

## CURRICULUM VITAE OF JO-ANNE THOMAS

<b>Profession:</b>	Environmental Management and Compliance Consultant; Environmental Assessment Practitioner
<b>Specialisation:</b>	Environmental Management; Strategic environmental advice; Environmental compliance advice & monitoring; Environmental Impact Assessments; Policy, strategy & guideline formulation; Project Management; General Ecology
<b>Work experience:</b>	Nineteen (19) years in the environmental field

### VOCATIONAL EXPERIENCE

Provide technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, 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 (including client and authority liaison and management of specialist teams); 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)

### Short Courses:

- Environmental Impact Assessment, Potchefstroom University (1998)
- Environmental Law, Morgan University (2001)

### Professional Society Affiliations:

- Registered with the South African Council for Natural Scientific Professions as a Professional Natural Scientist: Environmental Scientist (400024/00)

## EMPLOYMENT

Date	Company	Roles and Responsibilities
<b>2006 - Current:</b>	Savannah Environmental (Pty) Ltd	Director Project manager Independent specialist environmental consultant, Environmental Assessment Practitioner (EAP) and advisor.
<b>1997 – 2005:</b>	Bohlweki Environmental (Pty) Ltd	Senior Environmental Scientist at. Environmental Management and Project Management
<b>January – July 1997:</b>	Sutherland High School, Pretoria	Junior Science Teacher

## PROJECT EXPERIENCE

Project experience includes large infrastructure projects, including electricity generation and transmission, wastewater treatment facilities, mining and prospecting activities, property development, and national roads, as well as strategy and guidelines development.

## RENEWABLE POWER GENERATION PROJECTS: PHOTOVOLTAIC SOLAR ENERGY FACILITIES

### *Environmental Impact Assessments and Environmental Management Programmes*

Project Name & Location	Client Name	Role
Christiana PV 2 SEF, North West	Solar Reserve South Africa	Project Manager & EAP
De Aar PV facility, Northern Cape	iNca Energy	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Everest SEF near Hennenman, Free State	FRV Energy South Africa	Project Manager & EAP
Graafwater PV SEF, Western Cape	iNca Energy	Project Manager & EAP
Grootkop SEF near Allanridge, Free State	FRV Energy South Africa	Project Manager & EAP
Hertzogville PV 2 SEF with 2 phases, Free State	SunCorp / Solar Reserve	Project Manager & EAP
Karoshhoek CPV facility on site 2 as part of the larger Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP
Kgabalatsane SEF North-East for Brits, North West	Built Environment African Energy Services	Project Manager & EAP
Kleinbegin PV SEF West of Groblershoop, Northern Cape	MedEnergy Global	Project Manager & EAP
Lethabo Power Station PV Installation, Free State	Eskom Holdings SoC Limited	Project Manager & EAP
Majuba Power Station PV Installation, Mpumalanga	Eskom Holdings SoC Limited	Project Manager & EAP
Merapi PV SEF Phase 1 – 4 South-East of Excelsior, Free State	SolaireDirect Southern Africa	Project Manager & EAP
Sannaspos Solar Park, Free State Province	SolaireDirect Southern Africa	Project Manager & EAP
Ofir-Zx PV Plant near Keimoes, Northern Cape	S28 Degrees Energy	Project Manager & EAP
Oryx SEF near Virginia, Free State	FRV Energy South Africa	Project Manager & EAP
Project Blue SEF North of Kleinsee, Northern Cape	WWK Development	Project Manager & EAP
S-Kol PV Plant near Keimoes, Northern Cape	S28 Degrees Energy	Project Manager & EAP
Sonnenberg PV Plant near Keimoes, Northern Cape	S28 Degrees Energy	Project Manager & EAP
Tutuka Power Station PV Installation, Mpumalanga	Eskom Transmission	Project Manager & EAP
Two PV sites within the Northern Cape	MedEnergy Global	Project Manager & EAP
Two PV sites within the Western & Northern Cape	iNca Energy	Project Manager & EAP
Upington PV SEF, Northern Cape	MedEnergy Global	Project Manager & EAP
Vredendal PV facility, Western Cape	iNca Energy	Project Manager & EAP
Waterberg PV plant, Limpopo	Thupela Energy	Project Manager & EAP
Watershed Phase I & II SEF near Litchtenburg, North West	FRV Energy South Africa	Project Manager & EAP
Alldays PV & CPV SEF Phase 1, Limpopo	BioTherm Energy	Project Manager & EAP

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Aberdeen PV SEF, Eastern Cape	BioTherm Energy	Project Manager & EAP
Christiana PV 1 SEF on Hartebeestpan Farm, North-West Province	Solar Reserve South Africa	Project Manager & EAP
Heuningspruit PV1 & PV 2 facilities near Koppies, Free State	Sun Mechanics	Project Manager & EAP
Kakamas PV Facility, Northern Cape	iNca Energy	Project Manager & EAP
Kakamas II PV Facility, Northern Cape	iNca Energy	Project Manager & EAP
Machadodorp 1 PV SEF, Mpumalanga	Solar To Benefit Africa	Project Manager & EAP
PV site within the Northern Cape	iNca Energy	Project Manager & EAP
PV sites within 4 ACSA airports within South Africa, National	Airports Company South Africa (ACSA)	Project Manager & EAP
RustMo1 PV Plant near Buffelspoort, North West	Momentous Energy	Project Manager & EAP
RustMo2 PV Plant near Buffelspoort, North West	Momentous Energy	Project Manager & EAP
RustMo3 PV Plant near Buffelspoort, North West	Momentous Energy	Project Manager & EAP
RustMo4 PV Plant near Buffelspoort, North West	Momentous Energy	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Sannaspos PV SEF Phase 2 near Bloemfontein, Free State	SolaireDirect Southern Africa	Project Manager & EAP
Solar Park Expansion within the Rooiwal Power Station, Gauteng	AFRKO Energy	Project Manager & EAP
Steynsrus SEF, Free State	SunCorp	Project Manager & EAP
Thaba Eco Lodge PV Facility, Gauteng	Camco Clean Energy	Project Manager & EAP

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Allemans Fontein SEF near Noupoot, Northern Cape	Fusion Energy	Project Manager & EAP
Amandel SEF near Thabazimbi, Limpopo	iNca Energy	Project Manager & EAP
Arola/Doornplaat SEF near Ventersdorp, North West	FRV & iNca Energy	Project Manager & EAP
Bloemfontein Airport PV Installation, Free State	The Power Company	Project Manager & EAP
Brakspruit SEF near Klerksorp, North West	FRV & iNca Energy	Project Manager & EAP
Carolus Poort SEF near Noupoot, Northern Cape	Fusion Energy	Project Manager & EAP
Damfontein SEF near Noupoot, Northern Cape	Fusion Energy	Project Manager & EAP
Everest SEF near Welkom, Free State	FRV & iNca Energy	Project Manager & EAP
Gillmer SEF near Noupoot, Northern Cape	Fusion Energy	Project Manager & EAP
Grootkop SEF near Allansridge, Free State	FRV & iNca Energy	Project Manager & EAP
Heuningspruit PV1 & PV 2 near Koppies, Free State	Cronimat	Project Manager & EAP
Kimberley Airport PV Installation, Northern Cape	The Power Company	Project Manager & EAP
Kolonnade Mall Rooftop PV Installation in Tshwane, Gauteng	Momentous Energy	Project Manager & EAP
Loskop SEF near Groblersdal, Limpopo	S&P Power Unit	Project Manager & EAP
Marble SEF near Marble Hall, Limpopo	S&P Power Unit	Project Manager & EAP
Morgenson PV1 SEF South-West of Windsorton, Northern Cape	Solar Reserve South Africa	Project Manager & EAP
OR Tambo Airport PV Installation, Gauteng	The Power Company	Project Manager & EAP
Oryx SEF near Virginia, Free State	FRV & iNca Energy	Project Manager & EAP
Rhino SEF near Vaalwater, Limpopo	S&P Power Unit	Project Manager & EAP
Rustmo2 PV Plant near Buffelspoort, North West	Momentous Energy	Project Manager & EAP
Spitskop SEF near Northam, Limpopo	FRV & iNca Energy	Project Manager & EAP
Steynsrus PV, Free State	Suncorp	Project Manager & EAP
Tabor SEF near Polokwane, Limpopo	FRV & iNca Energy	Project Manager & EAP
Upington Airport PV Installation, Northern Cape	The Power Company	Project Manager & EAP
Valeria SEF near Hartebeestpoort Dam, North West	Solar to Benefit Africa	Project Manager & EAP
Watershed SEF near Lichtenburg, North West	FRV & iNca Energy	Project Manager & EAP
Witkop SEF near Polokwane, Limpopo	FRV & iNca Energy	Project Manager & EAP
Woodmead Retail Park Rooftop PV Installation, Gauteng	Momentous Energy	Project Manager & EAP

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ECO and bi-monthly auditing for the construction of the Adams Solar PV Project Two South of Hotazel, Northern Cape	Enel Green Power	Project Manager
ECO for the construction of the Kathu PV Facility, Northern Cape	REISA	Project Manager
ECO and bi-monthly auditing for the construction of	Enel Green Power	Project Manager

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
the Pulida PV Facility, Free State		
ECO for the construction of the RustMo1 SEF, North West	Momentous Energy	Project Manager
ECO for the construction of the Sishen SEF, Northern Cape	Windfall 59 Properties	Project Manager
ECO for the construction of the Upington Airport PV Facility, Northern Cape	Sublanary Trading	Project Manager
Quarterly compliance monitoring of compliance with all environmental licenses for the operation activities at the Kathu PV facility, Northern Cape	REISA	Project Manager

### **Compliance Advice and ESAP Reporting**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Aggeneys Solar Farm, Northern Cape	BioTherm Energy	Environmental Advisor
Airies II PV Facility SW of Kenhardt, Northern Cape	BioTherm Energy	Environmental Advisor
Kalahari SEF Phase II in Kathu, Northern Cape	Engie	Environmental Advisor
Kathu PV Facility, Northern Cape	Building Energy	Environmental Advisor
Kenhardt PV Facility, Northern Cape	BioTherm Energy	Environmental Advisor
Kleinbegin PV SEF West of Groblershoop, Northern Cape	MedEnergy	Environmental Advisor
Konkoonises II SEF near Pofadder, Northern Cape	BioTherm Energy	Environmental Advisor
Konkoonises Solar Farm, Northern Cape	BioTherm Energy	Environmental Advisor
Lephalale SEF, Limpopo	Exxaro	Environmental Advisor
Pixley ka Seme PV Park, South-East of De Aar, Northern Cape	African Clean Energy Developments (ACED)	Environmental Advisor
RustMo1 PV Plant near Buffelspoort, North West	Momentous Energy	Environmental Advisor
Scuitdrift 1 SEF & Scuitdrift 2 SEF, Limpopo	Building Energy	Environmental Advisor
Sirius PV Plants, Northern Cape	Aurora Power Solutions	Environmental Advisor
Upington Airport PV Power Project, Northern Cape	Sublunary Trading	Environmental Advisor
Upington SEF, Northern Cape	Abengoa Solar	Environmental Advisor
Ofir-ZX PV SEF near Keimoes, Northern Cape	Networx S28 Energy	Environmental Advisor

### **Due Diligence Reporting**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
5 PV SEF projects in Lephalale, Limpopo	iNca Energy	Environmental Advisor
Prieska PV Plant, Northern Cape	SunEdison Energy India	Environmental Advisor
Sirius Phase One PV Facility near Upington, Northern Cape	Aurora Power Solutions	Environmental Advisor

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Biodiversity Permit & WULA for the Aggeneys SEF near Aggeneys, Northern Cape	BioTherm Energy	Project Manager & EAP
Biodiversity Permit for the Konkoonises II SEF near Pofadder, Northern Cape	BioTherm Energy	Project Manager & EAP
Biodiversity Permitting for the Lephalale SEF, Limpopo	Exxaro Resources	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Environmental Permitting for the Kleinbegin PV SEF West of Groblershoop, Northern Cape	MedEnergy	Project Manager & EAP
Environmental Permitting for the Upington SEF, Northern Cape	Abengoa Solar	Project Manager & EAP
Environmental Permitting for the Kathu PV Facility, Northern Cape	Building Energy	Project Manager & EAP
Environmental Permitting for the Konkoonsies Solar Farm, Northern Cape	BioTherm Energy	Project Manager & EAP
Environmental Permitting for the Lephalale SEF, Limpopo	Exxaro Resources	Project Manager & EAP
Environmental Permitting for the Scuitdrift 1 SEF & Scuitdrift 2 SEF, Limpopo	Building Energy	Project Manager & EAP
Environmental Permitting for the Sirius PV Plant, Northern Cape	Aurora Power Solutions	Project Manager & EAP
Permits for the Kleinbegin and UAP PV Plants, Northern Cape	MedEnergy Global	Project Manager & EAP
S53 Application for Arriesfontein Solar Park Phase 1 – 3 near Danielskuil, Northern Cape	Solar Reserve / SunCorp	Project Manager & EAP
S53 Application for Hertzogville PV1 & PV 2 SEFs, Free State	Solar Reserve / SunCorp	Project Manager & EAP
S53 Application for the Bloemfontein Airport PV Facility, Free State	Sublunary Trading	Project Manager & EAP
S53 Application for the Kimberley Airport PV Facility, Northern Cape	Sublunary Trading	Project Manager & EAP
S53 Application for the Project Blue SEF, Northern Cape	WWK Developments	Project Manager & EAP
S53 Application for the Upington Airport PV Facility, Free State	Sublunary Trading	Project Manager & EAP
WULA for the Kalahari SEF Phase II in Kathu, Northern Cape	Engie	Project Manager & EAP

## **RENEWABLE POWER GENERATION PROJECTS: CONCENTRATED SOLAR FACILITIES (CSP)**

### ***Environmental Impact Assessments and Environmental Management Programmes***

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Ilanga CSP 2, 3, 4, 5, 7 & 9 Facilities near Upington, Northern Cape	Emvelo Holdings	Project Manager & EAP
Ilanga CSP near Upington, Northern Cape	Ilangethu Energy	Project Manager & EAP
Ilanga Tower 1 Facility near Upington, Northern Cape	Emvelo Holdings	Project Manager & EAP
Karoshhoek CPVPD 1-4 facilities on site 2 as part of the larger Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP
Karoshhoek CSP facilities on sites 1.4; 4 & 5 as part of the larger Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP
Karoshhoek Linear Fresnel 1 Facility on site 1.1 as part of the larger Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ECO for the construction of the !Khi CSP Facility, Northern Cape	Abengoa Solar	Project Manager
ECO for the construction of the Ilanga CSP 1 Facility near Upington, Northern Cape	Karoshhoek Solar One	Project Manager
ECO for the construction of the Kathu Solar Park, Northern Cape	Kathu Solar	Project Manager
ECO for the construction of the KaXu! CSP Facility, Northern Cape	Abengoa Solar	Project Manager
Internal audit of compliance with the conditions of the IWUL issued to the Karoshhoek Solar One CSP Facility, Northern Cape	Karoshhoek Solar One	Project Manager

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Upington CSP (Tower) Plant near Kanoneiland, Northern Cape	iNca Energy and FRV	Project Manager & EAP

### **Compliance Advice and ESAP reporting**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Ilanga CSP Facility near Upington, Northern Cape	Ilangethu Energy	Environmental Advisor
Ilanga CSP 2, Northern Cape	FG Emvelo	Environmental Advisor
Kathu CSP Facility, Northern Cape	GDF Suez	Environmental Advisor
Lephalale SEF, Limpopo	Cennergi	Environmental Advisor
Solis I CSP Facility, Northern Cape	Brightsource	Environmental Advisor

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Environmental Permitting for the Ilanga CSP Facility near Upington, Northern Cape	Ilangethu Energy	Project Manager & EAP
Environmental Permitting for the Kathu CSP, Northern Cape	GDF Suez	Project Manager & EAP
WULA for the Solis I CSP Facility, Northern Cape	Brightsource	Project Manager & EAP

### **RENEWABLE POWER GENERATION PROJECTS: WIND ENERGY FACILITIES**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Sere WEF, Western Cape	Eskom Holdings SoC Limited	EAP
Aberdeen WEF, Eastern Cape	Eskom Holdings SoC Limited	Project Manager & EAP
Amakhala Emoyeni WEF, Eastern Cape	Windlab Developments	Project Manager & EAP
EXXARO West Coast WEF, Western Cape	EXXARO Resources	Project Manager & EAP
Goereesoe Wind Farm near Swellendam, Western Cape	iNca Energy	Project Manager & EAP
Hartneest WEF, Western Cape	Juwi Renewable Energies	Project Manager & EAP
Hopefield WEF, Western Cape	Umoya Energy	EAP
Kleinsee WEF, Northern Cape	Eskom Holdings SoC Limited	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Klipheuwel/Dassiesfontein WEF within the Overberg area, Western Cape	BioTherm Energy	Project Manager & EAP
Moorreesburg WEF, Western Cape	iNca Energy	Project Manager & EAP
Oyster Bay WEF, Eastern Cape	Renewable Energy Resources Southern Africa	Project Manager & EAP
Project Blue WEF, Northern Cape	Windy World	Project Manager & EAP
Rheboksfontein WEF, Western Cape	Moyeng Energy	Project Manager & EAP
Spitskop East WEF near Riebeeck East, Eastern Cape	Renewable Energy Resources Southern Africa	Project Manager & EAP
Suurplaat WEF, Western Cape	Moyeng Energy	Project Manager & EAP
Swellendam WEF, Western Cape	IE Swellendam	Project Manager & EAP
Tsitsikamma WEF, Eastern Cape	Exxarro	Project Manager & EAP
West Coast One WEF, Western Cape	Moyeng Energy	Project Manager & EAP

