2009: Elandsfontein Archaeology Field School, David Braun
- Jan 2009: UCT Middle Campus tennis court historical excavation, ACO
- June 2008: Hollow Rock Shelter, Lars Larsson

Post-Excavation Analysis:

- Sorting and analysis of finds
 - Recording and interpretation of sediments and excavation
 - Data-basing records and information, including artefacts and residues
-

OTHER EXPERIENCE:

- **January 2009 - 2011:** Field Assistant & Intern; UCT Archaeology Contracts Office
 - **2013-2014:** Excavation, general site management, data capture & analysis of artefacts and residues; Mertenhof Rock Shelter, Alex Mackay
 - **2011-2012:** Excavation, general site management, data capture & analysis of artefacts and residues; Klipfonteinrand Rock Shelter, Alex Mackay
 - **Apr 2012:** 22 Bree Street: pre-development excavations of 19th century site, Katie Smuts
 - **Jan 2012:** SAHRA Maritime and Underwater Cultural Heritage Field School
 - **Jun 2011:** Structural analysis & excavation: Bethlehem Farm, Pniel, Hugo Pinto
 - **May 2011:** Historical excavations of 17th century foundations: Solms Delta Wine Estate, Hugo Pinto
 - **Apr 2011:** Pre-renovation excavations: The Old Miller's House, De Meule, Tim Hart, Archaeology Contracts Office
 - **2010-2011:** Research supervisor & educator of heritage management & archaeology for the Clanwilliam Living Landscape Project (CLLP); John Parkington and National Heritage Council
 - **Aug 2010-Feb 2011:** Photographer, producer and seller of photos, Happy Snappy Photo Company - Table Mountain
 - **Mar-May 2010:** Archaeological Assistant, Excavator and Finds Manager; Metolong Cultural Resource Management (MCRM) Project; Prof. Peter Mitchell and Charles Arthur, Lesotho
 - **Feb 2010:** Qualified SA Host tour guide
 - **2009-2010:** Founding member and events coordinator of the Archaeological & Geographical Expeditionary Society (UCT)
 - **Jan 2009:** Historical excavation: UCT Middle Campus tennis court, Tim Hart, Archaeology Contracts Office
 - **2007-2009:** Photography Teacher, Wynberg Girls' High School
-



CEDAR TOWER
SERVICES

REFERENCES:

Nic Wiltshire

Director, Cedar Tower Services
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nic.wiltshire@cedartower.co.za

Alex Mackay

Senior Field Archaeologist - Putslaagte, Klipfonteinrand and Mertenhof excavations
mackay.ac@gmail.com

John Parkington

Professor Emeritus - UCT, Employer of CLLP project
+27 79 872 4807
john.parkington@uct.ac.za

Katie Smuts

Heritage Officer: Archaeology, Paleontology and Meteorites Unit - SAHRA
+27 72 7967754
katiesmuts@yahoo.co.uk

Cheryl Bluff

Owner & Sales Associate - The Bluff's Property Consultants
+27 (21) 762 5628
+27 83 2615001
cheryl@thebluffs.co.za

Curtis Marean

Senior Field Archaeologist - Pinnacle Point excavations
+27 76 890 6153
curtis.marean@asu.edu

Tim Hart

Principal Investigator - UCT Archaeology Contracts Office
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Personal Details

Residential Address

Dr. Foreman Bandama
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 Plumstead 7800
 Cape Town, South Africa

Postal Address

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 Upper Campus, Beattie Building
 University of Cape Town
 Private Bag 7701 Rondebosch
 Cape Town, South Africa

Title	Dr	Surname	Bandama	First name	Foreman
Citizenship	Zimbabwean	Passport #	BN718525	Date of Birth	08-04-1984
Gender	Male	Marital Status	Married	Religion	Christianity
Contacts	Email: fbandama@yahoo.co.uk Alternative email: fbandama@gmail.com			Tel: +27 11 029 2555	Mobile: +27 82 404 6592
Driver's License	Code B, South Africa				
Qualifications	Ph.D. (Archaeology) (2013) [University of Cape Town] B.A. Honours (Archaeology) (2008) & B.A. General (Archaeology, Economic History & Geography) (2007) [University of Zimbabwe].				

Languages (Scale of 1-5: 1= excellent, 5 = poor)

Language	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
xiTsonga	Excellent	Excellent	Excellent
Shona	Excellent	Excellent	Excellent
isiXhosa/Zulu/Ndebele/Sotho/Tswana/Venda	Fair	Fair	Fair

Computer literacy

ACTIVITY	PROGRAMMES
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Processing & Presentation	Microsoft Word, Excel, PowerPoint & Access
Image design & Manipulation	Adobe Photoshop & Illustrator
Mapping	Quantum GIS, TakGIS and basic ArcView GIS
Statistics	Statistica, Stata & Sigma Plot

Professional training

Archaeological contract skills:	Siyathembana 293 Pty
Scanning Electron Microscopy:	University of Cape Town (UCT)
Optical Microscopy:	University of Cape Town
X-Ray Fluorescence Spectroscopy:	University of Cape Town
Archaeological fieldwork & interviews:	University of Zimbabwe & UCT
Ethnography & oral history:	University of Cape Town
Teaching skills:	University of Zimbabwe & UCT
Curatorial skills:	University of Zimbabwe

Cultural Resource Management (CRM) experience

2016 Revised Phase 1 Heritage Impact Assessment for Afrimat Aggregates Trading (Pty) Ltd's proposed for Sand Mining on Remainder of Portion 8, Modder River Farm 499, Worcester, Western Cape.

- Desktop research (100% responsibility)
- Fieldwork (100% responsibility)
- Mapping (100% responsibility)
- Report write-up (100% responsibility)

2015a A Phase 1 Heritage Impact Assessment for Afrimat Aggregates Trading (Pty) Ltd's proposed for Mining Right and Water Use License application for the existing GaMohaam Quarry, near Kuruman, Northern Cape.

- Desktop research (100% responsibility)

- Fieldwork (100% responsibility)
- Mapping (100% responsibility)
- Report write-up (100% responsibility)

2015b A Phase 1 Heritage Impact Assessment for the Transnet Engineering's proposed Koedoespoort Landfill Site in Silverton, Pretoria East.

- Desktop research (100% responsibility)
- Fieldwork (100% responsibility)
- Mapping (100% responsibility)
- Report write-up (100% responsibility)

2015c Mitigation of archaeological sites to be impacted by the consolidation of existing activities at Venetia Diamond Mine, near Alldays, Musina, Limpopo Province (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2014 Archaeological Impact Assessment of the proposed Krone-Endora Diamond Mine (Mining Rights Applications 11011MR & 10017MR) on portions of farms Krone 104MS and Endora 66MS near Alldays, Musina, Limpopo Province (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2014 The Integrated Management Plan for the Royal Bafokeng Archaeological Heritage Sites (South Africa)

- Desktop research (100% responsibility)

- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2013 A survey of archaeological resources in the Royal Bafokeng Nation Land (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2012-2013a A Phase 1 Archaeological Impact Assessment for the Gamma (Victoria West, Northern Cape) - Kappa (Ceres – Western Cape) 765Kv (2) Eskom power transmission line (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2012-2013b A Phase 1 Archaeological Impact Assessment for the proposed Kappa – Omega 765Kv Eskom power transmission line (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

2011 Kaditshwene Integrated Management Plan for SAHRA (South Africa).

- Desktop research (100% responsibility)
- Fieldwork (50% responsibility)
- Mapping (100% responsibility)
- Report write-up (50% responsibility)

Teaching experience

CO-LECTURER: Department of Archaeology, University of Cape Town.

CANDIDATE INFO	COURSE/MODULE & RESPONSIBILITIES
7 years in this course. (Qualifications: Ph.D. Archaeology since 2013, BA Honours Archaeology since 2008).	The roots of black identity in South Africa (AGE3011F) (3 rd year Archaeology) <ul style="list-style-type: none"> ➤ 16 class lectures in 2016 ➤ 12 class lectures in 2015 ➤ 14 class lectures in 2013 ➤ 12 class lectures in 2012 ➤ 12 class lectures in 2011 ➤ 4 class lectures in 2010 ➤ Preparing course outline and reading list ➤ Developing content for lectures and practicals

LECTURER & COURSE CONVENER: Department of Archaeology, University of Cape Town.

CANDIDATE INFO	COURSE/MODULE & RESPONSIBILITIES
4 years in this course. (Qualifications: Ph.D. Archaeology since 2013, B.A. Honours Archaeology since 2008).	The roots of black identity in South Africa (AGE3011F) (3 rd year Archaeology) <ul style="list-style-type: none"> ➤ 52 class lectures in 2014 ➤ Preparing course outline and reading list ➤ Developing content for lectures and practicals ➤ Developing and marking the class assignments, tests and the final examinations

TEACHING ASSISTANT: Department of Archaeology, University of Cape Town.

CANDIDATE INFO	COURSE/MODULE & RESPONSIBILITIES
4 years in this course. (Qualifications: Ph.D. Candidate, B.A. Honours Archaeology since 2008).	The roots of black identity in South Africa (AGE3011F) (3 rd year Archaeology) <ul style="list-style-type: none"> ➤ 15 practical sessions in 2013 ➤ 15 practical sessions in 2012 ➤ 10 practical sessions in 2011 ➤ 10 practical sessions in 2010 ➤ Developing content for practicals

	<ul style="list-style-type: none"> ➤ Developing and marking the practical assignments and tests.
2 years in this course. (Qualifications: Ph.D. Candidate, B.A. Honours Archaeology since 2008).	Africa and World Archaeology (AGE1002S) (1 st year Archaeology) <ul style="list-style-type: none"> ➤ 10 Practical sessions in 2010 ➤ 10 Practical sessions in 2009 ➤ Developing content for practicals ➤ Developing and marking the practical assignments and tests.
1 year in this course. (Qualifications: Ph.D. Candidate, B.A. Honours Archaeology since 2008).	Heritage Management Module for BSc Honours in Archaeology (AGE400W) <ul style="list-style-type: none"> ➤ 5 class practical sessions and 1 fieldwork session in 2009 ➤ Developing content for practicals ➤ Developing and marking the practical assignments and tests.

TEACHING ASSISTANT: Department of Geological Sciences, University of Cape Town.

CANDIDATE INFO	COURSE/MODULE & RESPONSIBILITIES
3 years in this course. (Qualifications: Ph.D. Archaeology since 2013, B.A. Honours Archaeology since 2008).	Introduction to earth and environmental sciences (GEO1009F) (1 st year Geology) <ul style="list-style-type: none"> ➤ 6 class practical and 2 fieldwork sessions in 2014 ➤ 6 class practical and 2 fieldwork sessions in 2013 ➤ 6 class practical and 2 fieldwork sessions in 2012 ➤ Developing content for practicals ➤ Developing and marking the practical assignments and tests.

TEACHING ASSISTANT: Department of History, University of Zimbabwe.

CANDIDATE INFO	COURSE/MODULE & RESPONSIBILITIES
1 years in this course. (Qualifications: B.A. Honours Archaeology since 2008, B.A. General).	Introduction to Archaeological Theory II (ARC2030) (2 nd year Archaeology) <ul style="list-style-type: none"> ➤ 10 class practical sessions in 2009 ➤ 5 class practical sessions in 2008 ➤ Developing content for practicals ➤ Developing and marking the practical assignments and tests.

INVITED LECTURESHIPS

CANDIDATE INFO	COURSE/MODULE & INSTITUTION
(Qualifications: Ph.D. Candidate, B.A. Honours Archaeology since 2008).	BA in Education, School of Mathematics and Science, University of Western Cape (3 rd year Education). (1 double lecture in 2013).
	Stratigraphy and Economic Geology (GEO2001S) (3 rd year Geology), Department of Geological Sciences, University of Cape Town. (2 lectures in 2012)

Other administrative/work experiences

INFORMATION MANAGER: Siyathembana Trading 293 Pty
(01/05/2009-31/09/2015)

CANDIDATE INFO	RESPONSIBILITIES & OUTPUT
6 years in this position. (Qualifications: Ph.D. Archaeology (2013), B.A. Honours Archaeology (2008) and B.A. General (2007).	Responsible for fieldwork, mapping, graphic designing, research and report write-ups of archaeological and heritage impact assessment services.

HERITAGE MANAGER: Siyathembana Trading 293 Pty (01/10/2015-Present)

CANDIDATE INFO	RESPONSIBILITIES & OUTPUT
6 years in this position. Qualifications: Ph.D. Archaeology (2013), B.A. Honours Archaeology (2008) and B.A. General (2007).	Responsible for research, heritage and archeology impact assessments, inventorying, curation, management, restoration and rehabilitation of heritage resources.

NRF POST-DOCTORAL RESEARCH FELLOW: University of Cape Town

CANDIDATE INFO	RESPONSIBILITIES & OUTPUT
3 years in this position. (Qualifications: Ph.D. Archaeology since 2013, B.A. Honours	<ul style="list-style-type: none"> ➤ Produced 7 research articles in high impact journals (2014-2016). ➤ Developed content for grant applications for my principal investigator. ➤ Carried out field work (excavations and surveys) at two World Heritage Sites (Great Zimbabwe and Khami) and several other

Archaeology since 2008, B.A. General since 2007).	<p>sites related to social complexity in Zimbabwe and South Africa.</p> <ul style="list-style-type: none"> ➤ Mapped the site of Mapela and re-mapped the World Heritage Sites of Great Zimbabwe and Khami. ➤ Mentored 5 BSc. Honours and 2 MSc. Archaeology students who have already graduated. ➤ Currently mentoring (2 PhD. and 1 MSc.) and co-supervising (1 MSc.) Archaeology students.
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SEMINAR CONVENER: Department of Archaeology, University of Cape Town

CANDIDATE INFO	RESPONSIBILITIES & OUTPUT
<p>1 year in this position. (Qualifications: Ph.D. Archaeology since 2013, B.A. Honours Archaeology since 2008, B.A. General since 2007).</p>	<ul style="list-style-type: none"> ➤ Organised Archaeology Departmental Seminars in 2015 ➤ Chaired and moderated sessions. ➤ Scouted and invited speakers from all over the world, leading to the successful hosting of 2 colleagues from the University of California Davies (USA), 1 from the University of Toronto (Canada), 1 from the University of Oslo (Norway), 1 from Dar es Salaam (Tanzania) and 1 from Kyambogo University (Uganda). I also gave PhD (3) and MSc (4) students the opportunity to deliver seminars, along with a several other colleagues from the within South Africa. ➤ Advertising seminars and inviting university audience.

Publications 1: Journal papers

Fredriksen, P.D. and **Bandama, F.** 2016. The mobility of memory: space/knowledge dynamics in rural potting workshops in Limpopo Province, South Africa. *Azania: Archaeological Research in Africa*. (Now available online) DOI: 10.1080/0067270X.2016.1220056

Bandama, F., Moffett, A.J., Thondhlana, T.P. and Chirikure, S. 2016. The production,

distribution and consumption of metals and alloys at Great Zimbabwe. *Achaeometry* (Now available online) DOI: 10.1111/arc.12248.

Chirikure, S., **Bandama, F.**, House, M., Moffett, A., Mukwende, T. and Pollard, A.M. 2016. Decisive evidence for multi-directional evolution of socio-political complexity in southern Africa. *African Archaeological Review* 33 (1): 75-95.

Chirikure, S., **Bandama, F.**, Chipunza, K., Mahachi, G., Matenga, E., Mupira, P. and Ngoro, W. 2016. Seen but Not Told: Re-mapping Great Zimbabwe Using Archival Data, Satellite Imagery and Geographical Information Systems. *Journal of Archaeological Method Theory*: 1-25 (Now available online) DOI 10.1007/s10816-016-9275-1.

Mathoho, E.N., **Bandama, F.** and Chirikure, S. 2016. A technological and anthropological study of iron production in Venda, Limpopo Province, South Africa. *Azania: Archaeological Research in Africa* 51 (2): 1-23.

Bandama, F. Hall, S. and Chirikure, S. 2015. Eiland crucibles and the earliest relative dating for tin and bronze working in southern Africa. *Journal of Archaeological Science* 62: 82-91.

Chirikure, S., Manyanga, M., Pollard, A.M., **Bandama, F.**, and Mahachi, G. and Pikirayi, I. 2014. Zimbabwe Culture before Mapungubwe: New Evidence from Mapela Hill, South-Western Zimbabwe. *Plosone* 9 (10): 1-18.

Chirikure, S. and **Bandama, F.** 2014. Indigenous African Furnace Types and Slag Composition—Is there a Correlation? *Archaeometry* 56 (2): 296–312.

Bandama, F. Chirikure, S. and Hall, S. 2013. Ores sources, smelters and archaeometallurgy: exploring Iron Age metal production in the Southern Waterberg.

Journal of African Archaeology 11 (2): 243–267.

Chirikure, S., Pollard, M., Manyanga, M. and **Bandama, F.** 2013. A Bayesian chronology for Great Zimbabwe: re-threading the sequence of a vandalised monument. *Antiquity* 87: 1-19.

Publications 2: Book chapters

Bandama, F. 2013. A reappraisal of Stone Age hunter gatherer research in Zimbabwe with a special focus on the later periods in eastern Zimbabwe. Manyanga, M. and Katsamudanga, S. *Zimbabwean archaeology in the post independence era*. Harare: SAPESS TRUST: 17-36.

Chirikure, S., Thondhlana, T. and **Bandama, F.** 2013. Archaeometallurgical studies: overview and recent approaches. Manyanga, M and Katsamudanga, S. *Zimbabwean archaeology in the post independence era*. Harare: SAPESS TRUST: 143-158.

Grants and awards

2016: National Research Foundation (NRF) Post-Doctoral Research Fellowship
2015: National Research Foundation (NRF) Post-Doctoral Research Fellowship
2014: National Research Foundation (NRF) Post-Doctoral Research Fellowship
2013: Wenner Gren, Wadsworth African Fellowship for dissertation write-up
2012: Wenner Gren, Wadsworth African Fellowship for Ph.D. study
2012: University of Cape Town International Scholarship for Ph.D. study
2011: Wenner Gren, Wadsworth African Fellowship for Ph.D. study
2011: University of Cape Town International Scholarship for Ph.D. study
2010: First prize for student poster award at the Joint PANAF-SAFA conference in Dakar, Senegal
2010: University of Cape Town Conference Travel Grant
2010: Wenner Gren, Wadsworth African Fellowship for Ph.D. study
2010: University of Cape Town International Scholarship for Ph.D. study
2009: National Research Foundation Grandholder linked bursary for MSc study

Conference presentations

Bandama, F. 2016. Iron fabrication during the *Age* of tin and bronze in the southern Waterberg. Paper presented at the SAFA Conference held in Toulouse, France.

Bandama, F. 2015. Metal is king; and forks and spoons are a solution to hunger. Separating activity from achievement in the production and consumption of metals at Great Zimbabwe. Paper presented at the ASAPA Conference held in Harare, Zimbabwe.

Bandama, F. 2014a. From bloom to bangle: The fabrication and consumption of iron in the southern Waterberg during the Late Iron Age. Paper presented at the joint PANAF-SAFA Conference held in Johannesburg, South Africa.

Mohapi, M., **Bandama, F.**, Mathoho, E. and Chirikure, S. **2014a.** The archaeological survey of the Royal Bafokeng Nation land, Rustenburg, North West Province. Paper presented at the joint PANAF-SAFA Conference held in Johannesburg, South Africa.

Bandama, F. 2013a: The innovation of tin and bronze production in southern Africa: Findings from Rhenosterkloof 3 in the Southern Waterberg. Paper presented at the ASAPA Conference held at the University of Botswana, Botswana.

Bandama, F. 2013b: Indigenous copper smelting as a vehicle for teaching science and technology in Africa. Paper presented at the 21st Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education held at the University of Western Cape, South Africa.

Bandama, F. 2012: The archaeology of pre-colonial tin and bronze working in southern Africa. Paper presented at the Ninth International Mining History Conference held in Johannesburg, South Africa.

Bandama, F. 2011a: Southern African metallurgy and global network connections. Paper presented at the African Archaeological Materials Research Workshop held at the University of Cape Town, South Africa.

Bandama, F. 2011b: An exploratory study of metal working in the Late Iron Age of the

Sand River valley, Southern Waterberg. **Paper presented at the ASAPA Conference in Swaziland.**

Bandama, F. 2010a: Metal working in the Sand River valley of the Southern Waterberg, Limpopo Province. Preliminary findings from Rhenosterkloof 1 and 2. **Paper presented at the joint PANAFA-SAFA Conference in Dakar, Senegal.**

Bandama, F. 2010b: Indigenous iron production in South Africa: An archaeometallurgical investigation of metal working at Rhenosterkloof 1, Limpopo Province, South Africa. **Poster presented at the joint PANAFA-SAFA Conference in Dakar, Senegal (won the first prize).**

Bandama, F. 2009a: Indigenous iron production in South Africa: The case of Rhenosterkloof. **Poster presented on the University of Cape Town Postgraduate Science Faculty Symposium, South Africa.**

Bandama, F. 2009b: The Character of Later Stone Age assemblages from eastern Zimbabwe: some insights from Gwenzi, Manjowe, Manjowe 1 and Diana's Vow. **A paper presentation at the Zimbabwean Prehistory Society in Harare, Zimbabwe.**

Selected research and fieldwork

2016 Archaeological excavations at Mapela and Great Zimbabwe, Zimbabwe. **In collaboration with Prof S. Chirikure (University of Cape Town), P. Fredriksen (University of Oslo) and the National Museums and Monuments of Zimbabwe.**

- Responsible for mapping of terraces and excavation areas at Mapela
- Responsible for mapping and integrating new stone walls not found in the published literature about Great Zimbabwe.
- Responsible for supervising the field accessioning and sorting of artefacts.
- Manuscripts being prepared for journal publications based on this work

2015 Ethnographic surveys and documentation of indigenous potting amongst the Tsonga, Sotho and Venda of northern South Africa. **In collaboration with Dr P.**

Fredriksen (University of Oslo).

- Responsible for local knowledge and language interpretation.
- Responsible for mapping of potting locales, clay sources and homesteads.
- Journal article on this work has already been published in the *Azania: Researches in Africa's* Special issue on Mobility.

2014a Archaeological excavations at Khami and Little Mapela, Zimbabwe. **In collaboration with Prof S. Chirikure (University of Cape Town), P. Fredriksen (University of Oslo) and the National Museums and Monuments of Zimbabwe.**

- Responsible for mapping the two sites (maps found in the MSc and Ph.D. dissertations for respective students).
- Responsible for supervising the field accessioning and sorting of artefacts.
- Publications being prepared for journal submissions.

2014b Archaeological excavations at Great Zimbabwe. **In collaboration with Prof S. Chirikure (University of Cape Town) and Dr Mahachi, G. and Mupira, P. (National Museums and Monuments of Zimbabwe).**

- Responsible for supervising the field accessioning and sorting of artefacts.
- Responsible for field training of honours and masters on the use of the Portable X-ray Fluorescence machine.
- Publication (Bandama et al. 2016: refer to Publications 1 of this CV).

2013a Archaeological surveys of the Royal Bafokeng Nation Land, North West province South Africa. **In collaboration with Prof S. Chirikure (University of Cape Town).**

- Responsible for desktop mapping of the stone walled sites
- Responsible for training an honours student (graduated in 2014) on field methods and site interpretation for her dissertation.