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Amakhala Emoyeni Wind Monitoring Masts, Eastern Cape	Windlab Developments	Project Manager & EAP
Beaufort West Wind Monitoring Masts, Western Cape	Umoya Energy	Project Manager & EAP
Hopefield Community Wind Farm near Hopefield, Western Cape	Umoya Energy	Project Manager & EAP
Koekenaap Wind Monitoring Masts, Western Cape	EXXARO Resources	Project Manager & EAP
Koingnaas WEF, Northern Cape	Just Palm Tree Power	Project Manager & EAP
Laingsburg Area Wind Monitoring Masts, Western Cape	Umoya Energy	Project Manager & EAP
Overberg Area Wind Monitoring Masts, Western Cape	BioTherm Energy	Project Manager & EAP
Oyster Bay Wind Monitoring Masts, Eastern Cape	Renewable Energy Systems Southern Africa (RES)	Project Manager & EAP

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Albertinia WEF, Western Cape	BioTherm Energy	Project Manager & EAP
Koingnaas WEF, Northern Cape	Just Pal Tree Power	Project Manager & EAP
Napier Region WEF Developments, Western Cape	BioTherm Energy	Project Manager & EAP
Tsitsikamma WEF, Eastern Cape	Exxarro Resources	Project Manager & EAP
Various WEFs within an identified area in the Overberg area, Western Cape	BioTherm Energy	Project Manager & EAP
Various WEFs within an identified area on the West Coast, Western Cape	Investec Bank Limited	Project Manager & EAP
Various WEFs within an identified area on the West Coast, Western Cape	Eskom Holdings Limited	Project Manager & EAP
Various WEFs within the Western Cape	Western Cape Department of Environmental Affairs and Development Planning	Project Manager & EAP
Velddrift WEF, Western Cape	VentuSA Energy	Project Manager & EAP
Wind 1000 Project	Thabo Consulting on behalf of Eskom Holdings	Project Manager & EAP



<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Wittekleibosch, Snylip & Doriskraal WEFs, Eastern Cape	Exxarro Resources	Project Manager & EAP

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ECO for the construction of the West Coast One WEF, Western Cape	Aurora Wind Power	Project Manager
ECO for the construction of the Gouda WEF, Western Cape	Blue Falcon	Project Manager
EO for the Dassiesklip Wind Energy Facility, Western Cape	Group 5	Project Manager
Quarterly compliance monitoring of compliance with all environmental licenses for the operation activities at the Gouda Wind Energy facility near Gouda, Western Cape Province	Blue Falcon	Project Manager
Annual auditing of compliance with all environmental licenses for the operation activities at the West Coast One Wind Energy facility near Vredenburg, Western Cape Province	Aurora Wind Power	Project Manager

### **Compliance Advice**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Amakhala Phase 1 WEF, Eastern Cape	Cennergi	Environmental Advisor
Dassiesfontein WEF within the Overberg area, Western Cape	BioTherm Energy	Environmental Advisor
Excelsior Wind Farm, Western Cape	BioTherm Energy	Environmental Advisor
Great Karoo Wind Farm, Northern Cape	African Clean Energy Developments (ACED)	Environmental Advisor
Hopefield Community WEF, Western Cape	African Clean Energy Developments (ACED)	Environmental Advisor
Rheboksfontein WEF, Western Cape	Moyeng Energy	Environmental Advisor
Tiqua WEF, Western Cape	Cennergi	Environmental Advisor
Tsitsikamma WEF, Eastern Cape	Cennergi	Environmental Advisor
West Coast One WEF, Western Cape	Moyeng Energy	Environmental Advisor

### **Due Diligence Reporting**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Witteberg WEF, Western Cape	EDPR Renewables	Environmental Advisor
IPD Vredenburg WEF within the Saldanha Bay area, Western Cape	IL&FS Energy Development Company	Environmental Advisor

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Biodiversity Permitting for the Power Line between the Tsitikamma Community WEF & the Diep River Substation, Eastern Cape	Cennergi	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Biodiversity Permitting for the West Coast One WEF, Western Cape	Aurora Wind Power	Project Manager & EAP
Environmental Permitting for the Excelsior WEF, Western Cape	BioTherm Energy	Project Manager & EAP
Plant Permits & WULA for the Tsitsikamma Community WEF, Eastern Cape	Cennergi	Project Manager & EAP
S24G and WULA for the Rectification for the commencement of unlawful activities on Ruimsig AH in Honeydew, Gauteng	Hossam Soror	Project Manager & EAP
S24G Application for the Rheboksfontein WEF, Western Cape	Ormonde - Theo Basson	Project Manager & EAP
S53 Application & WULA for Suurplaat and Gemini WEFs, Northern Cape	Engie	Project Manager & EAP
S53 Application for the Hopefield Community Wind Farm near Hopefield, Western Cape	Umoya Energy	Project Manager & EAP
S53 Application for the Project Blue WEF, Northern Cape	WWK Developments	Project Manager & EAP
S53 for the Oyster Bay WEF, Eastern Cape	RES	Project Manager & EAP
WULA for the Great Karoo Wind Farm, Northern Cape	African Clean Energy Developments (ACED)	Project Manager & EAP

## **CONVENTIONAL POWER GENERATION PROJECTS (COAL)**

### ***Environmental Impact Assessments and Environmental Management Programmes***

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Mutsho Power Station near Makhado, Limpopo Province	Mutsho Consortium	Project Manager & EAP
Coal-fired Power Station near Ogies, Mpumalanga	Ruukki SA	Project Manager & EAP
Thabametsi IPP Coal-fired Power Station, near Lephallale, Limpopo	Axia	Project Manager & EAP
Transalloys Coal-fired Power Station, Mpumalanga	Transalloys	Project Manager & EAP
Tshivasho IPP Coal-fired Power Station (with WML), near Lephallale, Limpopo	Cennergi	Project Manager & EAP
Umbani Coal-fired Power Station, near Kriel, Mpumalanga	ISS Global Mining	Project Manager & EAP
Waterberg IPP Coal-Fired Power Station near Lephallale, Limpopo	Exxaro Resources	Project Manager & EAP

### ***Basic Assessments***

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Coal Stockyard on Medupi Ash Dump Site, Limpopo Province	Eskom Holdings	Project Manager & EAP
Biomass Co-Firing Demonstration Facility at Arnot Power Station East of Middleburg, Mpumalanga	Eskom Holdings	Project Manager & EAP

### ***Screening Studies***

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Baseload Power Station near Lephallale, Limpopo	Cennergi	Project Manager & EAP
Coal-Fired Power Plant near Delmas, Mpumalanga	Exxaro Resources	Project Manager & EAP

Makhado Power Station, Limpopo	Mutsho Consortium, Limpopo	Project Manager & EAP
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### **Environmental Compliance, Auditing and ECO**

Project Name & Location	Client Name	Role
ECO for the Camden Power Station, Mpumalanga	Eskom Holdings	Project Manager

### **Compliance Advice**

Project Name & Location	Client Name	Role
Thabametsi IPP Coal-fired Power Station, near Lephhalale, Limpopo	Axia	Environmental Advisor

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

Project Name & Location	Client Name	Role
Permit application for the Thabametsi Bulk Water Pipeline, near Lephhalale, Limpopo	Axia	Project Manager & EAP
S53 & WULA for the Waterberg IPP Coal-Fired Power Station near Lephhalale, Limpopo	Exxaro Resources	Project Manager & EAP
S53 Application for the Tshivasho Coal-fired Power Station near Lephhalale, Limpopo	Cennergi	Project Manager & EAP

## **CONVENTIONAL POWER GENERATION PROJECTS (GAS)**

### **Environmental Impact Assessments and Environmental Management Programmes**

Project Name & Location	Client Name	Role
Ankerlig OCGT to CCGT Conversion project & 400 kV transmission power line between Ankerlig and the Omega Substation, Western Cape	Eskom Holdings SoC Limited	Project Manager & EAP
Gourikwa OCGT to CCGT Conversion project & 400 kV transmission power line between Gourikwa & Proteus Substation, Western Cape	Eskom Holdings SoC Limited	Project Manager & EAP
Richards Bay Gas to Power Combined Cycle Power Station, KwaZulu-Natal	Eskom Holdings SoC Limited	Project Manager & EAP
Richards Bay Gas to Power Plant, KwaZulu-Natal	Richards Bay Gas	Project Manager & EAP
Decommissioning & Recommissioning of 3 Gas Turbine Units at Acacia Power Station & 1 Gas Turbine Unit at Port Rex Power Station to the existing Ankerlig Power Station in Atlantis Industria, Western Cape	Eskom Holdings	Project Manager & EAP

### **Screening Studies**

Project Name & Location	Client Name	Role
Fatal Flaw Analysis for 3 area identified for the establishment of a 500MW CCGT Power Station	Globeleq Advisors Limited	Project Manager & EAP
Richards Bay Gas to Power Combined Cycle Power Station, KwaZulu-Natal	Eskom Holdings SoC Limited	Project Manager & EAP

## **GRID INFRASTRUCTURE PROJECTS**

### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Aggeneis-Oranjemond Transmission Line & Substation Upgrade, Northern Cape	Eskom Transmission	Project Manager & EAP
Ankerlig-Omega Transmission Power Lines, Western Cape	Eskom Transmission	Project Manager & EAP
Karoshhoek Grid Integration project as part of the Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP
Koeberg-Omega Transmission Power Lines,, Western Cape	Eskom Transmission	Project Manager & EAP
Koeberg-Stikland Transmission Power Lines, Western Cape	Eskom Transmission	Project Manager & EAP
Kyalami Strengthening Project, Gauteng	Eskom Transmission	Project Manager & EAP
Mokopane Integration Project, Limpopo	Eskom Transmission	Project Manager & EAP
Saldanha Bay Strengthening Project, Western Cape	Eskom Transmission	Project Manager & EAP
Steelpoort Integration Project, Limpopo	Eskom Transmission	Project Manager & EAP
Transmission Lines from the Koeberg-2 Nuclear Power Station site, Western Cape	Eskom Transmission	Project Manager & EAP
Tshwane Strengthening Project, Phase 1, Gauteng	Eskom Transmission	Project Manager & EAP

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Dassenberg-Koeberg Power Line Deviation from the Koeberg to the Ankerlig Power Station, Western Cape	Eskom Holdings	Project Manager & EAP
Golden Valley II WEF Power Line & Substation near Cookhouse, Eastern Cape	BioTherm Energy	Project Manager & EAP
Golden Valley WEF Power Line near Cookhouse, Eastern Cape	BioTherm Energy	Project Manager & EAP
Karoshhoek Grid Integration project as part of the Karoshhoek Solar Valley Development East of Upington, Northern Cape	FG Emvelo	Project Manager & EAP
Konkoonsies II PV SEF Power Line to the Paulputs Substation near Pofadder, Northern Cape	BioTherm Energy	Project Manager & EAP
Perdekraal West WEF Powerline to the Eskom Kappa Substation, Western Cape	BioTherm Energy	Project Manager & EAP
Rheboksfontein WEF Powerline to the Aurora Substation, Western Cape	Moyeng Energy	Project Manager & EAP
Soetwater Switching Station near Sutherland, Northern Cape	African Clean Energy Developments (ACED)	Project Manager & EAP
Solis Power I Power Line & Switchyard Station near Upington, Northern Cape	Brightsource	Project Manager & EAP
Stormwater Canal System for the Ilanga CSP near Upington, Northern Cape	Karoshhoek Solar One	Project Manager & EAP
Tsitsikamma Community WEF Powerline to the Diep River Substation, Eastern Cape	Eskom Holdings	Project Manager & EAP

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
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ECO for the construction of the Ferrum-Mookodi Transmission Line, Northern Cape and North West	Trans-Africa Projects on behalf of Eskom	Project Manager
EO for the construction of the Gamma-Kappa Section A Transmission Line, Western Cape	Trans-Africa Projects on behalf of Eskom	Project Manager
EO for the construction of the Gamma-Kappa Section B Transmission Line, Western Cape	Trans-Africa Projects on behalf of Eskom	Project Manager
EO for the construction of the Hydra IPP Integration project, Northern Cape	Trans-Africa Projects on behalf of Eskom	Project Manager
EO for the construction of the Kappa-Sterrekus Section C Transmission Line, Western Cape	Trans-Africa Projects on behalf of Eskom	Project Manager
EO for the construction of the Namaqualand Strengthening project in Port Nolloth, Western Cape	Trans-Africa Projects on behalf of Eskom	Project Manager
ECO for the construction of the Neptune Substation Soil Erosion Mitigation Project, Eastern Cape	Eskom	Project Manager
ECO for the construction of the Ilanga-Gordonia 132kV power line, Northern Cape	Karoshhoek Solar One	Project Manager

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Environmental Permitting and WULA for the Rockdale B Substation & Loop in Power Lines,	Eskom Holdings	Project Manager & EAP
Environmental Permitting and WULA for the Steelpoort Integration project, Limpopo	Eskom Holdings	Project Manager & EAP
Environmental Permitting for Solis CSP near Upington, Northern Cape	Brightsource	Project Manager & EAP

### **MINING SECTOR PROJECTS**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Elitheni Coal Mine near Indwe, Eastern Cape	Elitheni Coal	Project Manager & EAP
Groot Letaba River Development Project Borrow Pits	liso	Project Manager & EAP
Grootegeluk Coal Mine for coal transportation infrastructure between the mine and Medupi Power Station (EMPr amendment) , Limpopo	Eskom Holdings	Project Manager & EAP
Waterberg Coal Mine (EMPr amendment), Limpopo	Seskoko Resources	Project Manager & EAP

#### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Rare Earth Separation Plant in Vredendal, Western Cape	Rareco	Project Manager & EAP

#### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ECO for the construction of the Duhva Mine Water Recovery Project, Mpumalanga	Eskom Holdings SoC Limited	Project Manager
External compliance audit of Palesa Coal Mine's Integrated Water Use License (IWUL), near KwaMhlanga, Mpumalanga Province	HCI Coal	Project Manager

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
External compliance audit of Palesa Coal Mine's Waste Management License (WML) and EMP, near KwaMhlanga, Mpumalanga Province	HCI Coal	Project Manager
External compliance audit of Mbali Coal Mine's Integrated Water Use License (IWUL), near Ogies, Mpumalanga Province	HCI Coal	Project Manager

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Waste Licence Application for the Rare Earth Separation Plant in Vredendal, Western Cape	Rareco	Project Manager & EAP
WULA for the Expansion of the Landfill site at Exxaro's Namakwa Sands Mineral Separation Plant, Western Cape	Exxaro Resources	Project Manager & EAP

### **INFRASTRUCTURE DEVELOPMENT PROJECTS (BRIDGES, PIPELINES, ROADS, WATER RESOURCES, STORAGE, ETC)**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Bridge across the Ngotwane River, on the border of South Africa and Botswana	Eskom Holdings	Project Manager & EAP
Chemical Storage Tanks, Metallurgical Plant Upgrade & Backfill Plant upgrade at South Deep Gold Mine, near Westonaria, Gauteng	Goldfields	Project Manager & EAP
Expansion of the existing Welgedacht Water Care Works, Gauteng	ERWAT	Project Manager & EAP
Golden Valley WEF Access Road near Cookhouse, Eastern Cape	BioTherm Energy	Project Manager & EAP
Great Fish River Wind Farm Access Roads and Watercourse Crossings near Cookhouse, Eastern Cape	African Clean Energy Developments (ACED)	Project Manager & EAP
Ilanga CSP Facility Watercourse Crossings near Upington, Northern Cape	Karoshhoek Solar one	Project Manager & EAP
Modification of the existing Hartebeestfontein Water Care Works, Gauteng	ERWAT	Project Manager & EAP
N10 Road Realignment for the Ilanga CSP Facility, East of Upington, Northern Cape	SANRAL	Project Manager & EAP
Nxuba (Bedford) Wind Farm Watercourse Crossings near Cookhouse, Eastern Cape	African Clean Energy Developments (ACED)	Project Manager & EAP
Pollution Control Dams at the Medupi Power Station Ash Dump & Coal Stockyard, Limpopo	Eskom	Project Manager & EAP
Qoboshane borrow pits (EMPr only), Eastern Cape	Emalahleni Local Municipality	Project Manager & EAP
Tsitsikamma Community WEF Watercourse Crossings, Eastern Cape	Cennergi	Project Manager & EAP

#### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Harmony Gold WWTW at Doornkop Mine, Gauteng	Harmony Doornkop Plant	Project Manager & EAP