2013b Archaeological excavations at Mapela, an early 2nd Millennium AD site in the Shashe-Limpopo, Zimbabwe. **In collaboration with Prof S. Chirikure and Dr M.**

Manyanga (Midlands State University).

- Responsible for mapping the site (maps found in the Honours dissertation for the students and in the subsequent publication: see Chirikure et al. 2014).
- Responsible for supervising the field accessioning and sorting of artefacts.

2013c Documentation and auditing of archaeological material excavated from the valley enclosures at Great Zimbabwe. **In collaboration with Prof S. Chirikure.**

- Responsible for desktop mapping of the site based on archival maps and satellite imagery.
- Responsible for field training of honours and masters on the use of the Portable X-ray Fluorescence machine.
- Publications on this work already out (see Chirikure et al 2016 and Bandama et al 2016, in Publications 1 of this CV).

2011 Archaeological excavations at Rhenosterkloof 2, Rhenosterkloof 3 and Tembi 1 in the Southern Waterberg, Limpopo Province of South Africa. **Principal investigator.**

- Conducted pre-field research on the sites.
- Supervised and directed field personnel on reconnaissance and excavations at the three sites.
- Taught field students in archaeological field techniques.

2010 Archaeological surveys in the Southern Waterberg, Limpopo Province of South Africa. **Principal investigator.**

- Conducted pre-field research on the sites.
- Supervised and directed field personnel on reconnaissance and surveys.
- Taught field students in archaeological field techniques.

2009 Archaeological excavations at Rhenosterkloof 1 in Southern Waterberg, Limpopo Province of South Africa. **Principal investigator.**

- Conducted pre-field research on the sites.

- Supervised and directed field personnel on reconnaissance and excavations at the three sites.
- Taught field students in archaeological field techniques.

Professional associations

2010-present: Society of Africanist Archaeologists (SAFA)

2012-present: Association of Southern African Professional Archaeologists (ASAPA)

Referees

1. Professor Judith Sealy

Professor and NRF Chair

Department of Archaeology

University of Cape Town

Upper Campus, Beattie Building

P. Bag 7701, Rondebosch

Cape Town, South Africa

Judith.sealy@uct.ac.za

2. Associate Professor Shadreck Chirikure

Associate Professor and Lecturer

Department of Archaeology

University of Cape Town

Upper Campus, Beattie Building

P. Bag 7701, Rondebosch

Cape Town, South Africa

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3. Associate Professor Simon Hall

Associate Professor and Head of Department

University of Cape Town

Upper Campus, Beattie Building

P. Bag 7701, Rondebosch

Cape Town

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Simon.hall@uct.ac.za

CURRICULUM VITAE

ELIZE BUTLER

PROFESSION: Palaeontologist

YEARS' EXPERIENCE: 23 years in Palaeontology

EDUCATION: B.Sc Botany and Zoology, 1988
University of the Orange Free State

B.Sc (Hons) Zoology, 1991
University of the Orange Free State

Management Course, 1991
University of the Orange Free State

M. Sc. *Cum laude* (Zoology), 2009
University of the Free State

Dissertation title: THE POSTCRANIAL SKELETON OF THE EARLY TRIASSIC
NON-MAMMALIAN CYNODONT *GALESAURUS PLANICEPS*: IMPLICATIONS
FOR BIOLOGY AND LIFESTYLE

Registered as a PhD fellow at the Zoology Department of the UFS

2013 to current

Dissertation title: A NEW GORGONOPSID FROM THE UPPERMOST
DAPTOCEPHALUS ASSEMBLAGE ZONE, KAROO BASIN OF
SOUTH AFRICA

MEMBERSHIP

Palaeontological Society of South Africa (PSSA)

2006-currently

EMPLOYMENT HISTORY

Part time Laboratory assistant

Department of Zoology &
Entomology University of the Free
State Zoology 1989-1992

Part time laboratory assistant

Department of Virology

University of the Free State Zoology
1992

6. **PAI site visit and report:** Palaeontological impact assessment of the proposed Orange Grove 3500 residential development, Buffalo City Metropolitan Municipality East London, Eastern Cape. 2015.
7. **PAI site visit and report:** Palaeontological Impact Assessment of the proposed Gonubie residential development, Buffalo City Metropolitan Municipality East London, Eastern Cape Province. 2015.
8. **PAI site visit and report:** Palaeontological Impact Assessment of the proposed Ficksburg raw water pipeline. 2015
9. **PAI site visit and report:** Palaeontological Heritage Impact Assessment report on the establishment of the 65 mw Majuba Solar Photovoltaic facility and associated infrastructure on portion 1, 2 and 6 of the farm Witkoppies 81 HS, Mpumalanga Province. 2015.
10. **PAI site visit and report:** Palaeontological Impact Assessment of the proposed township establishment on the remainder of portion 6 and 7 of the farm Sunnyside 2620, Bloemfontein, Mangaung metropolitan municipality, Free State, Bloemfontein. 2015.
11. **PIA desktop:** Palaeontological Impact Assessment of the proposed Woodhouse photovoltaic solar energy facilities and associated infrastructure on the farm Woodhouse 729, near Vryburg, North West Province. 2015.
12. **PIA desktop:** Palaeontological Impact Assessment of the proposed Orkney solar energy farm and associated infrastructure on the remaining extent of Portions 7 and 21 of the farm Wolvehuis 114, near Orkney, North West Province. 2015.
13. **PIA desktop:** Palaeontological Impact Assessment of the proposed Spectra foods broiler houses and abattoir on the farm Maiden Manor 170 and Ashby

Manor 171, Lukhanji Municipality, Queenstown, Eastern Cape Province.
2015.

14. **PIA desktop:** Palaeontological Impact Assessment of the proposed construction of the 150 MW Noupoort concentrated solar power facility and associated infrastructure on portion 1 and 4 of the farm Carolus Poort 167 and the remainder of Farm 207, near Noupoort, Northern Cape. Prepared for Savannah Environmental.
15. **PIA site visit and report:** Palaeontological Impact Assessment of the proposed Woodhouse 1 Photovoltaic Solar Energy facility and associated infrastructure on the farm Woodhouse 729, near Vryburg, North West Province. 2015.
16. **PIA site visit and report:** Palaeontological Impact Assessment of the proposed Woodhouse 2 Photovoltaic Solar Energy facility and associated infrastructure on the farm Woodhouse 729, near Vryburg, North West Province. 2015
17. **PIA Desktop:** Proposed 132kV overhead power line and switchyard station for the authorised Solis Power 1 CSP project near Upington, Northern Cape.
18. **PIA site visit and report:** Proposed pedestrian bridge in ward 5 of Senqu Local Municipality, Eastern Cape.

CONFERENCE CONTRIBUTIONS

NATIONAL

PRESENTATION

Butler, E., Botha-Brink, J., and F. Abdala. A new gorgonopsian from the uppermost *Dicynodon Assemblage Zone*, Karoo Basin of South Africa. 18th Biennial conference of the PSSA 2014. Wits, Johannesburg, South Africa.

INTERNATIONAL

Attended the Society of Vertebrate Palaeontology 73th Conference in Los Angeles, America. October 2012.

CONFERENCES: POSTER PRESENTATION

NATIONAL

Butler, E., and J. Botha-Brink. Cranial skeleton of *Galesaurus planiceps*, implications for biology and lifestyle. University of the Free State Seminar Day, Bloemfontein. South Africa. November 2007.

Butler, E., and J. Botha-Brink. Cranial skeleton of *Galesaurus planiceps*, implications for biology and lifestyle. 14th Conference of the PSSA, Matjiesfontein, South Africa. September 2008:

Butler, E., and J. Botha-Brink. The biology of the South African non-mammaliaform cynodont *Galesaurus planiceps*. 15th Conference of the PSSA, Howick, South Africa. August 2008.

INTERNATIONAL VISITS

Natural History Museum, London

July 2008

Paleontological Institute, Russian Academy of Science, Moscow

November 2014

Morné de Jager

Personal Data

Identity Number	711221 5062 080
Date of Birth	21 December 1971
Sex	Male
Marital Status	Married, three children
Driver's license	Code 08
Nationality	South African
Home Language	Afrikaans (speak, read and write)
Other Languages	English (speak, read and write)
Higher Educational Qualifications	B.Eng (Chemical Engineering) [Pretoria University]
Previous Employment	JCI Wates Meiring and Barnard Department of Water Affairs and Forestry M2 Environmental Connections cc
Current Employment	Enviro-Acoustic Research cc

Short Resumé

Morné started his career in the mining industry as a bursar Learner Official (JCI, Randfontein), working in the mining industry, doing various mining related courses (Rock Mechanics, Surveying, Sampling, Safety and Health [Ventilation, noise, illumination etc] and Metallurgy. He did work in both underground (Coal, Gold and Platinum) as well as opencast (Coal) for 4 years. He changed course from Mining Engineering to Chemical Engineering after his second year of his studies at the University of Pretoria.

After graduation he worked as a Water Pollution Control Officer at the Department of Water Affairs and Forestry for two years (first year seconded from Wates, Meiring and Barnard), where duties included the perusal (evaluation, commenting and recommendation) of various regulatory required documents (such as EMPR's, Water Licence Applications and EIA's), auditing of licence conditions as well as the compilation of Technical Documents.

Since leaving the Department of Water Affairs, Morné has been in private consulting for the last 15 years, managing various projects for the mining and industrial sector, private developers, business, other environmental consulting firms as well as the Department of Water Affairs. During that period he has been involved in various projects, either as specialist, consultant, trainer or project manager, successfully completing these projects within budget and timeframe. During that period he gradually moved towards environmental acoustics, focusing on this field exclusively since 2007.

He has been interested in acoustics as from school days, doing projects mainly related to loudspeaker design. Interest in the matter brought him into the field of Environmental Noise Measurement, Prediction and Control. He has been doing work in this field for the past 8 years, and was involved with the following projects in the last few years:

Project Experience – Acoustics

Wind Energy Facilities	<p>Full Environmental Noise Impact Assessments for - Bannf (Vidigenix), iNca Gouda (Aurecon SA), Kangnas (Aurecon), Plateau East and West (Aurecon), Wolf (Aurecon), Outeniqwa (Aurecon), Zen (Savannah Environmental – SE), Goereesoe (SE), Springfontein (SE), Garob (SE), Project Blue (SE), ESKOM Kleinzee (SE), Walker Bay (SE), Oyster Bay (SE), Hidden Valley (SE), Happy Valley (SE), Deep River (SE), Tsitsikamma (SE), AB (SE), West Coast One (SE), Hopefield II (SE), Namakwa Sands (SE), VentuSA Gouda (SE), Dorper (SE), Amakhala Emoyeni (SE), Klipheuwel (SE), Cookhouse (SE), Cookhouse II (SE), Rhebokfontein (SE), Suurplaat (SE), Karoo Renewables (SE), Koningaas (SE), Eskom Aberdene (SE), Spitskop (SE), Castle (SE), Khai Ma (SE), Poortjies (SE), Korana (SE), IE Moorreesburg (SE), Saldanha (Terramanzi), Loeriesfontein (SiVEST), , Rhenosterberg (SiVEST), Noupoot (SiVEST), Prieska (SiVEST), Canyon Springs (Canyon Springs), Msenge Emoyeni (Windlab), Gunstfontein (SE), Komsberg (ARCUS), Umsinde Emoyeni (ARCUS), Dwarsrug (SiVEST)</p>
Mining and Industry	<p>Full Environmental Noise Impact Assessments for - BECSA – Middelburg (Golder Associates), Kromkrans Colliery (Geovicon Environmental), SASOL Borrow Pits Project (JMA Consulting), Lesego Platinum (AGES), Tweefontein Colliery (Cleanstream), Evraz Vametco Mine and Plant (JMA), Goedehoop Colliery (Geovicon), Haca Project (Prescali Environmental), Der Brochen Platinum Project (J9 Environment), Delft Sand (AGES), Brandbach Sand (AGES), Verkeerdepan Extension (CleanStream), Dwaalboom Limestone (AGES), Jagdlust Chrome (MENCO), WPB Coal (MENCO), Landau Expansion (CleanStream), Otjikoto Gold (AurexGold), Klipfontein Colliery (MENCO), Imbabala Coal (MENCO), ATCOM East Expansion (Jones and Wagner), IPP Waterberg Power Station (SE), Kangra Coal (ERM), Schoongesicht (CleanStream), EastPlats (CleanStream), Chapudi Coal (Jacana Environmental), Generaal Coal (JE), Mopane Coal (JE), Glencore Boshhoek Chrome (JMA), Langpan Chrome (PE), Vlakpoort Chrome (PE), Sekoko Coal (SE), Frankford Power (REMIG), Strahrae Coal (Ferret Mining), Transalloys Power Station (Savannah), Pan Palladium Smelter, Iron and PGM Complex (Prescali), Fumani Gold (AGES), Leiden Coal (EIMS), Colenso Coal and Power Station (SiVEST/EcoPartners), Klippoortjie Coal (Gudani), Rietspruit Crushers (MENCO), Assen Iron (Tshikovha), Transalloys (SE), ESKOM Ankerlig (SE), Pofadder CSP (SE), Nooitgedacht Titano Project (EcoPartners), Algoa Oil Well (EIMS), Spitskop Chrome (EMAssistance), Klippoortjie Coal (Gudani), Vlakfontein South (Gudani), Leandra Coal (Jacana), Grazvalley and Zoetveld (Prescali), Tjate Chrome (Prescali), Langpan Chromite (Prescali), Vereeniging Recycling (Pro Roof), Meyerton Recycling (Pro Roof), Hammanskraal Billeting Plant 1 and 2 (Unica)</p>
Road and Railway	<p>K220 Road Extension (UrbanSmart), Boskop Road (MTO), Sekoko Mining (AGES), Davel-Swaziland-Richards Bay Rail Link (Aurecon), Moloto Transport Corridor Status Quo Report and Pre-Feasibility (SiVEST), Postmasburg Housing Development (SE), Tshwane Rapid Transport Project, Phase 1 and 2 (NRM Consulting/City of Tshwane), Transnet Apies-river Bridge Upgrade (Transnet), Gautrain Due-diligence (SiVest), N2 Piet Retief (SANRAL)</p>
Airport	<p>Oudtshoorn Noise Monitoring (AGES), Sandton Heliport (Alpine Aviation), Tete Airport Scoping</p>
Noise monitoring	<p>Peerboom Colliery (EcoPartners), Thabametsi (Digby Wells), Doxa Deo (Doxa Deo), Harties Dredging (Rand Water), Xstrata Coal – Witbank Regional (Xstrata), Sephaku Delmas (AGES), Amakhala Emoyeni WEF (Windlab Developments), Oyster Bay WEF (Renewable Energy Systems), Tsitsikamma WEF (Cennergi and SE), Hopefield WEF (Umoya), Wesley WEF (Innowind), Ncora WEF (Innowind), Boschmanspoort (Jones and Wagner), Nqamakwe WEF (Innowind), Hopefield WEF Noise Analysis (Umoya), Dassiesfontein WEF Noise Analysis (BioTherm), Transnet Noise Analysis (Aurecon), Jeffries Bay Wind Farm (Globeleq), Sephaku Aganang (Exigo), Sephaku Delmas (Exigo), Beira Audit (BP/GPT), Nacala Audit (BP/GPT), NATREF (Nemai), Rappa Resources (Rayten)</p>
Small Noise Impact Assessments	<p>TCTA AMD Project Baseline (AECOM), NATREF (Nemai Consulting), Christian Life Church (UrbanSmart), Kosmosdale (UrbanSmart), Louwlandia K220 (UrbanSmart), Richards Bay Port Expansion (AECOM), Babalegi Steel Recycling (AGES), Safika Slag Milling Plant (AGES), Arcelor Mittal WEF (Aurecon), RVM Hydroplant (Aurecon), Grootvlei PS Oil Storage (SiVEST), Rhenosterberg WEF, (SiVEST), Concerto Estate (BPTrust), Ekuseni Youth Centre (MENCO), Kranskop Industrial Park (Cape South Developments), Pretoria Central Mosque (Noman Shaikh), Soshanguve Development (Maluleke Investments), Seshego-D Waste Disposal (Enviroxcellence), Zambesi Safari Equipment (Owner), Noise Annoyance Assessment due to the Operation of the Gautrain (Thornhill and Lakeside Residential Estate), Upington Solar (SE), Ilangaletu Solar (SE), Pofadder Solar (SE), Flagging Trees WEF (SE), Uyekraal WEF (SE), Ruuki Power Station (SE), Richards Bay Port Expansion (AECOM), Babalegi Steel Recycling (AGES), Safika Ladium (AGES), Safika Cement Isando (AGES), RareCo (SE), Struisbaai WEF (SE), Perdekraal WEF (ERM), Kotula Tsatsi Energy (SE), Olievenhoutbosch Township (Nali)</p>
Project reviews and amendment reports	<p>Loperberg (Savannah), Dorper (Savannah), Penhoek Pass (Savannah), Oyster Bay (RES), Tsitsikamma (Cennergi), Amakhala Emoyeni (Windlab), Spreeukloof (Savannah), Spinning Head (SE), Kangra Coal (ERM), West Coast One (Moyeng Energy), Rhebokfontein (Moyeng Energy), De Aar WEF (Holland)</p>



ENVIRONMENTAL PLANNING AND DESIGN

Name JONATHAN MARSHALL
Nationality British
Year of Birth 1956
Specialisation Landscape Architecture / Landscape & Visual Impact Assessment / Environmental Planning / Environmental Impact Assessment.

Qualifications

Education Diploma in Landscape Architecture,
Gloucestershire College of Art and Design,
UK (1979)
Environmental Law, University of KZN
(1997)

Professional Registered Professional Landscape Architect (South Africa)
Chartered Member of the Landscape Institute (UK)
Certified Environmental Assessment Practitioner of South Africa.
Member of the International Association of Impact
Assessment, South Africa

Languages

<u>English</u> -	Speaking	-	Excellent
-	Reading	-	Excellent
-	Writing	-	Excellent

Contact Details

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Republic of South Africa

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Key Experience

Jon qualified as a Landscape Architect at Cheltenham (UK) in 1979. He has been a Chartered Member of the Landscape Institute (UK) since 1986. He is also a registered Landscape Architect and Environmental Assessment Practitioner of South Africa.

During the early part of his career (1981 – 1990) he worked with Clouston (now RPS) in Hong Kong and Australia. During this period he was called on to undertake visual impact assessment input to numerous environmental assessment processes for major infrastructure projects. This work was generally based on photography with line drawing superimposed to illustrate the extent of development visible.

He worked in the United Kingdom (1990 – 1995) for major supermarket chains including Sainsbury's and prepared CAD based visual impact assessments for public enquiry for new store development. He also prepared the VIA input to the environmental statement for the Cardiff Bay Barrage for consideration by the UK Parliament in the passing of the Barrage Bill.

His more recent VIA work in Africa (1995 to present) includes a combination of CAD and GIS based work for a new international airport to the north of Durban, new heavy industrial operations, overhead electrical transmission lines, mining operations, a number of commercial and residential developments as well as numerous renewable energy projects.

VIA work undertaken during the last twelve months includes assessments for several proposed Eskom power lines / substations and numerous solar and wind energy projects.

Relevant Landscape & Visual Impact Assessment (LVIA) Projects

1. **Paulputs CSP Power Tower project** – LVIA for a 200MW CSP power tower facility near Pofadder in the Northern Cape.
2. **Karoshhoek Solar Valley** – LVIA for nine CSP projects including power tower and parabolic trough projects in the Karoshhoek Solar Valley near Upington in the Northern Cape.
3. **Noupoort CSP** – LVIA for two CSP parabolic trough facilities close to Noupoort in the Northern Cape.
4. **Sol Invictus Solar** – LVIA for four 150MW photovoltaic solar arrays near Aggeneys in the Northern Cape for a private client
5. **Tshivhaso Power Station** – LVIA for a proposed new 600MW power station including associated infrastructure and dumps near Lephallale in the Limpopo Province for a private client.
6. **Woodhouse Solar** – LVIA for two 100MW photovoltaic solar arrays near Vryburg in the North West Province for a private client.
7. **Saldanha Eskom Network Strengthening Project** – LVIA for major improvements to Eskom's electrical infrastructure between Langebaan and Saldanha in the Western Cape for Eskom.
8. **Albany Solar Array** – LVIA for two 75MW photovoltaic solar arrays near Upington in the Northern Cape.
9. **Mpophomeni Shopping Centre** – LVIA for a proposed new shopping center to the south of Midmar Dam in KwaZulu Natal for a private client.
10. **Gunstfontein Wind Farm** – LVIA for a 200MWnd farm near Sutherland in the Northern Cape for a private client.
11. **Hennenman Solar Array** – LVIA for a proposed solar array in the Free State for a private client.
12. **Moorreesburg Wind Farm** – LVIA for a proposed wind energy project in the Western Cape for a private client.
13. **Lethabo Solar Array** – LVIA for a proposed solar array at the Lethabo Power Station in the Free State for Eskom.
14. **Tutuka Solar Array** – LVIA for a proposed solar array at the Tutuka Power Station in Mpumalanga for Eskom.
15. **Majuba Solar Array** – LVIA for a proposed solar array at the Majuba Power Station in Mpumalanga for Eskom.
16. **Isundu 765 / 400Kv Sub Station** - LVIA for a proposed major substation in KwaZulu Natal for Eskom.
17. **Bhangazi Lake Tourism Development** – Visual impact assessment for a proposed lodge development within the Isimangaliso Wetland Park World Heritage Site. This work is ongoing.
18. **Quarry Development for the Upgrade of Sani Pass** – Visual Impact Assessments for two proposed quarry developments on the edge of the uKhalamba-Drakensburg World Heritage Site.
19. **Mtubatuba to St Lucia Overhead Power Line** – Visual Impact Assessment for a proposed power line bordering on the Isimangaliso Wetland Park World Heritage Site for

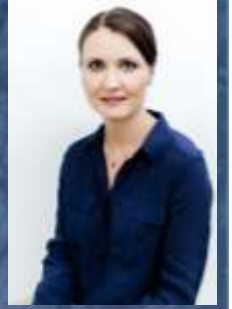
Eskom.

20. **St Faiths 400/132 kV Sub-Station and Associated Power Lines** - Visual Impact Assessment for a proposed new major sub-station and approximately 15km of overhead power line for Eskom.
21. **Clocolan to Ficksburg Overhead Power Line** – Visual Impact Assessment for a proposed power line for Eskom.
22. **Solar Plant Projects including Photovoltaic and Concentrating Solar Power Plants** – Numerous projects for Eskom and private clients in the Northern Cape, Limpopo, Mpumalanga and the Free State.
23. **Moorreesburg Wind Farm.** Visual impact assessment for a proposed new wind farm in the Western Cape.
24. **AngloGold Ashanti, Dokyiwa (Ghana)** – Visual Impact Assessment for proposed new Tailings Storage Facility at a mine site working with SGS as part of their EIA team.
25. **Camperdown Industrial Development** - Visual Impact Assessment for proposed new light industrial area to the north of Camperdown for a private client.
26. **Wild Coast N2 Toll Highway** – Peer review of VIA undertaken by another consultant.
27. **Gamma to Grass Ridge 765kv transmission line** – Peer review of LVIA undertaken by another consultant.
28. **Gateway Shopping Centre Extension (Durban)** – Visual Impact Assessment for a proposed shopping centre extension in Umhlanga, Durban.
29. **Kouroussa Gold Mine (Guinea)** – Visual impact assessment for a proposed new mine in Guinea working with SGS as part of their EIA team.
30. **Mampon Gold Mine (Ghana)** - Visual impact assessment for a proposed new mine in Ghana working with SGS as part of their EIA team.
31. **Telkom Towers** – Visual impact assessments for numerous Telkom masts in KwaZulu Natal
32. **Dube Trade Port, Durban International Airport** – Visual Impact Assessment for a new international airport.
33. **Sibaya Precinct Plan** – Visual Impact Assessment as part of Environmental Impact Assessment for a major new development area to the north of Durban.
34. **Umdloti Housing** – Visual Impact Assessment as part of Environmental Impact Assessment for a residential development beside the Umdloti Lagoon to the north of Durban.
35. **Tata Steel Ferrochrome Smelter** - Visual impact assessment of proposed new Ferrochrome Smelter in Richards Bay as part of EIA undertaken by the CSIR.
36. **Diamond Mine at Rooipoort Nature Reserve near Kimberley** – Visual impact assessment for a proposed diamond mine within an existing nature reserve for De Beers.
37. **Durban Solid Waste Large Landfill Sites** – Visual Impact Assessment of proposed development sites to the North and South of the Durban Metropolitan Area. The project utilised 3d computer visualisation techniques.
38. **Hillside Aluminium Smelter, Richards Bay** - Visual Impact Assessment of proposed extension of the existing smelter. The project utilised 3d computer visualisation techniques.
39. **Estuaries of KwaZulu Natal Phase 1 and Phase 2** – Visual character assessment and GIS mapping as part of a review of the condition and development capacity of eight

- estuary landscapes for the Town and Regional Planning Commission. The project was extended to include all estuaries in KwaZulu Natal.
40. **Signage Assessments** – Numerous impact assessments for proposed signage developments for Blast Media.
 41. **Signage Strategy** – Preparation of an environmental strategy report for a national advertising campaign on National Roads for Visual Image Placements.
 42. **Zeekoegatt, Durban** - Computer aided visual impact assessment. Acted as advisor to the Province of KwaZulu Natal in an appeal brought about by a developer to extend a light industrial development within a 60 metre building line from the National N3 Highway.
 43. **La Lucia Mall Extension** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed extension to shopping mall for public consultation exercise.
 44. **Redhill Industrial Development** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed new industrial area for public consultation exercise.
 45. **Avondale Reservoir** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed hilltop reservoir as part of Environmental Impact Assessment for Umgeni Water.
 46. **Hammersdale Reservoir** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed hilltop reservoir as part of Environmental Impact Assessment for Umgeni Water.
 47. **Southgate Industrial Park, Durban** - Computer Aided Visual Impact Assessment and Landscape Design for AECI.
 48. **Sainsbury's Bryn Rhos (UK)** - Computer Aided Visual Impact Assessment/ Planning Application for the development of a new store within the Green Wedge North of Swansea.
 49. **Ynyston Farm Access (UK)** - Computer Aided Impact Assessment of visual intrusion of access road to proposed development in Cardiff for the Land Authority for Wales.
 50. **Cardiff Bay Barrage (UK)** - Concept Design, Detail Design, Documentation, and Visual Input to Environmental Statement for consideration by Parliament in the debate prior to the passing of the Cardiff Bay Barrage Bill. The work was undertaken for Cardiff Bay Development Corporation.
 51. **A470, Cefn Coed to Pentrebach (UK)** - Preparation of frameworks for the assessment of the impact of the proposed alignment on the landscape for The Welsh Office.
 52. **Sparkford to Ilchester Bye Pass (UK)** - The preparation of the landscape framework and the draft landscape plan for the Department of Transport.
 53. **Green Island Reclamation Study (Hong Kong)** - Visual Impact Assessment of building massing, Urban Design Guidelines and Masterplanning for a New Town extension to Hong Kong Island.
 54. **Route 3 (Hong Kong)** - Visual Impact Assessment for alternative road alignments between Hong Kong Island and the Chinese Border.
 55. **China Border Link (Hong Kong)** - Visual Impact Assessment and initial Landscape Design for a new border crossing at Lok Ma Chau.
 56. **Route 81, Aberdeen Tunnel to Stanley (Hong Kong)** - Visual Impact Assessment for alternative highway alignments on the South side of Hong Kong Island.

Elena Broughton

Date of Birth: 11 September 1980
 Designation: Unit Manager: Innovation & Sustainable Development
 Profession: Senior Development Economist
 Specialisation: Sustainable Development Specialist
 Years within Firm: 12 Years
 Nationality: Russian
 Years of Experience: 12 Years
 HDI Status: White Female



Education:

University of Pretoria - 2011	MSc (Technology Management)
University of Pretoria - 2007	BScHons (Technology Management)
Parkland College, USA - 2004	Computer Integrated Accounting
Parkland College, USA - 2004	Independent Business
Parkland College, USA - 2003	Intermediate Accounting
Parkland College, USA - 2003	Records Management
Parkland College, USA - 2003	Financial Accounting
Parkland College, USA - 2003	Managerial Accounting
Nizhny Novgorod University, Russia - 2002	BComHons (Economics)

Professional Membership:

SAPOA Urban-Econ Development Economists (Pty) Ltd

Language Proficiency:	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Russian	Excellent	Excellent	Excellent

Work Experience:

2004 - Current	Urban-Econ Development Economists
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Key Qualification:

Elena Broughton completed her BComHons in Economics in Russia, at Nizhny Novgorod State University in 2002 specialising in regional economics. At the same time, she completed an additional degree as Translator/Interpreter in Professional Orientated Communication. After completion of her Honours degree in Economics, Elena moved to the USA and stayed there for 1.5 years. During her stay in the USA, she completed a number of Accounting and Business courses at Parkland College, Illinois. In 2007, she obtained her BScHons in Technology Management (Cum Laude) at the University of Pretoria and later received her MSc in Technology Management (2011) from the same university.

Elena Broughton is a senior professional at Urban-Econ and has an extensive knowledge in various fields of economic development, including impact assessments, investment strategy formulation, strategic decision analysis, and monitoring and evaluation. She is experienced in developing input-output and SAM-based models, as well as development and application of other econometric techniques. Elena has a special interest in project evaluation and decision-making framework, with the latter being the focus of her Master's dissertation. Over the past few years, she was able to extend her experience in these fields working on projects for both government and the private sector. Elena is managing the Innovation & Sustainable Development Unit and has successfully completed various energy and innovation projects in this capacity.

Experience Record:

Project:	The Localisation Potential of Photovoltaics (PV) and a Strategy to support large scale roll-out in South Africa
Year:	June 2012 – March 2013
Location:	National
Client:	WWF S, South African Photovoltaic Industry Association (SAPVIA), and the Department of Trade and Industry, RSA
Project Features:	
Activities Performed:	<ul style="list-style-type: none"> ▪ Describing of the global PV industry and its trends ▪ Profiling of the local PV industry

	<ul style="list-style-type: none"> ▪ Analysing of the local PV value chain considering three market segments, i.e. rooftop, commercial and utilities ▪ Analysing of financial dynamics of the market and standardisation requirements ▪ Determining the potential for localisation in the country ▪ Developing a strategy for the future roll-out <p>Policy environment review, market segments analysis, demand analysis, value chain analysis, pricing of components, local content analysis, potential for localisation assessment, strategy formulation</p> <p>The goal of the study was to describe the global and local PV industry trends and dynamics, and to develop localisation scenarios for the purposes of providing recommendations with respect to the future roll-out of the industry.</p>
Project: Year: Location: Client: Project Features:	<p>Feasibility study into establishing CSP component manufacturing facilities in South Africa November 2012 – February 2013 National The Industrial Development Corporation, RSA</p> <ul style="list-style-type: none"> ▪ The identification of various CSP technologies and systems that are promoted internationally ▪ And various designs and configuration of each technology. ▪ An overview of the international and local CSP market, the major materials and components of CSP with a view of establishing a local manufacturing base of CSP systems and components ▪ The identification of key technical and technology partner in the development of the manufacturing facility ▪ Engagement with the potential technical partner to determine whether the IDC can capacitate the supplier to manufacture components and systems locally ▪ Identification of a suitable location for the new facility or expansion of existing local CSP component manufacturing facilities in South Africa ▪ The amount of potential jobs that will be created from expansion or creation of a new facility, preliminary financial model and CAPEX budget.
Activities Performed:	Global CSP industry analysis, value chain analysis, local industrial capabilities assessment, demand analysis, job creation potential analysis
Project: Year: Location: Client: Project Features:	<p>Northern Cape Renewable Energy Strategy November 2012 – June 2013 National The Northern Cape Department of Economic Development and Tourism, RSA</p> <ul style="list-style-type: none"> ▪ Description of the status and potential of the local renewable energy sector ▪ Investigation of the potential to establish clean and green sustainable development projects in the Province in line with the optimal mix identified. ▪ Identification of income generation opportunities for the purpose of revitalising rural communities ▪ Assessment of the institutional capacity and capability ▪ Strategy and implementation plan formulation
Activities Performed:	Policy environment analysis, renewable energy industry profiling, desired state of industry analysis, market segmentation and demand analysis, stakeholder analysis and institutional structures review, strategy formulation
Project: Year: Location: Client: Project Features:	<p>A study of the factors contributing to successful technology commercialization March 2015-September 2015 National The dti</p> <ul style="list-style-type: none"> • Current context and framework for technology commercialisation in South Africa • Identification of critical factors and resources required for successful commercialisation • On-line survey • Interviews with numerous stakeholders (universities, businesses, government organisations) • Case study analysis of policies and interventions in other countries • Profiling of the current policy environment, funding mechanisms and stakeholders • Identification of mechanisms and interventions to assist in commercialisation of technologies • Formulation of a guide for commercialisation
Activities Performed:	Project management and quality control, presentation of study findings
Project: Year:	<p>Assessment of policy to enable the implementation of energy efficiency in the building sector December 2014-April 2015</p>

Location: Client: Project Features:	National SANEDI/Department of Energy <ul style="list-style-type: none"> Assessment of existing national and local government policy frameworks (legislations, standards, policy, building codes etc.) with respect to constraints and opportunities created for implementation of energy efficiency in the building sector Interview various stakeholders Review of interventions and support mechanisms Undertake case studies Provide policy recommendations
Position held: Activities Performed:	Project manager Project management and quality control, presentation of study finding
Project: Year: Location: Client: Project Features:	A Study of the Economic Impact of load shedding on the City of Johannesburg with or without Kelvin Power Station January 2015 – June 2015 City of Johannesburg City of Johannesburg Metro <ul style="list-style-type: none"> Developing a model of electricity usage by various economic sectors based on information supplied by City Power Profiling economic structure of City of Joburg regions Modelling of the potential economic impact on the City with and without Kelvin Power Station, in the short-term and the impact of outages on the City as a whole over the medium-term; Interview large electricity users in the City Interpreting economic effects of load shedding derived from the modelling exercise in the context of the CoJ economy, and specifically its implications on the production, Gross Domestic Product per region (GDP-R), and employment
Position held: Activities Performed:	Senior economist Economic modelling, report quality control, presentation of findings
Project: Year: Location: Client: Project Features:	Global Energy Efficiency options: Energy efficient technologies, policy and institutional requirements for adoption in South Africa July 2015 – February 2016 National The dti/the Industrial Development Corporation <ul style="list-style-type: none"> Profiling of full range of Energy Efficiency options currently being utilised globally in the building and industrial/mining sectors Assessment of technologies favoured by countries that have successfully implemented EE measures Explore policy initiatives and incentives that contribute to both the greening of industries and the establishment of new green industries Developing a cost and savings potential model to evaluate technologies
Position held: Activities Performed:	Project manager Project management and quality control, presentation of study findings, costing and saving model development
Project: Year: Location: Client: Project Features:	Feasibility study of high temperature applications for South Africa October 2014 – February 2015 National CSIR/the Department of Science and Technology <ul style="list-style-type: none"> Profile HTA technologies Assess South Africa's readiness and need for HTA Assess the current and projected future requirements for HTA Evaluating the prospects (technical and economic) of HTA in South Africa Determine RDI opportunities for the country Formulate and action plan and providing recommendations appropriate for the implementation programme
Position held: Activities Performed:	Project manager Project management and quality control, engagement with industry stakeholders