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Ofir-ZX Watercourse Crossing for the Solar PV Facility, near Keimoes, Northern Cape	Networx S28 Energy	Project Manager & EAP
Qoboshane bridge & access roads, Eastern Cape	Emalaheni Local Municipality	Project Manager & EAP
Relocation of the Assay Laboratory near Carletonville, Gauteng	Sibanye Gold	Project Manager & EAP
Richards Bay Harbour Staging Area, KwaZulu-Natal	Eskom Holdings	Project Manager & EAP
S-Kol Watercourse Crossing for the Solar PV Facility, East of Keimoes, Northern Cape	Networx S28 Energy	Project Manager & EAP
Sonnenberg Watercourse Crossing for the Solar PV Facility, West Keimoes, Northern Cape	Networx S28 Energy	Project Manager & EAP

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Roodepoort Open Space Optimisation Programme (OSOP) Precinct, Gauteng	TIMAC Engineering Projects	Project Manager & EAP

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ECO and bi-monthly auditing for the construction of the Olifants River Water Resources Development Project (ORWRDP) Phase 2A: De Hoop Dam, R555 realignment and housing infrastructure	Department of Water and Sanitation	Project Manager Auditor
ECO for the Rehabilitation of the Blaaupan & Storm Water Channel, Gauteng	Airports Company of South Africa (ACSA)	Project Manager
Due Diligence reporting for the Better Fuel Pyrolysis Facility, Gauteng	Better Fuels	Project Manager
ECO for the Construction of the Water Pipeline from Kendal Power Station to Kendal Pump Station, Mpumalanga	Transnet	Project Manager

### **Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
WULA for the Izubulo Private Nature Reserve, Limpopo	Kjell Bismeyer, Jann Bader, Laurence Saad	Project Manager & EAP
WULA for the Masodini Private Game Lode, Limpopo	Masodini Private Game Lodge	Environmental Advisor
WULA for the Ezulwini Private Nature Reserve, Limpopo	Ezulwini Investments	Project Manager & EAP
WULA for the Masodini Private Game Lode, Limpopo	Masodini Private Game Lodge	Project Manager & EAP
WULA for the N10 Realignment at the Ilanga SEF, Northern Cape	Karoshok Solar One	Project Manager & EAP

## **HOUSING AND URBAN PROJECTS**

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Postmasburg Housing Development, Northern Cape	Transnet	Project Manager & EAP

### **Compliance Advice and reporting**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Kampi ya Thude at the Olifants West Game Reserve, Limpopo	Nick Elliot	Environmental Advisor

### **ENVIRONMENTAL MANAGEMENT TOOLS**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Development of the 3rd Edition Environmental Implementation Plan (EIP)	Gauteng Department of Agriculture and Rural Development (GDARD)	Project Manager & EAP
Development of Provincial Guidelines on 4x4 routes, Western Cape	Western Cape Department of Environmental Affairs and Development Planning	EAP
Compilation of Construction and Operation EMP for the Braamhoek Transmission Integration Project, Kwazulu-Natal	Eskom Holdings	Project Manager & EAP
Compilation of EMP for the Wholesale Trade of Petroleum Products, Gauteng	Munaca Technologies	Project Manager & EAP
Operational Environmental Management Programme (OEMP) for Medupi Power Station, Limpopo	Eskom Holdings	Project Manager & EAP
Operational Environmental Management Programme (OEMP) for the Dube TradePort Site Wide Precinct	Dube TradePort Corporation	Project Manager & EAP
Operational Environmental Management Programme (OEMP) for the Kusile Power Station, Mpumalanga	Eskom Holdings	Project Manager & EAP
Review of Basic Assessment Process for the Wittekleibosch Wind Monitoring Mast, Eastern Cape	Exxaro Resources	Project Manager & EAP
Revision of the EMP for the Sirius Solar PV	Aurora Power Solutions	Project Manager & EAP
State of the Environment (SoE) for Emalahleni Local Municipality, Mpumalanga	Simo Consulting on behalf of Emalahleni Local Municipality	Project Manager & EAP
Aspects and Impacts Register for Salberg Concrete Products operations	Salberg Concrete Products	EAP

### **PROJECTS OUTSIDE OF SOUTH AFRICA**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Advisory Services for the Zizabona Transmission Project, Zambia, Zimbabwe, Botswana & Namibia	PHD Capital	Advisor
EIA for the Semonkong WEF, Lesotho	MOSCET	Project Manager & EAP
EMP for the Kuvaninga Energia Gas Fired Power Project, Mozambique	ADC (Pty) Ltd	Project Manager & EAP
Environmental Screening Report for the SEF near Thabana Morena, Lesotho	Building Energy	EAP
EPBs for the Kawambwa, Mansa, Mwense and Nchelenge SEFs in Luapula Province, Zambia	Building Energy	Project Manager & EAP
ESG Due Diligence for the Hilton Garden Inn Development in Windhoek, Namibia	Vatange Capital	Project Manager
Mandahill Mall Rooftop PV SEF EPB, Lusaka, Zambia	Building Energy	Project Manager & EAP



## CURRICULUM VITAE OF SARAH WATSON

<b>Profession:</b>	Environmental Consultant
<b>Specialisation:</b>	Environmental Impact Assessment, Environmental Management, Environmental Compliance and Due Diligence, and Compilation of Reports for projects in the infrastructure sector.
<b>Work Experience:</b>	Seven (7) years in the environmental field

### VOCATIONAL EXPERIENCE

Sarah has a Bachelor of Social Science (B.Soc.Sci.) Honours Degree in Geography and Environmental Management from the University of KwaZulu-Natal (UKZN), and seven (7) years of experience as an Environmental Consultant in the field of Environmental Impact Assessment and Environmental Management. She has experience working on a range of projects, specifically within the telecommunications; residential; industrial; bulk infrastructure; rural development; and energy sectors.

### SKILLS BASE AND CORE COMPETENCIES

- Environmental Assessment
- Environmental Management
- Environmental Compliance Monitoring
- Geographic Information System (GIS)
- Stakeholder Engagement

### EDUCATION AND PROFESSIONAL STATUS

#### Degrees:

- B.Soc.Sci. Honours in Geography and Environmental Management, University of KwaZulu-Natal, 2007.
- B.Soc.Sci. Geography and Environmental Management, University of KwaZulu-Natal, 2006.

#### Professional Society Affiliations:

- Member of the South African affiliate of the International Association for Impact Assessment (IAIASa).

- Member of the Society of South African Geographers (SSAG).

## EMPLOYMENT

Date	Company	Roles and Responsibilities
<b>October 2016 – Current</b>	Savannah Environmental (Pty) Ltd	Environmental Consultant <i>Tasks included: Executing Environmental Impact Assessment (EIA) processes, GIS Work, Environmental Screening, Environmental Due Diligence, and Environmental Management and auditing</i>
<b>December 2013 – December 2014</b>	Golder Associates Africa (Pty) Ltd	Environmental Consultant <i>Tasks included: Executing Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes, GIS work, Environmental Due Diligence, and Environmental Management and auditing</i>
<b>January 2011 – November 2013</b>	Scientific and Industrial Research (CSIR)	Environmental Consultant <i>Tasks included: Executing Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes, GIS work, Public Participation, Environmental Screening, and Environmental Management</i>
<b>April 2008 – December 2010</b>	K2M Environmental (Pty) Ltd	Environmental Consultant <i>Tasks included: Assisting Senior Environmental Consultant with executing Basic Assessment (BA) processes, GIS work, Public Participation, Preliminary Environmental Screening, and Environmental Managements</i>

## PROJECT EXPERIENCE

### Renewable Power Generation Projects: Solar Energy Facilities

#### **Environmental Impact Assessments and Environmental Management Programmes**

Project Name & Location	Client Name	Role
Combined EIA for the Betelgeuse PV Solar Projects 1, 2, 3 and 4; between Murraysburg and Victoria West, Western Cape Province.	Aurora Power Solutions (Pty) Ltd	Environmental, GIS and Public Participation Consultant (Scoping Phase)
EIA for the 75 MW Glen Thorne PV Solar Facility, near Bloemfontein, Free State Province.	SolaireDirect	Author of the draft Scoping Report (SR)

#### **Basic Assessments**

Project Name & Location	Client Name	Role
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BA for the PV Power Project on Kennilworth Farm, Northern Cape.	Biotherm Energy	Author of the draft Basic Assessment Report (BAR)
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### Screening Studies

Project Name & Location	Client Name	Role
Environmental Site Screening Assessment For Solar PV Energy Facilities proposed at Salima, Lilongwe and Golomoti, Central Region, Malawi.	H1 Holdings (Pty) Ltd	Environmental and GIS Consultant

### Environmental Compliance, Auditing and ECO

Project Name & Location	Client Name	Role
2017 Annual Environmental Compliance Evaluation with the Equator Principles and Environmental and Social Action Plan for the Mulilo Solar PV De Aar Photovoltaic Solar Energy Facility, Northern Cape Province	Mulilo Renewable Energy Solar PV De Aar (Pty) Ltd	Auditor
2017 Annual Environmental Compliance Evaluation with the Equator Principles and Environmental and Social Action Plan for the Mulilo Solar PV Prieska Photovoltaic Solar Energy Facility, Northern Cape Province	Mulilo Renewable Energy Solar PV Prieska (Pty) Ltd	Auditor
Biannual Environmental Compliance Audit of the Konkoonsies 10MW Photovoltaic (PV) Solar Energy Facility near Pofadder, Northern Cape Province	Limarco 77(Pty) Ltd	Auditor
Biannual Environmental Compliance Audit of the Aries 10MW Photovoltaic (PV) Solar Energy Facility near Kenhardt, Northern Cape Province	Sevenstones 159 (Pty) Ltd	Auditor
Final Environmental Compliance Audit for the Xina Solar One Thermal Plant, near Pofadder, Northern Cape Province	Xina Solar One RF (Pty) Ltd	Auditor

### Renewable Power Generation Projects: Wind Energy Facilities

#### Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	Client Name	Role
Combined EIA for the Ishwati Emoyeni Wind Energy Facility and associated Eskom Grid Connection Infrastructure, near Murraysburg, Western Cape Province.	Windlab Developments South Africa (Pty) Ltd (WDSA)	Environmental, GIS, and Public Participation Consultant (Scoping Phase)
EIA for the proposed Universal Wind Energy Project in the Coega IDZ, Eastern Cape Province.	Universal Wind	Environmental Consultant

### Screening Studies

Project Name & Location	Client Name	Role
Environmental Screening Study (ESS) of Sites being Investigated for Potential Wind Energy Projects, in the Northern Cape, Eastern Cape, Western Cape; and KwaZulu-Natal Provinces.	Confidential	Environmental and GIS Consultant

### Due Diligence Reporting

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Environmental and Social Due Diligence Report for the Roggeveld Wind Farm in the Northern and Western Cape Province.	Building Energy South Africa (Pty) Ltd	Environmental Consultant

### **Conventional Power Generation Projects (Coal)**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
H2 Energy Power Station and associated infrastructure near KwaMhlanga, Mpumalanga Province.	H2 Clean Energy (Pty) Ltd	Environmental and GIS Consultant
Mutsho Power Project and Associated Infrastructure on a site near Makhado (Louis Trichardt), Limpopo Province.	Mutsho Power (Pty) Ltd	Environmental and GIS Consultant

#### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Environmental Site Screening Assessment for a new coal-fired power station near Makhado (Louis Trichardt), Limpopo Province.	Confidential	Environmental and GIS Consultant

### **Mining Sector Projects**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ESIA for a proposed Iron Ore Mine near Melmoth, Northern KwaZulu-Natal.	Jindal Mining (Pty) Ltd	Environmental Consultant (Scoping Phase)
ESIA for a proposed Iron Ore Processing Site near Melmoth, KwaZulu-Natal Province.	Jindal Processing (Pty) Ltd	Environmental Consultant (Scoping Phase)

#### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Independent External Compliance audit of Palesa Mine's Integrated Water Use License (IWUL), near KwaMhlanga, Mpumalanga Province	HCI Coal	Auditor
Independent External Compliance audit of Palesa Mine's Waste Management License (WML), near KwaMhlanga, Mpumalanga Province	HCI Coal	Auditor
Independent External Compliance audit of Mbali Mine's Integrated Water Use License (IWUL), near Ogies, Mpumalanga Province	HCI Coal	Auditor

## **Infrastructure Development Projects (bridges, pipelines, roads, etc.)**

### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
EIA for the proposed Vopak-Reatile Terminal Richards Bay Bulk Liquid Storage and Handling Facility, Richards Bay, KwaZulu-Natal Province.	Vopak South Africa Developments (Pty) Ltd.	Environmental Consultant (Scoping Phase)
EIA for a proposed Common User Marine Servitude and Pipelines	Coega Development Corporation (CDC)	Environmental Consultant (Scoping Phase)

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
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 Province.	Vopak South Africa Developments (Pty) Ltd.	Environmental Consultant
BA for the proposed Hlabisa Bulk Water Supply Scheme, Hlabisa, KwaZulu-Natal Province.	Mhlathuze Water	Environmental, GIS and Public Participation Consultant
BA for the proposed construction of a Bulk Sewage Rising Main, City of uMhlathuze, KwaZulu-Natal Province.	City of uMhlathuze Local Municipality.	Environmental, GIS and Public Participation Consultant
BA for the proposed Rita Light Industrial Park Development, near Camperdown, KwaZulu-Natal Province.	Daisy Wheel Investments (Pty) Ltd	Environmental, GIS and Public Participation Consultant
BA for the development of a Light Industrial Park on Portion 10 of the Farm Balgowrie, Camperdown, KwaZulu-Natal.	Daisy Wheel Investments (Pty) Ltd	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Richards Bay, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station at Felixton, near Empangeni, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Ballito, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Howick, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Richmond, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station in Durban, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Kokstad, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Richmond, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Mkondeni, Pietermaritzburg, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station in Pietermaritzburg, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station in Bulwer, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Camperdown, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Underberg, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station in Cowies Hill, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station in Phoenix, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Kokstad, Eastern Cape Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Vulindlela, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MTN Telecommunication Mast and associated Base Station near Mpendle, KwaZulu-Natal Province.	BSO International on behalf of MTN	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Water Tower Transmission Installations and associated Base Stations in Isipingo, KwaZulu-Natal Province	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Water Tower Transmission Installations and associated Base Stations in Umlazi, KwaZulu-Natal Province	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Rooftop Transmission Installation and associated Base Station in Reservoir Hills, KwaZulu-Natal Province.	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Rooftop Transmission Installation and associated Base Station in Wentworth, KwaZulu-Natal Province.	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Rooftop Transmission Installation and associated Base Station in Queensburgh, KwaZulu-Natal Province.	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
BA for the construction of a MultiChoice Rooftop Transmission Installation and associated Base Station at the University of KwaZulu-Natal (UKZN), KwaZulu-Natal Province.	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of a MultiChoice Rooftop Transmission Installation and associated Base Station in Amanzimtoti, KwaZulu-Natal Province.	BSO International on behalf of MultiChoice	Environmental, GIS and Public Participation Consultant
BA for the construction of an iBurst Telecommunication Mast and associated Base Station in Kloof, KwaZulu-Natal Province	BSO International on behalf of iBurst	Environmental, GIS and Public Participation Consultant

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
ESS for the proposed Development of Pier 1 Phase 2 Container Terminal in the Port of Durban, KwaZulu-Natal Province.	Transnet Capital Projects (TCP).	Environmental Consultant and co-author

### **Environmental Compliance, Auditing and ECO**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Construction of a New Distribution Centre and Warehouse on Erf 5539 and 5540 (Chloorkop X74), Lords View Industrial Park, Gauteng Province	Olivier & Partners on behalf of ARB Holdings (Pty) Ltd	Environmental Control Officer (ECO)
Gap Analysis of Venture Diversified Product (VDP) Rosslyn Facility's EMS, in Rosslyn, Gauteng Province	Venture Diversified Product (VDP) Rosslyn	Auditor
Construction of the Hlabisa Bulk Water Supply Scheme, in Hlabisa, KwaZulu-Natal Province	Mhlathuze Water	Environmental Control Officer (ECO)

### **Training**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Capacity Building Workshop on Amended Environmental Impact Assessment Regulations and Associated Legislation, Durban, KwaZulu-Natal	Transnet	Assistant Environmental Consultant and Researcher

### **Housing and Urban Projects**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
EMP for the Makhasaneni Rural Subsidised Housing Development, in Mthonjaneni (Ward 5), KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Mthonjaneni Local Municipality, and the KwaZulu-Natal Department of Housing.	Environmental and GIS Consultant
EMP for the Ntembisweni Rural Subsidised Housing Development in the Ntembisweni Traditional Authority Area near Greytown, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Umvoti Local Municipality, and the KwaZulu-Natal Department of Housing.	Environmental and GIS Consultant

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>EMP for the Sikhonyane Rural Subsidised Housing Development, in the Sikhonyane Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Mandeni Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>EMP for the Umzumbe Cluster A Rural Subsidised Housing Development, near Umzumbe, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Umzumbe Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>EMP for the Applebosch Rural Subsidised Housing Development near Ndwedwe, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Msunduzi Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>BA for the proposed Loch-Sloy Rural Subsidised Housing Development, near Estcourt, KwaZulu-Natal Province.</i>	<i>Imbabazane Local Municipality</i>	<i>Environmental, GIS and Public Participation Consultant</i>
<i>BA for the proposed "Living in THE PARK" Residential Development, near Albert Falls, KwaZulu-Natal Province.</i>	<i>J.H.K Developers</i>	<i>Environmental, GIS and Public Participation Consultant</i>
<i>BA for the proposed Residential Development on the Remainder of Erf 215, Prince's Grant, KwaZulu-Natal Province.</i>	<i>Princes Grant</i>	<i>Environmental, GIS and Public Participation Consultant</i>
<i>BA for the proposed Greenmeadow Lane Retirement Village, KwaZulu-Natal Province.</i>	<i>Rodney Blake Jolly on behalf of Georgies Avenue Investments (Pty) Ltd</i>	<i>Environmental, GIS and Public Participation Consultant</i>