Other Projects:

- **Go-to-Market Strategy for a PV/Panel Manufacturer:** Urban-Econ together with EScience Associates and Tracy Stewart Consulting was appointed by the CEF to undertake a Go-to-Market Strategy for a PV panel manufacturing facility. The project consisted of two major parts. The first component included the analysis of the market and opportunities presented in the market, as well as identification of the needs, affordability levels and requirements by all groups of stakeholders in the industry's value chain. The second part of the study included the formulation of the strategic plan that outlined various target markets to be pursued, value proposition to be offered, market channels to be considered for entering the market and activities to be implemented during the product pre-launch, launch and post-launch phases.
- **High-tech bio-sciences incubator feasibility study:** The study focused on the assessment of the feasibility of establishing a physical high-tech bio-sciences incubator at the Innovation Hub in Gauteng, South Africa. It involved the investigation into the most feasible location, market viability, service offerings, operational requirements, and seed funding requirements.
- **High-tech chemical sector incubator feasibility study:** The study focused on the assessment of the feasibility of establishing a high-tech chemical sector incubator in Gauteng, South Africa. It involved the investigation into the most feasible location, market viability, service offerings, operational requirements, and seed funding requirements.
- **Promotion of Decent work in Southern African Ports (phase ii):** The study focused on the independent assessment of progress to date of the project across all the outcomes; assessing performance as per the foreseen targets and indicators of achievement at output level, strategies and implementation modalities chosen, partnership arrangements, constraints and opportunities in both Mozambique and South Africa. It provided strategic and operational recommendations as well as highlighted lessons to improve performance and delivery of project results. to port workers.
- **A feasibility study and a business plan for downstream beneficiation of fly ash in the Nkangala District Municipality:** Large volumes of coal fly ash (CFA) are being produced at power stations in Mpumalanga. CFA is already used as a cement extender by local cement factories; however, CFA has numerous other applicants that are not properly explored. The study therefore aimed at investigating all possible opportunities that could be derived from CFA beneficiation and identification of those that could be realised in Nkangala.
- **Matjhabeng Solar Park: Socio Economic needs analysis and plan formulation:** The study focused on the community of Matjhabeng, the Free State Province. It involved the identification of the socio-economic needs and priorities for the local communities, creating an inventory of social facilitates and small enterprises, and running a skills registrar. Aside from the secondary data review, 100 households were surveyed, 35 social facilities were profiled, and 30 businesses were audited. a skills development, a social facilitates, and enterprise development investment plans for the project developer were formulated.
- **Examining the possibility of attracting corporate social investment (CSI) into water research and development:** The study aimed at obtaining feedback from a sample of corporate representing a variety of industries with regard to the possibility and appetite to invest CSI funds in deploying water and sanitation related solutions in communities targeted by them.
- **Go-to-Market Strategy for a PV/Panel Manufacturer:** Urban-Econ together with EScience Associates and Tracy Stewart Consulting was appointed by the CEF to undertake a Go-to-Market Strategy for a PV panel manufacturing facility. The project consisted of two major parts. The first component included the analysis of the market and opportunities presented in the market, as well as identification of the needs, affordability levels and requirements by all groups of stakeholders in the industry's value chain. The second part of the study included the formulation of the strategic plan that outlined various target markets to be pursued, value proposition to be offered, market channels to be considered for entering the market and activities to be implemented during the product pre-launch, launch and post-launch phases.
- **SunCorp Socio-Economic and Enterprise Development Plan Formulation:** Urban-Econ was appointed by SunCorp to develop a Socio-Economic Development and Enterprise Development Plan for a Solar PV project in the Free State. The plans were devised in line with the DOE requirements outlined for the bidding phase.
- **Savanna Cookware Manufacturing Facility Pre-Feasibility Study:** Urban-Econ undertook a pre-feasibility study for a manufacturing facility planned to produce luxurious stainless steel cookware in South Africa. The pre-feasibility study focused on determining the need and desirability for the proposed manufacturing facility considering the defined

primary and secondary markets, the key prerequisites for the viability of the proposed venture and the most optimal location for the proposed manufacturing facility.

- An Opportunity Cost Assessment for the proposed Labonte 5 Mining Project: The purpose of the study was to investigate the opportunity cost of the proposed sand mining project to determine the implications on the local economy dynamics and the impact on the major infrastructure projects implemented in the Lephalale area if the proposed project is not approved.
- Saldanha Bay Separation Plant Economic Impact Assessment: The project involved undertaking an Economic Impact Assessment study for the proposed construction and operation of a Rare Earth Elements (REE) Separation Plant on Portion 6 of the Farm Langeberg 188 in Saldanha, in the Western Cape Province. The study formed part of the Environmental Impact Assessment process as prescribed in the National Environmental Management Act (NEMA) of 1998 and its subsequent amendments.
- Zandkopsdrift Rare Earth Elements (REE) Project Economic Impact Assessment: The project involved undertaking a Socio-Economic Impact Assessment study for the proposed the Zandkopsdrift Rare Earth Elements (REEs) Project near Garies in the Northern Cape Province of South Africa. The study formed part of the Environmental Impact Assessment process as prescribed in the National Environmental Management Act (NEMA) of 1998 and its subsequent amendments.
- Balmoral EIA: The study involved undertaking a Socio-Economic Impact Assessment as an input into a Basic Impact Assessment Study for the proposed Balmoral X5 Township Development in the Ekurhuleni Metropolitan Municipality (EMM).
- Green Building Market Entry Study: The Embassy of the Kingdom of the Netherlands in Pretoria appointed Urban-Econ to undertake a market entry study for the Green Building Industry of South Africa. The document was compiled for the purpose of guiding the existing or prospective Dutch companies in expanding or involving themselves in the South African Green Building Industry. The report contained information on the policy and regulatory environment that drives the development of this sector in the country and the broad overview of the status of the construction industry with the focus on the green building industry. The document also encompassed information on the state of development and industry maturity of selected green building sub-sectors that are aligned with the expertise of the Dutch companies. Information on doing business in South Africa as far as procurement and tendering practices, business funding and other support offered by South Africa and Netherlands, was also provided.
- Royal Bafokeng Mining Procurement Study: The study identified business opportunities that can be established in the area leading to the localisation of mining inputs. It was based on a comprehensive assessment of the selected mine's contract-based procurement practices.
- Ventersburg Business Development Concept: The study focused on the identification of business development opportunities that could be pursued in the town of Ventersburg based on the traffic derived in the area from the N1 highway and other regional roads. The study involved a comprehensive assessment of the target markets induced by traffic, economic base of the area, current business offerings and derived opportunities. It concluded with a presentation of business development concept scenarios and associated socio-economic benefits.
- Eskom CSP (Solar 1) Macroeconomic Impact Assessment: The study involved the identification of potential localisation opportunities for various components of the project and modelling of the socio-economic impact.
- Proposed Exxaro IPP Coal-Powered Power Station - Lephalale Scoping Inputs: Urban-Econ was appointed to undertake a Socio-Economic Scoping Study and Land-Use Impact Study for the proposed Exxaro Coal-Powered Power Station near the town of Lephalale, Limpopo Province.
- Mafube Nooitgedacht and Wildfontein EIA/EMP Sustainable Development Investigation Study: Urban-Econ was appointed to undertake an investigation into sustainable development options associated with the proposed project. The results of this study aimed at informing the decision makers of socio-economic trade-offs related to each option analysed and the preferred alternative.
- Thaba Metsi Sustainable Development Investigation Study: The objective of the Thaba Metsi Project is to mine coal via opencast and underground mining methods for supply to the Independent Power Producer (IPP) coal-fired power station, to be developed by Exxaro, north of the proposed Thaba Metsi project. Urban-Econ provided a specialist input into the sustainable development Investigation aimed at quantifying and assessing various options associated with the development and post-mining land uses that formed part of an input into the EIA report.
- Eskom Sere Wind (WEF1) Macro-Economic Impact Assessment: The project entailed the strategic assessment of the proposed facility on the macro-economic situation with respect to the impact on the balance of payments, supply of

energy, demand for water, and achievement of strategic government objectives. It also entailed the assessment of the proposed project on the regional and local economies.

- **Evaluation of Energy-Related Proposals for the Department of Science and Technology:** Urban-Econ was appointed to undertake an evaluation of six energy-related proposals submitted to the DST SBS. The objective of the evaluation is to advise the Department on whether the projects described in the proposals should be funded or not. The assessment takes into account operational and financial feasibility of projects, alignment thereof with government objectives, economic benefits derived from the project, ability of the organisations to implement the projects successfully and a risk assessment. The project also involved the development of a decision framework based on a Multi-Criteria Decision Method to be used to compare proposals and determine suitability for funding and prioritisation.
- **Independent Evaluation of the Wireless Mesh Network in Government Broadband:** Urban-Econ was appointed to undertake an independent evaluation of the Community Wireless Mesh Networks in the Government Broadband project. Urban-Econ's responsibility was to evaluate the progress of the project and provide recommendations that can be implemented to improve its design and execution.
- **Eskom Ariadne-Eros Power Lines Economic & Agricultural Impact Assessment:** Urban-Econ was appointed to undertake an Agricultural Potential and Economic Impact Assessment for the proposed Ariadne-Eros Transmission Power Line and expansion and upgrade of the related substations in KwaZulu-Natal.
- **Eskom Ingula Pumped Storage Scheme Regional Economic Impact Assessment:** The purpose of the study was to present an assessment of socio-economic impact of the Ingula Pumped Storage Scheme on the national and regional economies.
- **Gauteng Infrastructure Renewal and Investment Plan (GIRIP):** The study involved the formulation of an Infrastructure and Renewal Plan up to 2025 that would transform Gauteng into a competitive Global City-Region. As part of the study a regional model with necessary demographic and economic projects was developed that assisted in identifying future infrastructural needs in the Province.
- **De Hoop Dam Economic Impact Monitoring Framework:** Urban-Econ was approached to develop and set up an integrated and coherent monitoring and evaluation reporting system which will primarily be based on a regional impact assessment model framework to monitor and evaluate the regional socio-economic impacts due to the development of the De Hoop Dam.
- **North West Cluster Performance Analyses:** Urban-Econ was appointed by the North West Office of the Premier to undertake the analysis of statistics tables for six clusters (Human Resource Development, Physical Assets, Resource Base, Governance and Protection, Economic and Social), identify areas that require interventions and propose possible solutions to address the key challenges.
- **Mopani Investment Strategy:** Urban-Econ was appointed by the Mopani District Municipality to formulate an investment strategy for the region with a focus of promoting integrated and sustainable development in the local economy.
- **Socio-Economic Impact Assessment - Proposed Route Operator Business in Mpumalanga:** The project entailed assisting with the preparation of the response to the Request for Applications in respect of Limited Pay-out Machine Licences in the Mpumalanga Province. The study encompassed a macro-level socio-economic analysis of the proposed route operator business in Mpumalanga with a focus on: (a) benefits to the economy in terms of gross geographical product ("GGP"), employment creation, increased household income, skills development and small, medium, micro enterprise ("SMME") development and (b) potential social impact of gaming in the Province.
- **N3 Highway Economic Impact Assessment:** Urban-Econ was appointed to determine the Socio-Economic Impact of the proposed re-routing of the N3 highway around Harrismith and the current link with the N5 Route towards Lesotho and Mangaung.
- **The Mandela Bay Precinct Economic Impact Assessment:** The study entailed conducting an economic-impact assessment of the proposed Mandela Bay Precinct Development in Port Elizabeth. The proposed project was a mixed use development with the main component being a Regional Shopping Centre that will be surrounded by high density residential property, filling stations, light industrial space, a hospital, and a hotel and office space.
- **The City of Windhoek Draft SME Policy:** Urban-Econ was appointed by the City of Windhoek (COW) Local Authority to develop a Draft SME Development Policy Directive to guide future SME promotion and development in the City of Windhoek

- **Harrismith Logistics Hub Impact Assessment:** Urban-Econ Development Economists was appointed to undertake a rapid economic impact assessment study of the proposed Harrismith Freight Logistics Hub ("HLH"). The aim of the study was to determine potential benefits that could be created by the HLH in terms of unlocking the latent development of the area. This technical memorandum presents the results of the study.
- **Megamall Economic Impact Assessment:** Urban-Econ was requested to undertake an economic impact study for the Megamall project to be developed in the Mogale City Local Municipality. The aim of the study was to determine the potential economic impacts emanating from the proposed development. This study involved assessment of socio-economic impacts the proposed project could have on the local economy which could be used in application for funding from commercial banks and government.
- **Coega Ridge Economic and Social Impact Assessments:** Urban-Econ was appointed to undertake an economic and social impact assessment of the proposed Coega Ridge development. The aim of the development was to create a unique and sustainable residential enclave encompassing a "live, work, play and shop" environment including components such as affordable housing, shopping centre, office park, industrial park, community and social facilities, bulk service infrastructure, and public open space.
- **Amanzi Economic & Social Impact Assessment:** Urban-Econ was requested to undertake an economic and social impact study for the proposed Amanzi Estate that included the original homestead of Sir Percy Fitzpatrick, author of Jock of the Bushveld.
- **Limpopo Industrial Parks Resuscitation Assessment:** Urban-Econ was appointed to assess the feasibility of resuscitation of the selected industrial parks in the Limpopo Province. The study included analysis of the economic potential of the selected areas, development of scenarios and formulation of recommendations. Urban-Econ managed the team of sub-consultants.
- **North West PGDS Monitor:** The study encompasses a comprehensive analysis and projections of the achievement of the PGDS targets, reviewing the performance of the Working Groups and providing recommendations regarding actions needed to be taken to address the shortfalls.
- **Sedibelo Economic Impact Assessment:** The study involved conducting an economic-impact assessment of the proposed development utilising, an Input/output model.
- **Hanglip Sustainability Model:** Urban-Econ was appointed to develop a model that could assist decision makers in identifying the most preferred alternative/s for the Hanglip Development. The model was based on the Multi-Criteria Decision-making process.
- **Emalahleni Investment Incentive Package:** Urban-Econ was appointed by the Emalahleni Local Municipality to update the Investment Incentive Package for the Emalahleni Local Municipality.
- **Eastern Cape Industrial Sector Study:** Urban-Econ was appointed by the Eastern Cape Socio-Economic Consultative Council (ECSECC) to undertake an industrial sector study for the Eastern Cape Province. The study provided inputs to the Provincial Industrial Strategy. The focus of the strategy was on provision of support to sectors with the potential for job creation in the Province. In this context, this study aims at identifying the sectors that have the highest potential for uplifting the second economy in the Province and highlighting their growth barriers.
- **Socio-Economic Impact Assessment of the Proposed New Eskom Power Stations in the Witbank Area and Northern Free State:** The study involved conducting a socio-economic impact assessment of the proposed developments utilising an Input/Output model.
- **Sedibeng Investment Incentive Package:** The study encompasses a formulation of an incentive package that would enhance development and investment in the area, as well as promote economic growth. A comprehensive socio-economic analysis of the Sedibeng DM and its Local Municipalities, including growth potential was performed.
- **North West Sustainable Development Indicators Pilot Project:** After completing the North West Sustainable Development Indicators, Urban-Econ was appointed to execute of the pilot project of population the framework. Urban-Econ has been appointed by the North West Province's Office of the Premier to formulate a Sustainable Development Indicator Framework for the North West Provincial Administration. The purpose of the framework is to assist the provincial government authority in the monitoring and evaluation of their progress towards achieving sustainable growth and development.
- **Polokwane Trade Hub:** Urban-Econ assisted by Nyeleti Consulting Engineering, was appointed by Polokwane Municipality to undertake a Polokwane Trade Hub Feasibility study. The feasibility study included investigation of the

potential of Polokwane to develop into a regional trade hub, implications associated with its development and the initiatives, including programs and projects that need to be implemented to realise the vision of Polokwane as a regional trade hub.

- Mpumalanga Job Creation Budget: The project involved an assessment of the provincial budget with respect to its impact on job creation and identification of opportunities to enhance sustainable job creation in the Province.
- Joburg BPO Zone: Urban-Econ was appointed to provide an urban-economic rationale and motivation for the selection of a BPO Precinct in the Joburg Inner City.
- Bekkersdal Skills and Entrepreneurship Development Strategy: The Bekkersdal Skills and Entrepreneurship Development Strategy provides the reader with thorough data on the existing pool of enterprises and entrepreneurs, services and products and existing skills in Bekkersdal, which can be utilised by public and private entities. The document includes Skills Audit and Business Audit Databases in Access format.
- Baralink Economic and Market Study: Urban-Econ has been appointed by Urban Dynamics to undertake an economic and market study of four areas, namely, Baralink, JP's Town, Orange Farm, and Kwadzudza and provide the feedback on potential economic activities that can be introduced to the area in regard to promotion of sustainable livelihoods. This study forms a part of a comprehensive analysis of the abovementioned areas, the purpose of which is to compile a strategy for sustainable housing development, according to the new housing policy, in different regions of Johannesburg Metropolitan area.
- Business Improvement District Strategy for Bekkersdal: Due to the low levels of consumer and business confidence in the Bekkersdal CBD, this project required the formulation of a strategy for the establishment and implementation of a BID for the CBD area of Bekkersdal.
- Expansion of Holcim Cement Plant- Economic Impact Assessment: Urban-Econ has been appointed to assess economic impact of the expansion of Holcim Cement plant in Roodepoort.
- Madiba Bay Leisure Park Regional Mall Market Study: Urban-Econ was commissioned by East Cape Showcase (Ltd.) to conduct empirical market research and compile a specialist market study for the proposed regional retail mall within the North Gate precinct of the Madiba Bay Leisure Park project.
- Social and Labour Plan for Brandbach Mine, Cullinan: In order to insure sustainable development of the industry in the future along with the implementation of national visions on skills development, poverty alleviation, BEE and employment creation, the government has introduced a Skills and Labor Plan, preparation of which became a prerequisite for every mine in the country. Urban-Econ has been appointed to develop such plan for the Brandbach Mine in Cullinan.
- NIPS for POPS Economic Impact: Urban-Econ has been appointed as part of a specialist team to undertake the economic impact assessment of Infrastructure related to Persistent Organic Pollutants (POPS) in South Africa. The focus of the assessment is to formulate clear strategic guidelines related to the impacts of POPS and or their removal/eradication for the Development of National Implementation Plans (NIPS) of the Stockholm Convention on POPS.
- Other Socio-Economic and Economic Impact Assessment Studies for Renewable Energy Projects conducted as part of the Environmental Impact Assessment Processes
- Arriesfontein Solar Energy Park :near Danielskuil in the Northern Cape (100 MW CSP-Tower facility and 225 MW PV solar facility)
- Humansrus Solar Energy Facility: near Postmasburg in the Northern Cape (100 MW CSP-Tower facility)
- Rooipunt Solar Energy Park: near Upington in the Northern Cape (100 MW CSP-Tower facility and 215 MW PV solar facility)
- Farm 198 PV Solar Energy Facility: north of Kimberley in the Northern Cape (210 MW PV solar facility)
- Wag'nbiokiespan PV Solar Energy Facility: near Boshof, the Free State Province (75 MW PV solar facility)

Countries of Work Experience:

- South Africa
- Russia
- Zambia

References:

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- Email: judex@urban-econ.com
- Cell Phone: +27 82 770 8770

Contact details:

- Elena Broughton
- Email: elena@urban-econ.com
- Cell: +27 82 463 2325

Ndivhuwo Malemagoba

Date of Birth: 16 March 1992
 Profession: Development Economist
 Specialisation: Sustainable Development Specialist
 Years within Firm: 1 Year
 Nationality: RSA
 Years of Experience: 3 Years
 HDI Status: Black Female



Education:			
University of the Witwatersrand- 2016	MSc (Development Planning)		
University of the Witwatersrand - 2014	BSc Hons (Urban and Regional Planning)		
University of the Witwatersrand - 2013	BSc (Urban and Regional Planning)		
Mondeor High School-2009	National Senior Certificate		
Professional Membership:			
SAPOA Urban-Econ Development Economists (Pty) Ltd			
Language Proficiency:	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
IsiZulu	Excellent	Excellent	Excellent

Work Experience:	
2016 - Current	Urban-Econ Development Economists

Key Qualification:
 Ndivhuwo Malemagoba completed her MSc in Development Planning at the University of the Witwatersrand in 2016. In addition, she acquired her BSc and BSc (Hons) in Urban and Regional Planning at the same university in 2013 and 2014 respectively. She completed her BSc (Hons) degree with distinction. During her post-graduate studies, she attained Post-Graduate Merit Awards as a recognition of her outstanding academic record.
 Ndivhuwo is a Junior Development Economist with a sturdy background in development planning. Her endeavours include project management in built environment solution provision. Her robust experience in qualitative and quantitative research has equipped her with data collection, analysis and interpretation skills. This has led to her contribution to numerous development research studies in the academic and private sector arena. Ndivhuwo is currently working on her first Socio-Economic Impact Assessment study.

Experience Record:	
Project:	Smart Meter Factory Pre-Feasibility Study
Year:	2017
Location:	Gauteng
Client:	Veritas
Project Features:	<ul style="list-style-type: none"> Investigation into the domestic and export market opportunities Interviews with various industry players and municipalities Review of the existing competition, and Identification of factors that constraint as well as create opportunities.
Position held	Junior Development Economist
Activities performed	Data Collection, Data Analysis, Report Writing
Project:	Doornhoek Fluorspar Mine Project
Year:	2016
Location:	Gauteng
Client:	Exigo Sustainability (Pty) Ltd and Southern Palace (Pty) Ltd and Eurasian Natural Resources Corporation plc (ENRC)
Project Features:	<ul style="list-style-type: none"> Conduct scoping assessment Assess Need and Desirability of project Assess Socio-economic impacts

Position held	<ul style="list-style-type: none"> ▪ Develop mitigation measures
Activities performed	Junior Development Economist Data Collection, Data Analysis and preparing an impact assessment report

Other Projects:

- Socio-Economic Impact Studies:
 - Leeudoringstad 8MW Solar PV Socio-Economic Basic Assessment
 - Palmietkuilen Coal Mine Economic Impact Assessment
 - Richards Bay Combined Cycle Gas Turbine Socio-Economic Impact Assessment

Countries of Work Experience:

- South Africa

References:

- Elena Broughton
- Email: elena@urban-econ.com
- Cell Phone: +27 82 463 2325

Contact details:

- Ndivhuwo Malemagoba
- Email: ndivhuwo@urban-econ.com
- Cell: +27 73 565 2239

Profession

Traffic & Transportation Engineer

Current Position

Western Cape
Senior Transportation Engineer

Date and Place of Birth:

15 July 1961, Cape Town

Joined Techso:

2008

Nationality

South African

Academic Qualifications

NHD in Civil Engineering, Cape Technikon
1989

Professional Associations

The Engineering Council of South African
(ECSA)

Specialisation

Traffic Engineering and Transportation
Planning

Languages

Afrikaans, English

Appointments

- 1986– 1992: Principal Industrial and (1986 - 1991) Industrial Technician:
Geometric Design: Provincial
Administration: Western Cape
- 1993– 1994: Chief Industrial Technician:
Mapping and Proclamations:
Provincial Government: Western
Cape
- 1994 – 1995: Chief Industrial Technician
Regional Services: Provincial
Government: Western Cape
- 1995 - 1996: Chief Industrial Technician,
Urban Transportation: Provincial
Government: Western Cape
- 1997 – 1998: Senior Technician, Kantey
and Templer
- 1998 - 2006: Principal Technician: Traffic
Engineering, City of Cape Town
- 2006 – 2008: Regional Head, Traffic Impact
Assessments and Development
Control, City of Cape Town
- 2008 - Senior Transportation Engineer,
Techso

Contact Details

Phone: +27 (0) 21 5577730
Mobile: +27 (0) 84 300 7722
E-mail: steve@techso.co.za

Key Experience

Stephen is a traffic engineering technologist with 27 years of experience in traffic and transportation engineering. He has completed the Transportation Planning and Study Methodology course and the Highway Capacity course at the University of Stellenbosch. Stephen has been involved with civil, traffic and transportation engineering for ten (10) years at Provincial Government of the Western Cape, 1,5 years with Kantey and Templer Consulting Engineers and 10 yrs at local authority/city level and joined Techso in August 2008.