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, in the Ntembisweni Traditional Authority area near Greytown, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Umvoti Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, in the Mkhwanazi Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the City of uMhlathuze Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at Makhasaneni in Ward 5 of the Mthonjaneni Local Municipality, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Mthonjaneni Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>



<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at the Sikhonyane Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Mandeni Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, near Ndwedwe, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Msunduzi Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at Nxamalala Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Impendle Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at KwaDolo Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Msinga Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at Ndlangubo Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the uMlalazi Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at the Embo Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Maphumulo Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for a Rural Subsidised Housing Development, at Mthandeni Traditional Authority area, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Maphumulo Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>
<i>Preliminary Environmental Assessment for the Highflats Slum Clearance Housing Project near Ixopo, KwaZulu-Natal Province.</i>	<i>Stedone Developments and Bigen Africa on behalf of the Ubuhlebezwe Local Municipality, and the KwaZulu-Natal Department of Housing.</i>	<i>Environmental and GIS Consultant</i>

## Environmental Permitting & WUL Applications

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Application for Planning Consent for the proposed Kwamavundla Rural Subsidised Housing Development in the Kwamavundla Traditional Authority area, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Hibiscus Coast Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Ngolokodo Rural Subsidised Housing Development, near Nquthu KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Ubuhlebezwe Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Mdletshe Traditional Authority Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Hlabisa Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Makhasaneni Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Mthonjaneni Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Njomelwane Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Ntambanana Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Umzambe Cluster A Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Umzambe Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Ntanzi Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Nongoma Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant
Application for Planning Consent for the proposed Abakwahlabisa Rural Subsidised Housing Development, KwaZulu-Natal Province.	Stedone Developments and Bigen Africa on behalf of the Hlabisa Local Municipality, and the KwaZulu-Natal Department of Housing.	GIS Consultant and assistant Environmental Consultant

## **Environmental Management Tools**

### **Screening Studies**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Umzinyathi District Municipality's Strategic Environmental Assessment (July 2009).</i>	<i>Umzinyathi District Municipality</i>	<i>Assistant GIS Consultant</i>

### **Specialist Studies**

#### **Social Impact Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>BA for the Kruisvallei Hydroelectric Power Generation Scheme, Free State Province</i>	<i>Zevobuzz (Pty) Ltd</i>	<i>Social Consultant</i>
<i>Lake Management Plan for Lake Mzingazi, Richards Bay, KwaZulu-Natal Province</i>	<i>City of uMhlathuze</i>	<i>Social Consultant (Review and update of Social Assessment)</i>

## CURRICULUM VITAE OF GABRIELE STEIN

(Comprehensive)

<b>Profession :</b>	Public Participation and Social Consultant
<b>Specialisation:</b>	Public participation; stakeholder engagement and management; environmental impact assessment (social processes); social research (qualitative & quantitative); social assessments (stakeholder analysis and social impact assessment); facilitation (workshops, focus groups; public hearings, public open days, committees); environmental and social policy; monitoring and evaluation; community needs assessments
<b>Work Experience:</b>	10 years' experience as a Public Participation and Social Consultant

### VOCATIONAL EXPERIENCE

Professional execution of public participation, stakeholder engagement, stakeholder management and social assessment consulting and advisory services for projects in the environmental assessment and management context. Consulting and advisory services are provided to both public and private sector clients, including national and provincial government departments, international development agencies and funding institutions involved in infrastructure development in South Africa. Key focus is on the design and implementation of public participation programmes required for Environmental Impact Assessments undertaken for large infrastructure projects, including electricity generation projects (wind, solar, gas and coal) and linear developments (roads and power lines). Experienced in implementing public participation programmes with a variety of stakeholder groups ranging from traditional communities, rural farming communities, business stakeholders, organs of state departments and non-governmental organisations within all nine s of South Africa.

### 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, working groups and 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
- Minute taking, issues mapping, report writing and quality control

## EDUCATION AND PROFESSIONAL STATUS

### Degrees:

- B.A. Honours in Anthropology, University of Johannesburg (2005)
- B.A in Psychology, University of Johannesburg (2004)

### Short Courses:

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

### Professional Society Affiliations:

- Member of International Association for Public Participation (IAP2): Southern Africa

## EMPLOYMENT

Date	Company	Roles and Responsibilities
May 2012 - Current	Savannah Environmental (Pty) Ltd	Public Participation and Social Consultant <i>Tasks include: Public participation process design and implementation; undertaking stakeholder identification and analysis and developing &amp; maintaining project specific databases; compiling and disseminating information relevant to the EIA process to I&amp;APs and the broader public; facilitating and recording comments raised by I&amp;APs, ensuring that comments are responded to by</i>

<b>Date</b>	<b>Company</b>	<b>Roles and Responsibilities</b>
		<i>the environmental consultants, specialists and clients and documented in the final BA, Scoping and EIA reports; scheduling, facilitating and recording public participation engagement opportunities; authority consultation; developing project proposals for procuring new projects in public participation and social consulting services.</i>
<b>March 2007 – April 2012</b>	NMA Effective Social Strategists (Pty) Ltd	Assistant Project Manager <i>Tasks include: design, execution and analysis of qualitative and quantitative social assessments including, stakeholder and social analysis, community needs assessment and stakeholder perception surveys; design and implementation of public participation strategies for integrated development planning and infrastructure projects during project implementation; development and facilitation of skills and SMME audit processes within local communities; coordinating the public participation processes for EIAs and HIAs; facilitating and taking minutes of participatory processes including focus group meetings, public open days, workshops, forums and committee meetings; supervising project coordinators and project administrators; liaising with clients regarding project deliverables and issues.</i>
<b>January 2005 – March 2007 (Part-time):</b>	University of Johannesburg: Department of Anthropology and Development Studies	Student Tutor and Research Assistant <i>Tasks include: marking tests, assignments and examinations written by undergraduate and postgraduate students; interview transcription, data analysis and report writing to assist PhD Fellows with research.</i>

## **PROJECT EXPERIENCE**

### **Renewable Power Generation Projects: Solar Energy Facilities**

#### ***Environmental Impact Assessments and Environmental Management Programmes***

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Prieska SEF, Northern Cape</i>	<i>Jouren Solar</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Blackwood SEF, Free State</i>	<i>Blackwood Solar Energy Facility</i>	<i>Public Participation &amp; Social Consultant</i>

<i>Merapi Phase 1 – 4 SEFs, Free State</i>	<i>SolaireDirect Southern Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Sannaspos SEF Phase 1, Free State</i>	<i>SolaireDirect Southern Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Pofadder SEF, Northern Cape</i>	<i>South Africa Mainstream Renewable Power Development</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Tiger SEF, Northern Cape</i>	<i>Kabi Solar</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Kgabalatsane SEF, North West</i>	<i>BuiltAfrica Investments</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Klip Gat SEF, Northern Cape</i>	<i>Klip Gat Solar Energy</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Naauw Poort SEF, Northern Cape</i>	<i>Naauw Poort Solar Energy</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Stormberg SEF, Eastern Cape</i>	<i>Networx Eolos Renewables</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Gihon SEF, Limpopo</i>	<i>Networx Renewables</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Kison SEF, Limpopo</i>	<i>Networx Renewables</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Steynsrus PV1 &amp; PV2 SEFs, Free State</i>	<i>SunCorp</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Zuurwater SEF Phase 1 – 4, Northern Cape</i>	<i>PVAfrica Development</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Sirius SEF Phase 1, Northern Cape</i>	<i>Sirius Solar PV Project One</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Sirius SEF Phase 2, Northern Cape</i>	<i>Sirius Solar PV Project Two</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Grootkop SEF, Free State</i>	<i>FRV Energy South Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Everest SEF, Free State</i>	<i>FRV Energy South Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Oryx SEF, Free State</i>	<i>FRV Energy South Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Watershed SEF, North West</i>	<i>FRV Energy South Africa</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Wolmaransstad SEF, North West</i>	<i>Bluewave Capital SA</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Hennenman SEF, Free State</i>	<i>Bluewave Capital</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Lethabo SEF, Free State</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Majuba SEF, Mpumalanga</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Tutuka SEF, Mpumalanga</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Bloemsmond 1 SEF, Northern Cape</i>	<i>AEP Bloemsmond Solar 1</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Bloemsmond 2 SEF, Northern Cape</i>	<i>AEP Bloemsmond Solar 2</i>	<i>Public Participation &amp; Social Consultant</i>

Woodhouse Solar 1 SEF, North West	Genesis Woodhouse Solar 1	Public Participation & Social Consultant
Woodhouse Solar 2 SEF, North West	Genesis Woodhouse Solar 2	Public Participation & Social Consultant
Sol Invictus 1 SEF, Northern Cape	Cyraclox	Public Participation & Social Consultant
Sol Invictus 2 SEF, Northern Cape	Cyracraft	Public Participation & Social Consultant
Sol Invictus 3 SEF, Northern Cape	Cyrafusion	Public Participation & Social Consultant
Sol Invictus 4 SEF, Northern Cape	Cyralex	Public Participation & Social Consultant
SolarReserve Kotulo Tsatsi PV Power Plant 2, Northern Cape	SolarReserve South Africa and Kotulo Tsatsi Energy	Public Participation & Social Consultant
Orkney SEF, North West	Genesis Orkney Solar	Public Participation & Social Consultant

### Basic Assessments

Project Name & Location	Client Name	Role
Sannaspos SEF Phase 2, Free State	SolaireDirect Southern Africa	Public Participation & Social Consultant
Southern Cross SEF near, Northern Cape	Tiquen Trading	Public Participation & Social Consultant
Tutwa SEF, Northern Cape	Tiquen Trading	Public Participation & Social Consultant
Carolus Poort SEF, Northern Cape Povice	Carolus Poort Solar Energy	Public Participation & Social Consultant
Wonderheuwel SEF, Northern Cape	Wonderheuwel Solar Energy	Public Participation & Social Consultant
Damfontein SEF, Northern Cape	Damfontein Solar Energy	Public Participation & Social Consultant
Gillmer SEF, Northern Cape	Gillmer Solar Energy	Public Participation & Social Consultant
Machadadorp SEF, Mpumalanga	Solar to Benefit Africa	Public Participation & Social Consultant
Son Citrus Rooftop SEF, Eastern Cape	Building Energy	Public Participation & Social Consultant
Gosforth Rooftop SEF, Gauteng	Building Energy	Public Participation & Social Consultant
Kynoch Rooftop SEF, Gauteng	Building Energy	Public Participation & Social Consultant
Newcastle SEF, KwaZulu-Natal	Building Energy	Public Participation & Social Consultant
Pongola SEF, KwaZulu-Natal	Building Energy	Public Participation & Social Consultant
Senekal 1 SEF, KwaZulu-Natal	Building Energy	Public Participation & Social Consultant
Senekal 2 SEF, KwaZulu-Natal	Building Energy	Public Participation & Social Consultant



Harmony Eland SEF, Free State	BBEntropie	Public Participation & Social Consultant
Harmony Nyala SEF, Free State	BBEntropie	Public Participation & Social Consultant
Harmony Tshepong SEF, Free State	BBEntropie	Public Participation & Social Consultant
Camco Clean Energy Solar System, Gauteng	Camco Clean Energy	Public Participation & Social Consultant
Scuitdrift SEF, Northern Cape	Scuitdrift Solar Project	Public Participation & Social Consultant

### Screening Studies

Project Name & Location	Client Name	Role
Bobididi 5MW SEF, Limpopo	Root 60Four Energy	Public Participation & Social Consultant
Koppies-Josina SEF, Free State	Bluewave	Public Participation & Social Consultant
BWC Potgietersrust SEF, Free State	Bluewave	Public Participation & Social Consultant
BWC Uitsig SEF, Free State	Bluewave	Public Participation & Social Consultant
Boipelo SEF, North West	Building Energy	Public Participation & Social Consultant
Modderivier Rooftop SEF, Northern Cape	Building Energy	Public Participation & Social Consultant
Red Sand SEF, North West	Building Energy	Public Participation & Social Consultant

### Renewable power generation projects: Wind Energy Facilities

#### Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	Client Name	Role
Garob WEF, Northern Cape	Garob Wind Farm	Public Participation & Social Consultant
Aberdeen WEF, Eastern Cape	Eskom	Public Participation & Social Consultant
Kleinzee WEF, Northern Cape	Eskom	Public Participation & Social Consultant
Elliot WEF, Eastern Cape	DNA Wind Farm	Public Participation & Social Consultant
Stormberg WEF, Eastern Cape	Networx Eolos Renewables	Public Participation & Social Consultant
Castle WEF, Northern Cape	Castle Wind Farm	Public Participation & Social Consultant
Zen WEF, Western Cape	Zen Wind Farm	Public Participation & Social Consultant
Mainstream Pofadder WEF, Northern Cape	South Africa Mainstream Renewable Power Development	Public Participation & Social Consultant

Mainstream Springfontein WEF, Free State	South Africa Mainstream Renewable Power Springfontein	Public Participation & Social Consultant
Karusa WEF, Northern Cape	Karusa Wind Farm	Public Participation & Social Consultant
Soetwater WEF, Northern Cape	Soetwater Wind Farm	Public Participation & Social Consultant
Great Karoo WEF, Northern Cape	Great Karoo Wind Farm	Public Participation & Social Consultant
Khai-Ma WEF, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Korana WEF, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Poortjies WEF, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Karreebosch WEF, Northern Cape and Western Cape s	Karreebosch Wind Farm	Public Participation & Social Consultant
Gunstfontein WEF, Northern Cape	Gunstfontein Wind Farm	Public Participation & Social Consultant
Hartebeest WEF, Western Cape	Hartebeest Wind Farm	Public Participation & Social Consultant

### Screening Studies

Project Name & Location	Client Name	Role
Lamberts Bay WEF, Western Cape	Windy World	Public Participation & Social Consultant

### Renewable Power Generation Projects: Concentrated Solar Facilities (CSP)

#### Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	Client Name	Role
Upington Solar Thermal Plant 2, Northern Cape	Abengoa Solar Power South Africa	Public Participation & Social Consultant
Upington Solar Thermal Plant 3, Northern Cape	Abengoa Solar Power South Africa	Public Participation & Social Consultant
Paulputs CSP Facility, Northern Cape	Abengoa Solar Power South Africa	Public Participation & Social Consultant
SolarReserve Kotulo Tsatsi CSP 1, Northern Cape	SolarReserve South Africa and Kotulo Tsatsi Energy	Public Participation & Social Consultant
SolarReserve Kotulo Tsatsi CSP 2, Northern Cape	SolarReserve South Africa and Kotulo Tsatsi Energy	Public Participation & Social Consultant
SolarReserve Kotulo Tsatsi CSP 3, Northern Cape	SolarReserve South Africa and Kotulo Tsatsi Energy	Public Participation & Social Consultant
Noupoort CSP Facility, Northern Cape	CRESCO Energy	Public Participation & Social Consultant
Ilanga CSP Power Tower 1 SEF, Northern Cape	FG Emvelo	Public Participation & Social Consultant

<i>Ilanga CSP 3 SEF, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Ilanga CSP 4 SEF, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Ilanga CSP 5 SEF, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Ilanga CSP 7, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Ilanga CSP 9, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>

## **Grid Infrastructure Projects**

### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Saldanha Bay Network Strengthening Project, Western Cape</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Sishen SEF 132kV Power Line, Northern Cape</i>	<i>Windfall 59 Properties</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Kopleegte – Poseidon 132kV Power Line, Eastern Cape</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Kopleegte Substation, Eastern Cape</i>	<i>Cennergi</i>	<i>Public Participation &amp; Social Consultant</i>
<i>132kV Golden Valley – Kopleegte Power Line, Eastern Cape</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>132kV Golden Valley – Poseidon Power Line, Eastern Cape</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Golden Valley Substation, Eastern Cape</i>	<i>Terra Wind Energy Golden Valley</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Khobab Substation and 132kV Khobab – Helios Power Line, Northern Cape</i>	<i>South Africa Mainstream Renewable Power Khobab</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Garob Wind Farm to Kronos Substation 132kV Power Line, Northern Cape</i>	<i>Garob Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Wesley – Peddie 132kV Power Line, Eastern Cape</i>	<i>Just Energy</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Nojoli Wind Farm Substation and Power Line Integration, Eastern Cape</i>	<i>Nojoli Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Loeriesfontein 2 WEF Power Line Realignment, Northern Cape</i>	<i>South Africa Mainstream Renewable Power Loeriesfontein 2</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Springfontein Power Line, Free State</i>	<i>South Africa Mainstream Renewable Power Springfontein</i>	<i>Public Participation &amp; Social Consultant</i>
<i>132kV Power Line from the Cuprum Substation to the Burchell Substation and Mooidraai Substation, Northern Cape</i>	<i>Eskom</i>	<i>Public Participation &amp; Social Consultant</i>

66kV Orlight Power Line, Northern Cape	Orlight SA	Public Participation & Social Consultant
Iziduli Emoyeni WEF Power Line and Switching Station, Eastern Cape	Emoyeni Wind Farm Renewable Energy	Public Participation & Social Consultant
Iziduli Emoyeni WEF Substation, Eastern Cape	Emoyeni Wind Farm Renewable Energy	Public Participation & Social Consultant
Aggeney's Solar 1 Power Line, Northern Cape	PVAfrica Development	Public Participation & Social Consultant
Blackwood SEF Power Line, Free State	Blackwood Solar Energy Facility	Public Participation & Social Consultant
Terra Wind Energy Golden Valley WEF Power Line, Eastern Cape	Terra Wind Energy Golden Valley	Public Participation & Social Consultant
Rhebokfontein WEF 132kV Power Line, Western Cape	Moyeng Energy	Public Participation & Social Consultant
Khai-Ma WEF Power Line, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Poortjies WEF Power Line, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Korana WEF Power Line, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Korana SEF Power Line, Northern Cape	South Africa Mainstream Renewable Power Developments	Public Participation & Social Consultant
Castle WEF 132kV Power Line, Northern Cape	Castle Wind Farm	Public Participation & Social Consultant
Solis Power I Facility 132kV Power Line, Northern Cape	Solis Power I	Public Participation & Social Consultant
Karusa WEF 132kV Power Line and Switching Station, Northern Cape	ACED Renewable Hidden Valley	Public Participation & Social Consultant
Nxuba WEF 132kV Power Line, Substation and Metering Station, Eastern Cape	Nxuba Wind Farm	Public Participation & Social Consultant
Karusa WEF 132kV Power Line and Switching Station, Northern Cape	Soewater Wind Farm	Public Participation & Social Consultant
Konkoonsies II SEF Power Line and Substation, Northern Cape	Ramizone	Public Participation & Social Consultant
Perdekraal West WEF 132kV Power Line, Western Cape	Perdekraal West Wind Farm	Public Participation & Social Consultant
Golden Valley II WEF 132kV Power Line, Eastern Cape	Golden Valley II Wind	Public Participation & Social Consultant

## Gas Projects

### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Richards Bay Power Facility, KwaZulu-Natal	Richards Bay Gas Power 2	Public Participation & Social Consultant
Richards Bay Combined Cycle Power Plant, KwaZulu-Natal	Eskom	Public Participation & Social Consultant

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Neopak CHP, Gauteng	Neopak	Public Participation & Social Consultant

### **Mining Sector Projects**

#### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Chemical Storage Tanks, Metallurgical Plant Upgrade & Backfill Plant Upgrade at South Deep Gold Mine, Gauteng	South Deep	Public Participation & Social Consultant
Waste License Application for Waste Transfer and Storage Facilities at South Deep Mine, Gauteng	South Deep	Public Participation & Social Consultant
Harmony Gold Doornkop Mine Wastewater Treatment Plant, Gauteng	Harmony Gold Mining Company	Public Participation & Social Consultant

#### **Environmental Permitting & WUL Applications**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Yzermyn Underground Coal Mine WULA, Mpumalanga	Atha Africa Ventures	Public Participation & Social Consultant

### **Infrastructure Development Projects (bridges, pipelines, roads, etc)**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Medupi Power Station Pollution Control Dams, Ash Dump & Coal Stockyard, Limpopo	Eskom	Public Participation & Social Consultant
Realignment of the N10, Northern Cape	South African National Roads Agency Limited (SANRAL)	Public Participation & Social Consultant

#### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Watercourse Crossings within the authorised Ilanga CSP Facility, Northern Cape	Ilangaletu Solar Power	Public Participation & Social Consultant
Watercourse Crossings within the authorised Ofir-ZX SEF, Northern Cape	Networx S28 Energy	Public Participation & Social Consultant
Watercourse Crossings within the authorised S-KOL SEF, Northern Cape	Networx S28 Energy	Public Participation & Social Consultant
Watercourse Crossings within the authorised Sonnenberg SEF, Northern Cape	Networx S28 Energy	Public Participation & Social Consultant
Loeriesfontein 2 WEF Watercourse Crossings, Northern Cape	South Africa Mainstream Renewable Power Loeriesfontein 2	Public Participation & Social Consultant
Production and Storage of Chemical Fertilisers at a proposed facility near Bothaville, Free State	AMSOL Fertilizers	Public Participation & Social Consultant
Production and Storage of Chemical fertilisers at a proposed facility near Viljoenskroon, Free State	AMSOL Fertilizers	Public Participation & Social Consultant

Watercourse Crossings over 4 drainage lines within the authorised Nojoli WEF, Eastern Cape	ACED Cookhouse South Wind Farm	Public Participation & Social Consultant
Stormwater canal system associated with the authorised Ilanga CSP Facility, Northern Cape	Karoshhoek Solar One	Public Participation & Social Consultant
Watercourse Crossings within the Aggeneys SEF, Northern Cape	Orlight SA	Public Participation & Social Consultant
Watercourse Crossings within the authorised Nxuba (Great Fish Wind Farm) WEF, Eastern Cape	Nxuba Wind Farm	Public Participation & Social Consultant
Watercourse Crossings within the authorised Nxuba (Bedford Wind Farm), Eastern Cape	Nxuba Wind Farm	Public Participation & Social Consultant
REDISA Witbank Waste Tyre Pre-processing Depot, Mpumalanga	Recycling and Economic Development Initiative of South Africa (REDISA)	Public Participation & Social Consultant
REDISA Upington Waste Tyre Pre-processing Depot, Northern Cape	REDISA	Public Participation & Social Consultant
REDISA Nelspruit Waste Tyre Pre-processing Depot, Northern Cape	REDISA	Public Participation & Social Consultant
Cato Ridge Waste Tyre Pre-processing Depot, Northern Cape	REDISA	Public Participation & Social Consultant
Watercourse Crossings within the authorised Msenge Emoyeni WEF, Eastern Cape	Amakhala Emoyeni Renewable Energy	Public Participation & Social Consultant
Access Roads and Watercourse Crossings within the authorised Iziduli Emoyeni WEF, Eastern Cape	Emoyeni Wind Farm Renewable Energy	Public Participation & Social Consultant
Expansion of the LPG Storage Facility, Gauteng	Reatile Gaz	Public Participation & Social Consultant
Wastewater Dam, Biomass Storage Area and Pipeline for the authorised Mkuze Biomass Power Plant, KwaZulu-Natal	Navosync	Public Participation & Social Consultant
Paulputs Road Realignment, Northern Cape	Northern Cape Department of Roads and Public Works	Public Participation & Social Consultant
Klawer Watercourse Crossings and Road Upgrades within the authorised Klawer WEF, Western Cape	Klawer Wind Power	Public Participation & Social Consultant
Neopak Water Treatment Plant, Gauteng	Neopak	Public Participation & Social Consultant
Lehae Training Academy, Gauteng	Johannesburg Development Agency (JDA)	Public Participation & Social Consultant

### **Housing and Urban Projects**

#### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Kuruman Metals Industrial Cluster, Northern Cape	Northern Cape Department of Economic Development and Tourism	Public Participation & Social Consultant

#### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
Postmasburg Housing Development, Northern Cape	Transnet	Public Participation & Social Consultant
Rand Leases Extension 15 Industrial Township, Gauteng	Rand Leases Properties	Public Participation & Social Consultant

## **Environmental Management Tools**

### **Environmental Impact Assessments and Environmental Management Programmes**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Karoshhoek Grid Integration, Karoshhoek Solar Valley Development – EMPr, Northern Cape</i>	<i>FG Emvelo</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Aggeneys SEF – EMPr, Northern Cape</i>	<i>Main Street 957</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Konkoonsies II SEF – EMPr, Northern Cape</i>	<i>Ramizone</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Roggeveld WEF – EMPr, Northern Cape and Western Cape s</i>	<i>Roggeveld Wind Power</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Biotherm Excelsior WEF, Western Cape</i>	<i>Amstilinx</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Garob WEF – EMPr, Northern Cape</i>	<i>Garob Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Hopefield Small WEF – EMPr, Western Cape</i>	<i>Hopefield Small Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Nojoli WEF – EMPr, Eastern Cape</i>	<i>ACED Cookhouse South Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Klawer WEF – EMPr, Western Cape</i>	<i>Klawer Wind Power</i>	<i>Public Participation &amp; Social Consultant</i>
<i>Excelsior WEF Wetlands – EMPr, Western Cape</i>	<i>Amstilinx</i>	<i>Public Participation &amp; Social Consultant</i>

### **Basic Assessments**

<b>Project Name &amp; Location</b>	<b>Client Name</b>	<b>Role</b>
<i>Nojoli WEF Substation and Power Line – EMPr, Eastern Cape</i>	<i>ACED Coohouse South Wind Farm</i>	<i>Public Participation &amp; Social Consultant</i>

**ABRIDGED CV**


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

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**Personal Particulars**

**Date of Birth:** 13<sup>th</sup> 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](mailto: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 km<sup>2</sup>. 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
<b>2016</b>			
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

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
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
<b>2015</b>			
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
<b>2014</b>			
Lidwala Consulting (Eskom)	Majuba Ashing Project Biodiversity Offsite Mitigation Recommendations, Mpumalanga	Biodiversity Offsite Intervention,	Power Utility/ Biodiversity

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
	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

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
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
<b>2013</b>			
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

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
(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
<b>2012</b>			
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

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
(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
<b>2011</b>			
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

<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
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
<b>Other Projects of Interest</b>			
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



<b>CLIENT</b>	<b>PROJECT DESCRIPTION</b>	<b>Project Type</b>	<b>COMMODITY</b>
	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

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

## B. Education

<b>Qualification</b>	<b>Year</b>	<b>Place</b>
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

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

## D. Publications

<b>Publication</b>	<b>Year</b>	<b>Source</b>
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

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

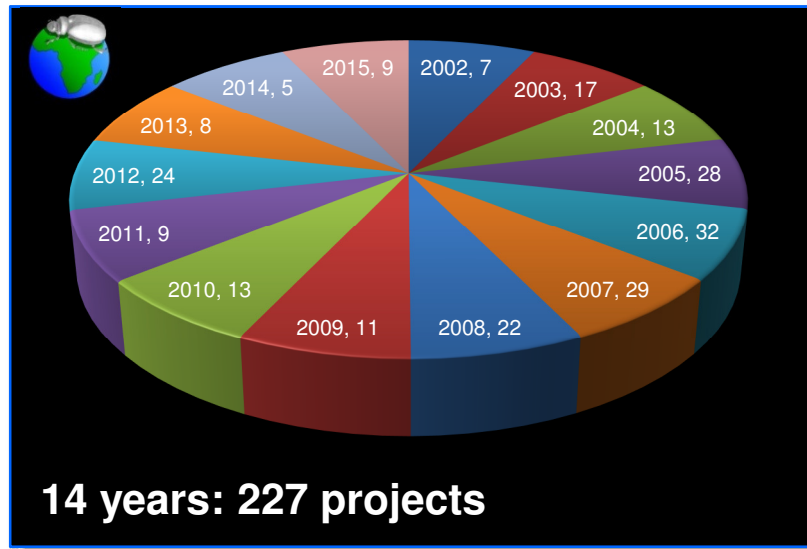
\* Dewald Kamffer started the biodiversity consulting company, Ecocheck Environmental Services, in 2002.

## F. Summary of Ecocheck's Projects

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

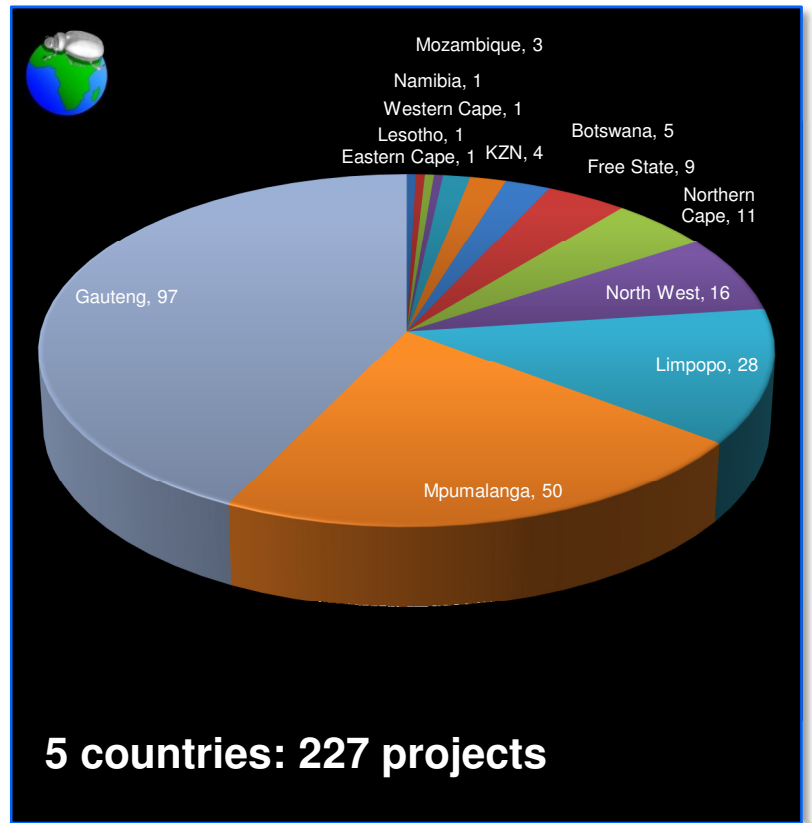
## G. Projects: year-by-year

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



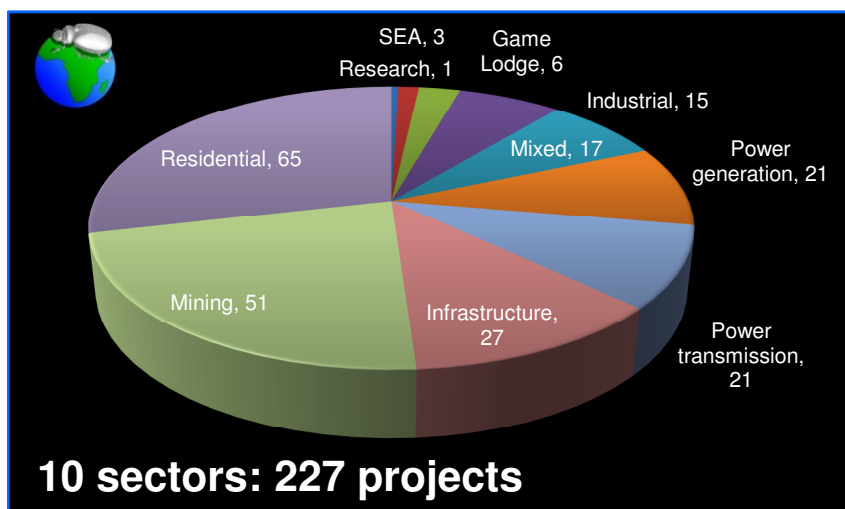
## H. Projects: Countries

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	EkolInfo	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	EkolInfo	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	EkolInfo	Frances Baard District Municipality
Gauteng	2005	EkolInfo	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	Utrecht Mining Project
Lesotho	2011	Gem Diamonds	Letšeng Diamond Mine Expansion Project
Limpopo	2006	ERM	Soutpansberg Mining Exploration Project
Limpopo	2007	AGES SA	Thorncliff 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	EkolInfo	Honingklip Development
Gauteng	2005	EkolInfo	Modderfontein Development
Gauteng	2005	EkolInfo	Rietvallei Development
Gauteng	2005	EkolInfo	The Hills Development
Gauteng	2005	EkolInfo	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	EkolInfo	Sedibeng Development
Gauteng	2006	EkolInfo	Cullinan Development
Gauteng	2006	EkolInfo	Bronberg South Development
Gauteng	2006	EkolInfo	Zambezi Development
Gauteng	2006	EkolInfo	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	EkolInfo	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	EkolInfo	Shoshanguve Development
Gauteng	2007	EkolInfo	Kievietskroon Development
Gauteng	2007	EkolInfo	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

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## 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).

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## 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 Manzengewenya 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 EkolInfo (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 (Winterveld 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 14<sup>th</sup> 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 14<sup>th</sup> 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

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#### **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 50<sup>th</sup> 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 <sub>2</sub> O <sub>3</sub> 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 <sup>1</sup> (name & contact details)	Position	Description
2009 – Present	South Africa Pretoria	Steenkampskraal Thorium Ltd Reference Trevor Blench ( <a href="mailto:trevor.blench@thorium100.com">trevor.blench@thorium100.com</a> )	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 ( <a href="mailto:trevor.blench@thorium100.com">trevor.blench@thorium100.com</a> )	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 ( <a href="mailto:trevor.blench@thorium100.com">trevor.blench@thorium100.com</a> )	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: Trigeneration 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: Trigeneration 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"> <li>• Life Cycle Assessments</li> <li>• Future Fuels – South Africa 2000</li> <li>• Textile Industry Impact – South Africa 1999</li> <li>• Process evaluations</li> </ul>

**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

Family name: Goodbrand  
 First names: Sarah Amy  
 Date of birth: September 29, 1991  
 Gender: Female  
 Nationality: South African  
 Civil status: Single

**Education:**

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
University of Witwatersrand 2010-2012	Bachelor of Science in Animal, Plants and Environmental Sciences.
University of Witwatersrand 2013	Bachelor of Science Honours in Zoology and Environmental Sciences (with distinction).
University of Witwatersrand 2016 – 2017	Currently working on Masters of Science (MSc) under the supervision of Professor Bob Scholes and Professor Coleen Vogel from the Global Change and Sustainability Research Institute (GCSRI) at the University of Witwatersrand. The title of the project is "Ecosystem based Adaptation of urban hydrology to climate change in three South African cities".

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

Language	Reading	Speaking	Writing
English	1	1	1

**Membership of professional bodies:**

**Other skills:** (e.g. Computer literacy, etc.) Microsoft Office proficiency, Good presentation skills

**Present position:** Carbon Advisor at Promethium Carbon

**Years within the firm:** 4

**Key qualifications:** (Relevant to the project)

Bachelor of Science Honours in Zoology and Environmental Sciences (with distinction)

### **Specific experience in the region:**

Sarah has worked on a suite of carbon footprints for the Mining, Chemical, Timber and Materials & Construction industries. She has worked on the project team that developed CDP and WDP reports which scored within the top 10 listed companies of South Africa. She also developed an internal scoring document for the CDP, to allow for accurate and consistent gap analysis. Following this, she internally scored each CDP written by Promethium Carbon and provided feedback to the client.

Sarah worked on the project team that assisted the CSIR and Department of Energy in the development of the country's Integrated Energy Report. She focused on extensive research and data capturing for various energy technologies.

In addition Sarah has worked on the project team that compiled South Africa's first Biennial Update report for the Department of Environmental Affairs (DEA). She contributed to the BUR, through research, reporting and reviewing of the document.

Sarah has gained experience in the CDM and VCS standards as she has worked with Promethium in developing a VCS Afforestation and Reforestation project activity and a CDM Fuel Switch project at Corobrik's Driefontein Brick Factory.

She has also been a part of the team that developed carbon tax business cases, by analyzing energy saving projects to determine the risk of carbon tax for a South African gold mining company.

Sarah assisted Promethium Carbon with the pilot testing of both the Mitigation Goal Standard and the Policy and Action Standard.

Sarah became a Climate Reality Project Leader, when she attended the Climate Reality Leadership Corps hosted by Al Gore in Johannesburg in 2014.

More recently Sarah has been working with the DEA and the World Bank in the development of Draft Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry. This included specific research into the IPCC 2006 Guidelines, extensive stakeholder engagements and report compilation. As part of this project, Sarah has been involved in an extensive review of the Draft Greenhouse Gas Reporting Regulations. She also has experience working with the Draft Pollution Prevention Plan Regulations and the Draft Energy Reporting and Management Plans Regulations.

Leading on from this work, Sarah has provided regulatory support to industry and private companies regarding the proposed carbon tax for South Africa.

In addition to this, Sarah has worked on both South Africa's and Swaziland's Third National Communications, for submission to the UNFCCC.

Sarah conducted a climate change risk and vulnerability assessment of Gold Fields' South Deep mine, which included a mitigation and adaptation strategy. The project included an analysis of climate data from the South African Weather Service and the International Council on Mining and Metal's MiCA data tool.

Sarah worked on the Green Fund Impact Study funded by GIZ, analysing the green transformation, leverage and additionality of several investment projects



including Farming the Wild, Operation Oxpecker and Youth Jobs in Waste.

Currently Sarah is providing support to the Clay Brick Association of South Africa on the developing climate change (mandatory GHG reporting, pollution prevention plans) and energy regulations (mandatory energy reporting and energy management plans).

Sarah provides ongoing carbon support to Barloworld corporate, specifically updating emission factors (both DEFRA and 2006 IPCC Guidelines) and training on the developing climate change and energy regulations, aligning corporate reporting with the 2006 IPCC Guidelines and 7th Edition Standard Industrial Classification Codes.

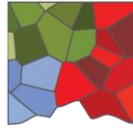
Recently, Sarah conducted a specialist climate change assessment of the proposed Khanyisa Coal Supply Project. The report formed part of the overall Environmental Impact Assessment for the proposed project. The specialist assessment included the calculation of greenhouse gas emissions for the construction and operational phases of the proposed project. A high level climate change risk and vulnerability assessment also formed part of the assessment.

Professional experience

Date from - Date to	Location	Company & reference person <sup>1</sup> (name & contact details)	Position	Description
2012 - present	South Africa Johannesburg	Promethium Carbon Harmke Immink Director +27 11 706 8185 <a href="mailto:Harmke@promethium.co.za">Harmke@promethium.co.za</a>	Carbon Advisor	Core competency lies in carbon footprint calculations, specialist climate change assessments, CDP Climate Change and Water responses, Biennial Update Reports, National Communications, assessment of regulations and various carbon emission related work.

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

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# DIGBY WELLS

## ENVIRONMENTAL

Mr. Byron Bester

Water Services: Aquatic Ecology

Digby Wells Environmental

### Summary

Byron attained his Master's degree in Aquatic Health from the University of Johannesburg by assessing the health status and edibility of selected fish species within various impoundments within the North West Province of South Africa. In addition to various aspects of aquatic ecosystem assessment (water quality assessment, sediment composition, fish biometric indices determination, etc.), he has specific experience and knowledge in the application of histopathological fish health assessments and human health risk assessments via the consumptive pathway. His passion for further research and exposure to water-related aspects of the natural system afforded him the opportunity to spend a few months at the renowned UNESCO-IHE Institute for Water Education in Delft, The Netherlands for a Special Programme in Environmental Science at a Master of Science level, for which he attained European Credit Transfer System points for the modules completed.

He is currently registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (Reg. No. 400662/15) and is a member of the South African Society of Aquatic Scientists. Additionally, Byron has been accredited as a SASS5 River Health Programme practitioner with the Department of Water and Sanitation (previously Department of Water Affairs) since March 2012 and attended a number training sessions presented by the DWS for EcoStatus Determination and the River Ecosystem Monitoring Programme, describing the latest bioassessment tools in Present Ecological State (or Ecological Category) determination.

### 1 Education

- 2013: MSc Aquatic Health (University of Johannesburg).
- 2010: BSc Hons. Zoology (University of Johannesburg)
- 2009: BSc Biochemistry & Zoology (University of Johannesburg)

### Other Qualifications/Skills

- South African Scoring System: Version 5 (SASS5) Field Assessment Accreditation in terms of the River Health Programme, Department of Water Affairs and Sanitation (March 2012 – Present)
- Special Programme (Module 3 & 4): MSc Environmental Science at UNESCO-IHE Institute for Water Education in The Netherlands (December 2012 – February 2013)

## Other Training / Courses / Workshops:

- **Fish Invertebrate Flow Habitat Assessment (FIFHA) - Short Course** *presented by* Dr Neels Kleynhans (Fish Scientist) at Department of Water and Sanitation: Resource Quality Information Services, 2015.
- **National Training and Development Buffer Zone Tool – Gauteng Workshop** *presented by* Ian Bredin (Senior Scientist) at Institute of Natural Resources and Doug Macfarlane (Director and Principal Scientist) at Eco-Pulse Consulting, 2015.
- **Rapid Habitat Assessment Model (RHAM) training** *presented by* Dr Neels Kleynhans (Fish Scientist) & Christa Thirion (Macroinvertebrate Scientist) at Department of Water and Sanitation: Resource Quality Information Services, 2015.
- **Quantum GIS (QGIS) training** *presented by* Michael Breetzke (UAV & LiDAR Technician) at Southern Mapping Geospatial, 2015.
- **New River Health Programme training** *presented by* Dr Neels Kleynhans (Fish Scientist) & Christa Thirion (Macroinvertebrate Scientist) at Department of Water Affairs: Resource Quality Services, 2014.
- **National Water Act, 1998 (Act No. 36 of 1998) Section 21 (c) & (i) Water Uses** *presented by* Ms Valerie du Plessis – Deputy Director: Environment and Recreation, 2013.
- **Atlas of Freshwater Ecosystem Priority Areas (FEPAs) in South Africa – Maps to support sustainable development of water resources** *presented by* Dr Jeanne Nel – Project Leader of the NFEPA Project and CSIR Principal Scientist, 2012.
- **SASS5 Aquatic Biomonitoring Training Course** *presented by* Dr Mark Graham – Director of Groundtruth and Regional KwaZulu-Natal SASS5 Auditor, 2012.
- **Health Risk Assessment of Contaminants in Fish Training** *presented by* Ms Bettina Genthe – Group Leader of Water and Human Health Research Group at CSIR Natural Resources and the Environment, 2011.

## 2 Language Skills

- English (1<sup>st</sup> language)
- isiZulu (2<sup>nd</sup> language)
- Afrikaans (Conversational)

## 3 Employment

- 09/2017 – Present: Aquatic Ecology Unit Manager at *Digby Wells Environmental (Pty) Ltd.*
- 05/2015 – 08/2017: Project Manager & Aquatic Ecologist at *GIBB (Pty) Ltd.*
- 10/2011 – 04/2015: Junior Natural Scientist (Aquatic Ecology) at *Strategic Environmental Focus (Pty) Ltd.*

- 08/2011 – 09/2011: Sampling Assistant (Histopathology) at *University of Johannesburg*

## 4 Services Experience

Throughout his postgraduate studies and subsequent career, Byron's involvement in numerous biodiversity-related studies and health-risk assessments has culminated in the delivery of the following services and/or deliverables:

- **Desktop analysis** of aquatic ecology functionality and associated catchment level importance and sensitivity;
- **Aquatic biological monitoring** (or biomonitoring) through the application of various biological response assessment indices (incl. aquatic macroinvertebrate, fish and diatoms assemblages), as well as development of subsequent biomonitoring programmes;
- **Baseline aquatic biodiversity assessments** (including defining a list of expected freshwater species of conservation concern and alien invasive species);
- **Impact assessments** on aquatic ecology, as well as determination of recommended buffer zone surrounding affected watercourses;
- **Fish health assessments** through the application of a number of fish biomarkers (e.g. conditions factors, organosomatic indices, haematological assessment, necropsy-based evaluation, histopathology, and ageing of fish);
- Experience in the application of **human health risk assessment models** through oral consumption of bioaccumulated pollutants sequestered within the muscle tissue of selected fish (or freshwater) species;
- **Basic riparian habitat assessment** of ephemeral streams; and
- **Basic 'passability' (or movement capability) assessments** of instream freshwater species within fragmented watercourses (e.g. culverts, weirs, dams, etc.).

## 5 Project Experience

During various tenures at large multidisciplinary environmental and engineering consulting companies, Byron has established himself as an aquatic ecologist (or scientist) with experience in both South Africa (7 of the 9 provinces) and abroad (e.g. Botswana, Democratic Republic of Congo, Ghana, Namibia, Zambia). He has been involved at various levels of the compilation of the Specialist Input required for the nationally legislated environmental process of South Africa, especially in the form of Environmental Impact Assessments (EIA's), Mining Right Applications and Water Use License Applications (WULA's).

He completed numerous specialist aquatic biodiversity assessments in a wide range of sectors, including mining (e.g. coal, gold, platinum, titanium, etc.), industrial (e.g. smelters, brick-making projects, special economic zones, etc.), transport infrastructure upgrades (e.g. roads, airports, rapid transport systems, etc.), services infrastructure (e.g. powerline installations, bulk water pipelines, etc.), as well as mixed-use, residential and commercial

developments. Consequently, he is in a good position to assess the potential impact upon aquatic ecosystems likely to be associated with a wide range of different type of projects and/or development plans.

## 6 Professional Affiliations

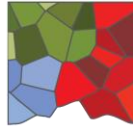
- South African Council for Natural Scientific Professions: Professional Natural Scientist. Registration number 400089/15;
- Member of the South African Society of Aquatic Scientists

## 7 Professional Registration

- South African Council for Natural Scientific Professions (SACNASP): Professional Natural Scientist (Registration. No. 400662/15)
  - Aquatic Science
  - Zoological Science

## 8 Publications/Presentations

- Bester, B. M., Wagenaar, G. M. & Van Dyk, J. C. (2013) An assessment of the histology and edibility of *Clarias gariepinus* and *Cyprinus carpio* from two impoundments in the North West Province, South Africa, Poster presentation, SASAQS Conference – Catchments, Coastal interfaces and Communities, Arniston.
- Bester, B. M., Wagenaar, G. M. & Van Dyk, J. C. (2012) Is there a human health risk from consumption of freshwater fish in the North West Province? Oral PPT presentation, SASAQS Conference – Aquatic ecosystems; conservation & connectivity, Cape St Francis.
- Bester, B. M., Wagenaar, G. M. & Van Dyk, J. C. (2011) Histology-based fish health assessment and edibility of fish from two impoundments in the North West Province, South Africa. Poster/PPT presentation, Suid-Afrikaanse Akademie Vir Wetenskap en Kuns (SAWEK).
- Bester, B. M. & De Lange-Jacobs, P. C. (2010) Histological assessment of the main visceral organs of *Sternophysinx filaris* and *S. calceola* (Crustacea: Amphipoda). Oral PPT presentation, SAWEK.



# DIGBY WELLS

## ENVIRONMENTAL

Ms Kieren Jayne Bremner

Biophysical: Wetland and Aquatic Ecology

Digby Wells Environmental

## 1 Education

### **Tertiary Education:**

M.Sc Aquatic Health (2011) - University of Johannesburg (UJ)

B.Sc. Hons, Natural and Environmental Sciences (2005) - Rand Afrikaans University (RAU)

B.Sc. Zoology and Biochemistry (2004) - Rand Afrikaans University (RAU)

### **Supplementary training:**

Wetland Plants Taxonomy – Short Course (2017) – SANBI

SASS5 Accreditation (2015) – South African River Health Programme

Bread Baking Course (2013) – Il de Pain

First Aid for Children and Family (2011) – Lifestyle Projects

Public Participation (2008) – Golder Associates

First Aid Certificate – Level 1 (2008) – Sharpminds

Environmental Auditing Workshop (2006) – University of Johannesburg (UJ)

Advanced 4x4 driving course (2005) – Driving School

## 2 Language Skills

English (Fluent)

Afrikaans (Fluent)

French (Basic)

Spanish (Basic)

### 3 Employment

Institution	Time period	Position held
Digby Wells Environmental	September 2017 - Present	Senior Ecologist: Wetlands and Aquatics
Scientific Aquatic Services	August 2015 – August 2017	Senior Aquatic and Wetland Ecologist
Estuary Care	2014 - 2015	Ecologist
Sustainable Seas Trust	2014	Team Member
The Bakery – Kenton on Sea	November October 2013 – April 2015	Owner and manager
Scientific Aquatic Services	2009 – April 2013	Aquatic Ecologist
TWP Engineering (Johannesburg)	2008	Junior Environmental Scientist
University of Johannesburg	2006 - 2007	Practical demonstrator
University of Johannesburg	2006 - 2007	Laboratory assistant
University of Johannesburg	2005	Research assistant

### 4 Experience

#### Desktop evaluations:

- Consulting various national and provincial databases to determine general ecological characteristics of an assessment site.
- Databases include Mining and Biodiversity Guidelines, National Freshwater Ecosystem Priority Areas, various SANBI databases, PESEIS database, etc.
- Sound knowledge and application of relevant legislature including NEMA, MWA, NEMBA, etc.
- Interpretation of datasets through the use of metadata.
- Knowledge and use of various computer programmes including PlanetGIS, GlobalMapper, Basecamp, ArcGIS, Garmin DNR and Microsoft Office.
- Consulting digital satellite images in order to map potential sensitive freshwater features and various points of interest prior to field verification and assessment.
- Desktop wetland delineation prior to field verifications
- Gathering of background information such as vegetation types, soil, climate and geology, conservation status, ecoregions, quaternary catchments, catchment management areas and sub-quaternary reaches.

#### Ongoing Aquatic Biomonitoring and Toxicological Assessments:

- Aquatic biomonitoring and toxicological assessments include to varying degrees the application of the following:
  - Desktop evaluations of the project area;
  - Site selections and visual assessments of each site;
  - On-site testing of biota specific water quality parameters including pH, electrical conductivity (EC), dissolved oxygen concentration (DO) and temperature, discussed against the relevant guideline water quality values





defined by the Department of Water and Sanitation (DWS), formerly the Department of water Affairs and Forestry (DWAf 1996 vol. 7).

- Macro-invertebrate sampling according to the SASS5 protocol;
- Assessment of habitat suitability using IHAS;
- Fish sampling by means of electro-shocker, seine nets, cast nets;
- Diatom, sediment and water sampling;
- Bioaccumulation studies;
- Application of various Ecostatus methodologies including: FRAI, MIRAI, VEGRAI, IHI and RHAM;
- In earlier years, application of older RHP indices including: FAIL, IHIA and RVI;
- Whole Effluent Toxicological testing on various trophic levels;
- Provinces worked in include Gauteng, Mpumalanga, Limpopo Province, North West Province, Eastern Cape and Kwa-Zulu Natal, Free State; as well as other African countries including Ghana and the Democratic Republic of Congo.
- Project range and variety includes aquatic ecological assessments for commercial, mining, residential and linear developments.

#### **Aquatic and Wetland Present Ecological State assessments conducted as part of the Environmental Impact Assessment Process:**

- Aquatic ecological assessments include to varying degrees the application of the following:
  - Site selections and visual assessments of each site;
  - On-site testing of biota specific water quality parameters including pH, electrical conductivity (EC), dissolved oxygen concentration (DO) and temperature, discussed against the relevant guideline water quality values defined by the Department of Water and Sanitation (DWS), formerly the Department of water Affairs and Forestry (DWAf 1996 vol. 7).
  - Macro-invertebrate sampling according to the SASS5 protocol;
  - Fish sampling by means of electro-shocker, seine nets, cast nets;
  - Diatom, sediment and water sampling;
  - Application of various Ecostatus methodologies including: FRAI, MIRAI, VEGRAI, IHI and RHAM;
  - In earlier years, application of older RHP indices including: FAIL, IHIA and RVI;
  - RDL wetland mammal assessment;
  - Provinces worked in include Gauteng, Mpumalanga, Limpopo Province, North West Province, Eastern Cape and Kwa-Zulu Natal, Free State as well as other African countries including Ghana and the Democratic Republic of Congo.
  - Project range and variety includes aquatic ecological assessments for commercial, mining, residential and linear developments.

## 5 Project Experience

Some of my project experience includes:

### **Specialist studies and project management**

- Numerous wetland delineation and function studies in the Gauteng, Free State and Mpumalanga provinces, South Africa.
- Development of an aquatic intervention plan and regional impact analysis for the Nokeng Flourspar Mine, Gauteng.
- Development and project management of aquatic biomonitoring studies at the Cronimet Mine, Limpopo Province, and the NECSA complex, Pelindaba.
- Implementation of a water quality monitoring programme on the Bushmans and Kariega Estuaries, Eastern Cape.

### **Aquatic and water quality monitoring and compliance reporting**

- Development of the 2010 State of the Rivers Report for the City of Johannesburg.
- Development of an annual report detailing the results of the Everest Platinum Mine water monitoring program.
- Aquatic biomonitoring programs for several Xstrata Alloys Mines and Smelters.
- Aquatic biomonitoring programs for several Anglo Platinum Mines.
- Aquatic biomonitoring programs for several Assmang Chrome Operations.
- Aquatic biomonitoring programs for Petra Diamonds.
- Aquatic biomonitoring programs for several coal mining operations.
- Aquatic biomonitoring programs for several mining operations for various minerals including iron ore, and small platinum and chrome mining operations.
- Aquatic biomonitoring program for industrial clients in the paper production and energy generation industries.
- Aquatic biomonitoring programs for the City of Tshwane Waste Water Treatment Works.
- Aquatic biomonitoring programs for the North West Wastewater Treatment Works.
- Baseline aquatic ecological assessments for numerous mining developments.
- Baseline aquatic ecological assessments for numerous residential commercial and industrial developments.
- Baseline aquatic ecological assessments in Ghana and the Democratic Republic of Congo.
- Water quality monitoring on the Bushmans and Kariega estuaries, Eastern Cape.

### **Wetland delineation and wetland function assessment**

- Wetland studies for developments in the mining industry.
- Wetland studies for developments in the residential commercial and industrial sectors.

**Public participation processes**

- Team member in the Public Participation Process for the Cronimet Mine.
- Team member in the Public Participation Process for Wesiswe Platinum Mine.

**Training and education**

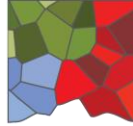
- Training of junior staff in the aquatic biomonitoring field.
- Educational workshops in mini-SASS in both Mpumalanga and the Eastern Cape.
- Educational workshops on water quality monitoring and environmental awareness in the Eastern Cape Province.

**Research projects**

- 2006 – 2010: BREMNER, K.J. The use of the Mozambique Tilapia (*Oreochromis mossambicus*) as a sentinel species of the possible effects on health and reproduction of DDE in vivo exposure and from a DDT sprayed area.
- 2006: BREMNER, K.J. KNEIDINGER, T.M. SERFONTEIN, S. An assessment of the water quality status of the Blesbokspruit Wetlands Ramsar Site. Unpublished. Distinction
- 2005: BREMNER, K. A study of the effect of barriers on the integrity of the Houtboschloop River Ecosystem. Unpublished. Distinction

## 6 Professional Registration

Registered RHP SASS5 practitioner.



# DIGBY WELLS

## ENVIRONMENTAL

Mr Mashudu Rafundisani  
Hydrologist  
Manager: Surface Water  
Digby Wells Environmental

## 1 Education

### 1.1 Formal

Qualification: BSC Honours Degree in Environmental Management  
Institution: University of Venda, Limpopo  
Date Completed: 2012

### 1.2 Short Courses

- Certificate of Attendance: Free Surface Water Flow Modelling (New HEC-RAS version 5.0) - University of Pretoria
- Certificate in Project Management: Primeserv Corporate Training - 2016

## 2 Language Skills

- Tshivenda: Excellent
- English: Excellent
- Zulu: Fair
- Tsonga: Fair

## 3 Employment

- October 2013 - Present: Surface Water Consultant (Hydrologist) at Digby Wells Environmental.
- January 2012 – 2013 - Technical Research Assistant (University of Venda)

## 4 Software Experience

- ArcGIS
- ArcHydro
- Utilities Programme for Drainage (UPD)



- Visual SCS-SA
- HEC-RAS 1D and 2D
- HEC-GeoRAS
- WRSM2000

## 5 General Experience

- Proposal writing.
- 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.

## 6 Project Experience (Selected)

- *Randgold Resources Limited, Luolo Gold Mine in Mali, Water Treatment Options Using a Constructed Wetland.* The study involved the design and operational needs to treat contaminated mine water to acceptable discharge levels, this research based work required the understanding of the right combination of vegetation, saturation of porous media (i.e. the macrophyte zone that could enable the treatment of the



contaminated discharge water by removing Sulphates, Nitrates, Arsenic and Cyanide.

- *Elandsfontein Colliery*: Development of the mine wide storm water management plan to ensure separation of clean and dirty water within the mine in accordance with the Best Practice Guideline G1: Storm Water Management issued by Department of Water and Sanitation in 2006, the developed or recommended storm water management infrastructures also ensures minimisation of dirty areas/catchments and maximisation of clean areas to try and conserve as much clean water as possible within and around the Elandsfontein Mine.
- *Sibanye Gold (Pty) Limited*, The project was known as the West Rand Tailings Retreatment Project (WRTRP) which is located in the Gauteng province approximately 60 km south east of Johannesburg, where they envisage reclamation of the various mine Tailings Storage Facilities (TSFs) for gold and uranium production. My role was to undertake surface water assessment study, the study included the following: catchment description, climate analysis (rainfall & evaporation), flood peaks determination, water quality analysis of the streams surrounding the area, flood lines determination and the impact assessment on the quantity and quality of water.
- *Sasol Mining (Pty) Ltd, Sigma Mooikraal Colliery and other several Mines*: Mine water salt balance, i have compiled the water balance model that can be utilized to investigate and establish current and forecasted long term impacts, solutions and associated costs for mining operations with regards to their water requirements. This study also forecasted the water quality impact on the surrounding stream by calculating the forecasted concentrations of the stream when mine water is discharged. This enabled the mine to take pre-cautionary measures on the quality of their waste water to prevent the associated surface water impacts.
- *South African Coal Mine*: Environmental and Social Impact Assessment for a proposed coal mine in Hendrina, Mpumalanga Province. Undertaking the project from application forms, scoping and EIA report, compiling the specialist reports and public participation outcomes to a final submission of the ESIA report for environmental authorisation;
- *Building Energy S.A*: Surface Water Assessment study as part of the Basic Assessment Report for a proposed construction of Solar PV facility on a farm in the Northern Cape Province. This included an application for IWULA General Authorisation for Section C & I water use in accordance with the in terms of section 39 of the National Water Act, 1998 (act no. 36 of 1998), Notice 509 promulgated in August 2016;
- *Glencore Operations South Africa (Pty) Ltd*: Water Balance Models-. Construction of Excel based water and salt balances based for the operational mine activities.



Develop a reporting tool of quarterly water uses at the Mines. Construction water balance based on monthly time step water for proposed mining activities.

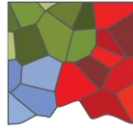
- *Ergo Mining (Pty) Ltd*: Storm Water Management Plan, South Africa. Assessment of the existing mine water management infrastructure, draft a report and compile a current water balance model for the mine, reporting of conclusions, whilst providing the necessary recommendations.
- *Eskom Holdings; Transmission Lines*; Flood lines determination 1:100 and 1:50 year floods - Assessments included hydrology modelling, model preparation in ArcGIS software HecGeoRas, hydraulic structures surveys on site, setting up 10 HecRAs Models, flood lines determination reporting of conclusions, whilst providing the necessary recommendations.
- *Randgold Resources Limited* - Integrated Mine Water Management Plan and Water Balance Model, Mali. Undertaking and assessment of the existing mine water management infrastructure, draft a report and compile a current water balance model for the mine, reporting of conclusions, whilst providing the necessary recommendations in line with the Mali Water Resources Commission permit requirements.

## 7 Professional Registration

- 2017: Registered as a Certified Natural Scientist with The South African Council for Natural Scientific Professions. Registration number: 115066

## 8 Professional affiliations

- Water Institute of Southern Africa, WISA (No. 25305)



# DIGBY WELLS

## ENVIRONMENTAL

Dr Robel Gebrekristos

Manager: Hydrogeology

Digby Wells Environmental

### 1 Education

- 2007, Ph.D. (Hydrogeology), University of the Free State, South Africa
- 2004, M.Sc. (Hydrogeology), University of the Free State, South Africa
- 1999, B.Sc. (Geology), University of Asmara, Eritrea

### 2 Language Skills

- Fluent – English, Tigrinya
- Basic - Arabic

### 3 Employment

- Digby Wells Environmental, South Africa, Department Manager: hydrogeology, October 2011 to present.
- Environmental Resources Management, Senior hydrogeologist, April 2009 – October 2011.
- Knight Piésold (Pty) Ltd, South Africa, Hydrogeologist, July 2007 to April 2009.
- Institute for Groundwater Studies, University of the Free State, South Africa, Researcher, April 2004 – July 2007.
- Umvoto Africa (Pty) Ltd. Cape Town, South Africa, Intern, November 2002 – January 2003 and June 2003 – July 2003
- Geology Department, University of Asmara, Eritrea Hydrogeologist, October 1999 – February 2002.

### 4 Experience

- Project and team management
- Numerical modelling (using finite difference or element). This includes mine dewatering design and environmental impact assessments
- Conceptual modelling
- Surface and groundwater sampling and water quality assessment



- Geophysical and geochemical data interpretation
- Aquifer testing data interpretation
- Packer testing and interpretation
- Borehole drilling, supervision and data logging
- Tailings seepage analysis (analytically and numerically)
- Water and salt balance modelling (using Excel or GoldSim)

## 5 Project Experience

Recent 15 projects include:

- Hendrina Coal Mine | Glencore South Africa (Pty) Ltd | South Africa | March 2016 to August 2016 | Groundwater task manager, groundwater conceptual and numerical modelling, hydrogeological data interpretation and field cooperation
- Regional Tailings Storage Facility | Sibanye Gold Ltd. | South Africa | January 2015 – January 2016 | Groundwater task manager, groundwater modelling, hydrogeological data interpretation and field coordination
- Groundwater Modelling in Support of the IWWMP Update | Sappi South Africa Ltd | South Africa | August 2014 – January 2016 | Groundwater modelling and impact assessment
- Temo Coal Mine | Namane Resources | South Africa | May 2015 to January 2016 | Feasibility level groundwater assessment in support for pit slope stability, water balance modelling for mine water management
- Elandsfontein Colliery | Anker Coal | South Africa | January 2015 to January 2016 | Mine decant assessment, numerical modelling, environmental impact assessment, numerical and conceptual modelling, hydrogeological data interpretation and field coordination
- Falea Mine Dewatering | Rockgate Corp. | Mali | April 2013 – January 2014 | Project manager, groundwater modelling, well field investigation, hydrogeological data interpretation and fieldwork coordination.
- Zandbaken Mine | Xstrata Coal | South Africa | July 2012 – February 2014 | Groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Nooitgedacht Mine | Xstrata Coal | South Africa | December 2012 – May 2014 | Groundwater modelling, hydrogeological data interpretation and fieldwork coordination



- Bokoni Mine | Anglo Platinum | South Africa | December 2013 – May 2014 | Project manager, groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Union Colliery | BHP Energy Coal | South Africa | October 2011 – June 2013 | Groundwater modelling and hydrogeological data interpretation
- Geluksdal TSF | Gold One | South Africa | February 2012 – June 2013 | Groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Bokoni Mine | Anglo Platinum | South Africa | November 2011 – May 2012 | Project manager, groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Boikarabelo Mine | Resource Generation | South Africa | February 2012 – November 2013 | Groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Bathopele Mine | Anglo Platinum | South Africa | 2010 – 2011 | Groundwater modelling, hydrogeological data interpretation and fieldwork coordination
- Grootegeeluk Mine | Exxaro Mine | South Africa | 2009 – 2010 | Groundwater modelling and hydrogeological data interpretation

## 6 Professional Affiliations

- The Geological Society of South Africa: Membership number: 967074
- International Association of Hydrogeologists (IAH)
- Ground Water Division of the Geological Society of South Africa

## 7 Professional Registration

- Registered Professional Natural Scientist (PrSciNat) with the South African Council for Natural Scientific Professions – Registration Number: 400175/08

## 8 Publications

Gebrekrastos, R., Packer Testing and analytical Modelling for Groundwater Inflow Estimation for Proposed Shafts. (*Best Paper at Biennial South African Groundwater Conference, Johannesburg, 21-23 September 2015*)

Gebrekrastos, R., Blast Curtain Optimised with a Numerical Model for TSF Seepage Control. Biennial South African Groundwater Conference, Johannesburg, 21-23 September 2015.

Gebrekrastos, R.A and Cheshire, P. (2012). Hydrogeological properties of the UG2 pyroxenite aquifers of the Bushveld Complex. The South African Institute of Mining and Metallurgy Platinum, 18-20 September 2012.



Gebrekrastos, R.A, Cheshire, P. and Kotze J. (2011). Analytical Modelling Based on Strong Conceptual Site Models. Biennial South African Groundwater Conference, Pretoria, 16 – 18 September 2011.

Mills, M.E, van Gool, J., Kotze, J. and Gebrekrastos, R.A. (2011). Development of a Conceptual Model to Assist with Closure of a Contaminated Hydrogeologically Complex Site. Biennial South African Groundwater Conference, Pretoria, 16 – 18 September 2011.

Gebrekrastos, R., Single-Well Dilution Test for In-Situ Effective Porosity Estimation. Biennial South African Groundwater Conference, Stellenbosch, 16 – 18 November 2009.

Gebrekrastos, R., Challenges Of DNAPL Characterisation in Fractured Aquifers. Biennial South African Groundwater Conference, Stellenbosch, 16 – 18 November 2009.

Usher, B.H., Pretorius, J.A. and Gebrekrastos, R.A. (2008). Guidelines for the Acceptance of Monitored Natural Attenuation Processes in South Africa. WRC Project No. 1501/3/08, Water Research Commission, South Africa

Gebrekrastos, R.A., Pretorius, J.A. and Usher, B.H. (2008). Manual for Site Assessment at DNAPL Contaminated Sites in South Africa. WRC Project No. K5/1501/2/08, Water Research Commission, South Africa

Pretorius, J.A., Usher, B.H., and Gebrekrastos, R.A. (2008). Groundwater Monitoring Guidelines for DNAPLs in South African Aquifer. WRC Project No. 1501/4/08, Water Research Commission, South Africa

Usher, B.H., Pretorius, J.A., and Gebrekrastos, R.A. (2008). Field and Laboratory Investigations to Study the Fate and Transport of Dense Non-Aqueous Phase Liquids (DNAPLs) in Groundwater. WRC Project No. 1501/5/08, Water Research Commission, South Africa

Gebrekrastos, R.A., Shapiro, A.M., and Usher, B.H., (2008), In Situ estimation of the effective chemical diffusion coefficient of a rock matrix in a fractured aquifer: Hydrogeology Journal, Vol 16, page 629-638.

Usher, B.H., Pretorius, J.A., and Gebrekrastos, R.A. (2008). Dense Non-Aqueous Phase Liquids in South Africa: A LAYMAN'S GUIDE. WRC Project No. TT 325/08, Water Research Commission, South Africa

Pretorius, J.A., Usher, B.H., and Gebrekrastos, R.A. (2008). Handbook for DNAPL Contaminated Sites in South Africa. WRC Project No. TT 326/08, Water Research Commission, South Africa

Gebrekrastos, R.A. (2007). Characterization of DNAPLs in Fractured South African Aquifers. PhD Thesis, University of the Free State, South Africa

Gebrekrastos, R., Usher, B., Lenong, SE., Pretorius, J., Innovative methods to characterize fractured rock aquifers and comparison to established methods. (*Best Poster at Biennial South African Groundwater Conference, Bloemfontein, 8-10 October 2007*)



Gebrekrastos, RA, Shapiro, AM and Usher, BH, In situ estimation of the effective chemical diffusion coefficient of the rock matrix in a fractured aquifer Biennial South African Groundwater Conference, Bloemfontein, 8-10 October 2007.

Gebrekrastos, RA and Usher, BH (2007) A column experiment to characterise DNAPL Saturation using Partitioning Interwell Tracer Test (PITT) Biennial South African Groundwater Conference, Bloemfontein, 8-10 October 2007.



DIGBY WELLS  
ENVIRONMENTAL

## AYABONGA MPELWANE

Ms Ayabonga Mpelwane  
Water Geosciences Department  
Digby Wells Environmental

### 1 EDUCATION

- BSc Geology, University of the Free State, Bloemfontein, 2013
- BSc (Honours) Geohydrology, IGS (UFS), Bloemfontein, 2014
- Project Management, Primeserv, 2016
- MSc Geohydrology, IGS (UFS), Bloemfontein, 2017

### 2 LANGUAGE SKILLS

- English
- isiXhosa
- isiZulu

### 3 EMPLOYMENT

- Digby Wells Environmental- Hydrogeologist

### 4 EXPERIENCE

- Mine impact numerical groundwater modelling
- Wellfield impact numerical groundwater modelling
- Landfill impact analytical and numerical groundwater modelling
- Ash Dump impact analytical groundwater modelling
- Research: Underground coal gasification impacts on the Karoo aquifers, conducted for the Water Research Commission



# 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 geohydrological 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 Zandriverspoort 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**

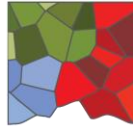
- Sasol Sigma (Pty) Ltd Geochemical and Waste Classification of Ash material to be used in the underground backfilling process
- Anglo Coal (Pty) Ltd Dalyshope - Geochemical Modelling of Ash backfilling as a post-closure option
- Msobo (Pty) Ltd EIA – Environmental Geochemical Assessment on waste and 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)



# DIGBY WELLS

## ENVIRONMENTAL

Mr. Brett Coutts

Divisional Manager: Ecology and Atmospheric Sciences

Digby Wells Environmental

### 1 Education

- 2006 – 2007: BSc Honours in Ecology, Environment and Conservation - University of the Witwatersrand.
- 2003 – 2006: Undergraduate BSc - University of the Witwatersrand.

### 2 Language Skills

- English; and
- Afrikaans.

### 3 Employment

- September 2012 – Present: Digby Wells Environmental – Unit Manager: Rehabilitation.
- October 2008 – August 2012: Terra Pacis Environmental (Pty) Ltd – Environmental Consultant.
- November 2007 – September 2008: Hydromulch (Pty) Ltd – Junior Project Manager.

### 4 Experience

Brett Coutts is an Ecologist with a BSc Honours in Ecology, Environment and Conservation. Brett gained practical hands on experience as a project manager on environmental rehabilitation projects at Hydromulch and his roles and responsibilities include the compilation of Basic Assessment (BA) reports, Scoping & Environmental Impact Reports, compilation of Environmental Management Plans (EMP), GIS mapping and Biodiversity Action Plans linking to rehabilitation. Brett is currently the Divisional Manager for the Ecological and Atmospheric Sciences Division.

Prior to his appointment, he gained experience as a junior project manager on environmental rehabilitation projects at Hydromulch and then was appointed by Terra Pacis as an Environmental Consultant where his roles and responsibilities included the compilation of Basic Assessment (BA) reports, Scoping & Environmental Impact Reports, compilation of Environmental Management Plans (EMP), GIS mapping and Biophysical Studies.

## 5 Project Experience

- Integrated Environmental Authorisations for Blue Sphere Investments and Trading 103 (Pty) Ltd – Consultant.
- The compilation of the Atmospheric Emissions Licences for Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton – Consultant.
- Scoping and Environmental Impact Reporting for the Refurbishment of West Plant Sludge Dam No.3 and associated Mixing Facility at Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton – Consultant.
- Scoping and Environmental Impact Reporting for the Upgrade of the existing Pelletising Plant to an Agglomeration Plant at Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton – Consultant.
- Waste Assessment for Kopanang Mine (Phase 2) - AngloGold Ashanti –Vaal River Operations - Consultant.
- Waste Assessment for Mponeng Mine (Phase 2) - AngloGold Ashanti - West Wits - Consultant.
- Compilation of Operational Procedures for the New North and West Plant Sludge Dams - Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton - Consultant.
- Biodiversity Assessment at Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton– Specialist.
- Basic Assessment for a Proposed Residential Development on Portion 378 and Portion 379 of the Farm Driefontein 85 IR, Boksburg - Business Venture Investments No. 1172 (Pty) Ltd – Consultant.
- Vegetation, Invertebrate and Wetland Assessments for the Proposed a Residential Development on Portions 378 and 379, of the Farm Driefontein 85 IR, Boksburg - Business Venture Investments No. 1172 (Pty) Ltd - Specialist.
- Salvage Yard Layout-Review of Design and Stormwater - Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton – Consultant.
- Dams Risk Assessment - Goedgevonden Colliery, Xtrata Coal South Africa – Consultant.
- Invasive Alien Plant Control Procedure at Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton - Consultant.
- Environmental Management Plan Update - North Mara Mine Limited, Barrick Gold Corporation – Consultant.
- Waste Assessment for Kopanang Mine(Phase 1) - AngloGold Ashanti –Vaal River Operations - Consultant.



- Waste Assessment for Mponeng Mine (Phase 1) - AngloGold Ashanti - West Wits - Consultant.
- Admox Bagging Plant, Admox Bagging Plant, Admox Pelletising Plant and OBC Fume Extraction Operation Environmental Management Plan - Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton - Consultant.
- Compilation of Standard Operational Procedures for the Slag and Dust Stockpiles - Samancor Manganese (Pty) Ltd, Metalloys, BHP Billiton - Consultant.
- Internal Water Use License Audit - Goedgevonden Colliery, Xtrata Coal South Africa - Auditor.
- Biophysical Specialist Study Report for the Bravo 3 Power Line Route Alternatives-2008 – Zitholele Consulting – Specialist.
- Voorspoed Mine Closure Plan - De Beers Consolidated Mines – Consultant.
- Co-ordination and Implementation Project for Thabazimbi Iron Ore Mine associated with Aerial Seeding and Re-vegetation Reporting Plan, Anglo Group – Rehabilitation Consultant.
- Exxaro Portfolio, Rehabilitation Specialist for Grootegeluk Coal Mine, Compilation of Rehabilitation Plan, Exxaro Coal (Pty) Ltd – Rehabilitation Specialist.
- Rehabilitation plan compilation for historical mines located in Mpumalanga with associated biophysical studies and monitoring of progress of rehabilitation, Anker Coal– Rehabilitation Specialist.
- Overall management and coordination of projects associated with the mine and co-ordination with mine personnel, Key Account Management – Environmental Consultant.
- Scoping and Environmental Impact Assessment for the Proposed Schoonoord Underground Mine, Exxaro Arnot Coal Mine, Exxaro (Pty) Ltd – Project Manager.
- Scoping and Environmental Impact Assessment for the Proposed Thabametsi Coal Mine, Exxaro (Pty) Ltd – Project Manager.
- Compilation of Biodiversity Management Plans for Tongon Gold Mine, Rand Gold Resources – Technical Specialist and Project Manager.
- Wetland Offset Strategy for the Waterberg Region , Exxaro (Pty) Ltd– Project Manager.
- Rehabilitation Plan for Consbrey and Hawar Projects Msobo Coal– Rehabilitation Specialist.
- Update of Greenside Colliery Closure Plan, Anglo American (Pty) Ltd – Project Manager.
- Compilation of Putu Iron Ore Rehabilitation Plan, Liberia – Rehabilitation Specialist.

- Compilation of Rehabilitation Plan for Balama, Mozambique, Syrah Resources – Rehabilitation Specialist.
- Compilation of Rehabilitation and Closure Plan for Storm Mountain Diamond Mine – Rehabilitation Specialist.
- Overall management and coordination of projects associated with the mine and co-ordination with mine personnel, Bokoni Platinum Mine – Key Account Manager.
- Environmental and Social Impact Assessment for New Liberty Gold Mine, Liberia, Aureus – Project Manager.
- Preliminary Closure Plan for New Liberty Gold Mine, Liberia, Aureus– Rehabilitation Specialist.
- Waste Assessment for Kopanang Mine(Phase 1) - AngloGold Ashanti –Vaal River Operations - Consultant.
- Compilation of GIS Training Manual – Consultant (Internal).
- Rehabilitation Plan for IPP Station, Vedanta Resources – Rehabilitation Specialist.
- Compilation of Biodiversity Management Plans for Morila Gold Mine, Mali, Rand Gold Resources – Technical Specialist and Project Manager.

## 6 Short Courses

- 2009: IEMA Approved Carbon Footprint Management Course: An Introductory Programme.
- 2010: Exclusive Panel Discussion on: The Copenhagen Climate Change Conference.
- 2011: International Association for Impact Assessments conference at the Wild Coast.
- 2012: Centre for Environmental Management, North-West University: Environmental Law for Environmental Managers.

## 7 Professional Affiliations

Geographic Information Society of South Africa (GISSA)

## 8 Professional Registration

- 2009: IAIA - International Association for Impact Assessment (South Africa).

## **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 (2<sup>nd</sup> 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. 14<sup>th</sup> 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. 16<sup>th</sup> 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. 17<sup>th</sup> 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. 21<sup>st</sup> 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. 24<sup>th</sup> 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:***

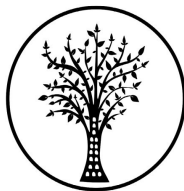
**PATERSON, D.G.**, 1992. Ground penetrating radar applications in USA and South Africa. Report on an official study tour to USA, 13-29 July, 1991. ISCW Report GW/A/92/8.

**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

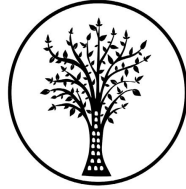
- 2016 Antiquities Trafficking and Art Crime (University of Glasgow, Online Course)
- 2010 Continued Professional Development Course in Architecture and Urban Conservation Part I: Theory and Development and Part II: Skills Development (University of Cape Town)

### 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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34 Harries Street, Plumstead, Cape Town, 7800  
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**

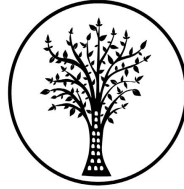
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## CTS HERITAGE

- 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.

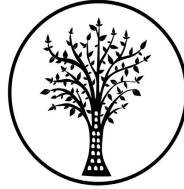
### AFFILIATIONS:

- 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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## CTS HERITAGE

- 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

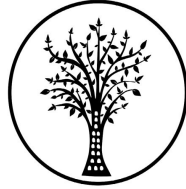
### SELECTED PUBLICATIONS:

- 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](mailto:colette.scheermeyer@westerncape.gov.za)

3. Director of ACO Associates

Mr Tim Hart

Tel: 021 706 4104

Email: [tim.hart@acoassociates.com](mailto:tim.hart@acoassociates.com)

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CEDAR TOWER  
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## 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  
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## CURRICULUM VITAE



**KYLA BLUFF**

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

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### **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



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**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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- 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
-



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**REFERENCES:**

**Nic Wiltshire**

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+27 (21) 685 1824  
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  
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**Katie Smuts**

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

**Cheryl Bluff**

Owner & Sales Associate - The Bluff's Property Consultants  
+27 (21) 762 5628  
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**Curtis Marean**

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

**Tim Hart**

Principal Investigator - UCT Archaeology Contracts Office  
+27 21 650 2353  
tim.hart@uct.ac.za

**Personal Details**

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 Flat N. 305 Waterbury Court  
 9 Blenheim Road  
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 Cape Town, South Africa

**Postal Address**

c/o Materials laboratory  
 Upper Campus, Beattie Building  
 University of Cape Town  
 Private Bag 7701 Rondebosch  
 Cape Town, South Africa

<b>Title</b>	Dr	<b>Surname</b>	Bandama	<b>First name</b>	Foreman
<b>Citizenship</b>	Zimbabwean	<b>Passport #</b>	BN718525	<b>Date of Birth</b>	08-04-1984
<b>Gender</b>	Male	<b>Marital Status</b>	Married	<b>Religion</b>	Christianity
<b>Contacts</b>	<b>Email:</b> <a href="mailto:fbandama@yahoo.co.uk">fbandama@yahoo.co.uk</a> <b>Alternative email:</b> <a href="mailto:fbandama@gmail.com">fbandama@gmail.com</a>			<b>Tel:</b> +27 11 029 2555 <b>Mobile:</b> +27 82 404 6592	
<b>Driver's License</b>	Code B, South Africa				
<b>Qualifications</b>	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	<b>Microsoft Word, Excel, PowerPoint &amp; Access</b>
Image design & Manipulation	<b>Adobe Photoshop &amp; Illustrator</b>
Mapping	<b>Quantum GIS, TakGIS and basic ArcView GIS</b>
Statistics	<b>Statistica, Stata &amp; Sigma Plot</b>

### Professional training

<b>Archaeological contract skills:</b>	Siyathembana 293 Pty
<b>Scanning Electron Microscopy:</b>	University of Cape Town (UCT)
<b>Optical Microscopy:</b>	University of Cape Town
<b>X-Ray Fluorescence Spectroscopy:</b>	University of Cape Town
<b>Archaeological fieldwork &amp; interviews:</b>	University of Zimbabwe & UCT
<b>Ethnography &amp; oral history:</b>	University of Cape Town
<b>Teaching skills:</b>	University of Zimbabwe & UCT
<b>Curatorial skills:</b>	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
<b>7 years in this course.</b> <b>(Qualifications:</b> <b>Ph.D. Archaeology</b> <b>since 2013, BA</b> <b>Honours</b> <b>Archaeology since</b> <b>2008).</b>	The roots of black identity in South Africa (AGE3011F) (3 <sup>rd</sup> year Archaeology) <ul style="list-style-type: none"> <li>➤ <b>16 class lectures in 2016</b></li> <li>➤ <b>12 class lectures in 2015</b></li> <li>➤ <b>14 class lectures in 2013</b></li> <li>➤ <b>12 class lectures in 2012</b></li> <li>➤ <b>12 class lectures in 2011</b></li> <li>➤ <b>4 class lectures in 2010</b></li> <li>➤ Preparing course outline and reading list</li> <li>➤ Developing content for lectures and practicals</li> </ul>

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

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

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

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

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

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

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

**TEACHING ASSISTANT:** Department of History, University of Zimbabwe.

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

## INVITED LECTURESHIPS



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

### Other administrative/work experiences

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

CANDIDATE INFO	RESPONSIBILITIES & OUTPUT
<b>6 years in this position.</b> <b>(Qualifications: Ph.D. Archaeology</b> <b>(2013), B.A. Honours Archaeology</b> <b>(2008) and B.A. General (2007).</b>	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
<b>6 years in this position.</b> <b>Qualifications: Ph.D. Archaeology</b> <b>(2013), B.A. Honours Archaeology</b> <b>(2008) and B.A. General (2007).</b>	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
<b>3 years in this</b> <b>position.</b> <b>(Qualifications:</b> <b>Ph.D. Archaeology</b> <b>since 2013, B.A.</b> <b>Honours</b>	<ul style="list-style-type: none"> <li>➤ <b>Produced 7 research articles in high impact journals (2014-2016).</b></li> <li>➤ Developed content for grant applications for my principal investigator.</li> <li>➤ Carried out field work (excavations and surveys) at two World Heritage Sites (Great Zimbabwe and Khami) and several other</li> </ul>

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"> <li>➤ Mapped the site of Mapela and re-mapped the World Heritage Sites of Great Zimbabwe and Khami.</li> <li>➤ Mentored 5 BSc. Honours and 2 MSc. Archaeology students who have already graduated.</li> <li>➤ Currently mentoring (2 PhD. and 1 MSc.) and co-supervising (1 MSc.) Archaeology students.</li> </ul>
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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"> <li>➤ Organised Archaeology Departmental Seminars in 2015</li> <li>➤ Chaired and moderated sessions.</li> <li>➤ 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.</li> <li>➤ Advertising seminars and inviting university audience.</li> </ul>

**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? *Achaeometry* 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 21<sup>st</sup> 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 2<sup>nd</sup> 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](mailto:Judith.sealy@uct.ac.za)

### 2. Associate Professor Shadreck Chirikure

Associate Professor and Lecturer

Department of Archaeology

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P. Bag 7701, Rondebosch

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### 3. Associate Professor Simon Hall

Associate Professor and Head of Department

University of Cape Town

Upper Campus, Beattie Building

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# 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 73<sup>th</sup> 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. 14<sup>th</sup> 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*. 15<sup>th</sup> 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

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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

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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

<b>Wind Energy Facilities</b>	<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>
<b>Mining and Industry</b>	<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 Palladum 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>
<b>Road and Railway</b>	<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>
<b>Airport</b>	<p>Oudtshoorn Noise Monitoring (AGES), Sandton Heliport (Alpine Aviation), Tete Airport Scoping</p>
<b>Noise monitoring</b>	<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>
<b>Small Noise Impact Assessments</b>	<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 (Enviroexcellence), 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>
<b>Project reviews and amendment reports</b>	<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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Westville  
3630  
Republic of South Africa

Phone: +27 31 2668241, Cell: +27 83 7032995

### **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. **Karoshok Solar Valley** – LVIA for nine CSP projects including power tower and parabolic trough projects in the Karoshok 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 Lephalale 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