Traffic & Transportation:

- Transportation Planning
- Traffic Engineering
- Road Safety Audits

Projects:

- Local Traffic Engineering and Transportation Plans, such as Traffic Signal Design, Traffic Calming, Parking, Road Safety Audits, Road Design, Road Signs and Lane Marking for City of Cape Town.
- Developed Structure Parking Ramp Design Guidelines for the City of Cape Town.
- Project Management: Blaauwberg Road and Diep River Bridge Design, Milnerton
- Transport Systems Management Project Design and Implementation (City of Tygerberg & City of Cape Town)
- Technical Input to the City of Cape Town Kerbside Adjudication Bid Evaluation Committee.
- Project Management sub-consultant: City of Cape Town - Integrated Rapid Transport intersection and traffic signal design.
- Traffic Engineer sub-consultant: City of Cape Town - Conceptual design of Eastern Region non-motorised transport project
- Transport Impact Assessments – Various
- Transportation Modelling – TIA for Windhoek Prime Ministers Offices
- Rustenburg Municipality – Integrated Rapid Transport System – AFC
- Ekurhuleni Municipality – Integrated Rapid Public Transport Network – AFC and APTMS
- Nelson Mandela Bay Municipality – Integrated Public Transport System – AFC and APTMS
- Road Safety Audits – City of Cape Town - Integrated Rapid Transit Phase 1B
- Transport Impact Assessments – Various Renewable Energy Site Assessments



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Riaan A.J. Robbeson (Pr.Sci.Nat.), on behalf of Bathusi Environmental Consulting cc		
Contact person:	Riaan A. J. Robbeson (Pr.Sci.Nat.)		
Postal address:	PO Box 77448, Eldoglen, Centurion		
Postal code:	0171	Cell:	082 3765 933
Telephone:	012 658 5579	Fax:	086 636 5455
E-mail:	riaan@bathusi.org		
Professional affiliation(s) (if any)	SACNASP (Ecological & Botanical Scientist, 400005/03)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Riaan A. J. Robbeson (Pr.Sci.Nat.), declare that -- General

declaration:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realize that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Bathusi Environmental Consulting cc (CK CK99/052182/23)

Name of company (if applicable):

2017 08 21

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Dewald Kamffer (Pr.Sci.Nat.), on behalf of Ecocheck cc		
Contact person:	Dewald Kamffer		
Postal address:	PO Box 55, Duiwelskloof		
Postal code:	0835	Cell:	082 419 0196
Telephone:	082 419 0196	Fax:	
E-mail:	dewaldkamffer@gmail.com		
Professional affiliation(s) (if any)	SACNASP (Ecological and Zoological Scientist – 400204/05)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Dewald Kamffer (Pr.Sci.Nat.), declare that -- General

declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

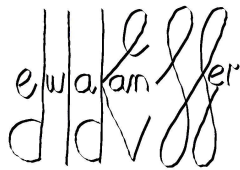
I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realize that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

ECOCHECK

Name of company (if applicable):

2017/08/21

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Pachnoda Consulting CC		
Contact person:	Lukas Niemand		
Postal address:	716 Lochiel Street, Faerie Glen, Pretoria		
Postal code:	0081	Cell:	083 978 0817
Telephone:	012 991 5141	Fax:	
E-mail:	lukas@pachnoda.co.za		
Professional affiliation(s) (if any)	SACNASP (400095/06) BirdLife South Africa (1039913)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Lukas Niemand , declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Name of company (if applicable): Pachnoda Consulting CC

Date: 21 August 2017



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	uMoya-NILU Consulting (Pty) Ltd		
Contact person:	Dr Mark Zunckel		
Postal address:	P O Box 20622, Durban North		
Postal code:	4016	Cell:	083 690 2728
Telephone:	031 262 3265	Fax:	031 262 3266
E-mail:	mark@umoya-nilu.co.za		
Professional affiliation(s) (if any)	South African Council for Scientific Professionals (400449/04)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Mark Zunckel, declare that –

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;


I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

uMoya-NILU Consulting (Pty) Ltd

Name of company (if applicable):

August 2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only) 12/12/20/ or 12/9/11/L
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Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Promethium Carbon (Pty) Ltd		
Contact person:	Robbie Louw		
Postal address:	PO Box 131253, Bryanston		
Postal code:	2021	Cell:	082 557 8646
Telephone:	011 706 8185	Fax:	086 589 3466
E-mail:	Robbie@promethium.co.za		
Professional affiliation(s) (if any)			

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, R.T. Louw, declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

PROMETHEUM CARBON

Name of company (if applicable):

22/8/2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	21/08/2017

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Nathan Cook		
Contact person:	Nathan Cook		
Postal address:	Digby Wells House, Turnberry Office Park, 48 Grosvenor Road, Bryanston, South Africa		
Postal code:	2191	Cell:	082 318 6579
Telephone:	(011) 789 9495	Fax:	(011) 069 6801
E-mail:	Nathan.cook@digbywells.com		
Professional affiliation(s) (if any)			

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Nathan Cook, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Digby Wells Environmental

Name of company (if applicable):

21/08/2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Ms Renée van Aardt		
Contact person:	Ms Renée van Aardt		
Postal address:	Private Bag X10046, Randburg, 2125, South Africa		
Postal code:	2125	Cell:	(064) 212 5933
Telephone:	Tel: (011) 789 9495	Fax:	Fax: (011) 789 9498
E-mail:	renee.vanaardt@digbywells.com		
Professional affiliation(s) (if any)	Institute of Business Management of Southern Africa, Member no: IBM2012/93510.		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

Renée van Aardt
I, _____, declare that--

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Name of company(if applicable):

Digby Wells and Associates (South Africa) (Pty) Ltd

Date: 21/08/2017



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Mr Mashudu Rafundisani		
Contact person:	Mr Mashudu Rafundisani		
Postal address:	Private Bag X10046, Randburg, 2125, South Africa		
Postal code:	2125	Cell:	073 923 9512
Telephone:	+27 11 789 9495	Fax:	+27 11 069 6801
E-mail:	mashudu.rafundisani@digbywells.com		
Professional affiliation(s) (if any)	SACNASP, WISA		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Mashudu Rafundisani _____, declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;


I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Digby Wells Environmental

Name of company (if applicable):

21-08-2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Andre van Coller		
Contact person:	Andre van Coller		
Postal address:	Private Bag X10046, Randburg, South Africa		
Postal code:	2125	Cell:	+27 76 076 9443
Telephone:	+27 11 789 9495	Fax:	
E-mail:	Andre.van.coller@digbywells.com		
Professional affiliation(s) (if any)			

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, ~~Andre van Coller~~, declare that -- General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Digby Wells Environmental

Name of company (if applicable):

21 August 2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number: Date Received:	DEAT/EIA

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and

Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Katie Smuts		
Contact person:	Katie Smuts		
Postal address:	34 Harries Street Plumstead, Cape Town		
Postal code:	7800	Cell:	0727967754
Telephone:	0210130131	Fax:	
E-mail:	katie.smuts@ctsheritage.com		
Professional affiliation(s) (if any)	ASAPA; APHP; SAMA		

Project Consultant: Savannah Environmental (Pty) Ltd

Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I _____Katie Smuts, ,

declare that -- General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Name of company (if applicable): CTS Heritage

21/08/2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only) 12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Palaeontologist		
Contact person:	E. Butler		
Postal address:	48 Pierre Ollemans str, Bloemfontein		
Postal code:	9301	Cell:	084 4478759
Telephone:	084 4478759	Fax:	
E-mail:	elizebutler002@gmail.com		
Professional affiliation(s) (if any)	PSSA		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Elize Butler , declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Banzai Environmental Pty Ltd

Name of company (if applicable):

21-08-2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only)
NEAS Reference Number:	12/12/20/ or 12/9/11/L
Date Received:	DEA/EIA

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Noise – Morné de Jager		
Contact person:	PO Box 2047, Garsfontein East		
Postal address:	0060		
Postal code:	012 993 2165	Cell:	082 565 4059
Telephone:	morne@menco.co.za	Fax:	086 621 0292
E-mail:	Noise – Morné de Jager		
Professional affiliation(s) (if any)	SAAI, ASA		

Project Consultant:	Savannah Environmental		
Contact person:	Jo-Anne Thomas		
Postal address:	PO Box 148, Sunninghill		
Postal code:	2157	Cell:	082-775-5628
Telephone:	011-656-3237	Fax:	086-684-0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, **Morné de Jaager**, declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Enviro-Acoustic Research cc

Name of company (if applicable):

21 August 2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only) 12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Afzelia Environmental Consultants (Pty) Ltd		
Contact person:	Jon Marshall		
Postal address:	PO Box 2122, Westville.		
Postal code:	3630	Cell:	083 703 2995
Telephone:	031 266 8241	Fax:	
E-mail:	Jon @enviroconsult.co.za		
Professional affiliation(s) (if any)	Chartered Member of the Landscape Institute (UK). Registered Professional Landscape Architect (South Africa). EAPSA (ICB)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Jon Marshall , declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Environmental Planning and Design CC

Name of company (if applicable):

21st August 2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management license in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Urban-Econ Development Economists (Pty) Ltd		
Contact person:	Elena Broughton		
Postal address:	PO. Box 13554, Hatfield		
Postal code:	0028	Cell:	082 463 2325
Telephone:	012 342 8686	Fax:	086 619 6911
E-mail:	elena@urban-econ.com		
Professional affiliation(s) (if any)	None		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_
Elena Broughton

I, _____, declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Urban-Econ Development Economists (Pty) Ltd

Name of company (if applicable):

22/08/2017

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	2017/08/21

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Development of the Mutsho Power Project and associated infrastructure near Makhado (Louis Trichardt), Limpopo Province.

Specialist:	Traffic Engineer		
Contact person:	Stephen Mark Fautley		
Postal address:	Unit 1 B 4, The Avenues, Cnr Parklands Main and Village Walk, Parklands		
Postal code:	7441	Cell:	0843007722
Telephone:	021 55 777 30	Fax:	
E-mail:	Steve@techso.co.za		
Professional affiliation(s) (if any)	ECSA (200270171) and SAICE (201500599)		

Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Jo-Anne Thomas		
Postal address:	P.O. Box 148 Sunninghill		
Postal code:	2157	Cell:	082 775 5628
Telephone:	011 656 3237	Fax:	086 684 0547
E-mail:	joanne@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, Stephen Mark Fautley , declare that --

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Techso (Pty) Ltd

Name of company (if applicable):

2017/08/21

Date: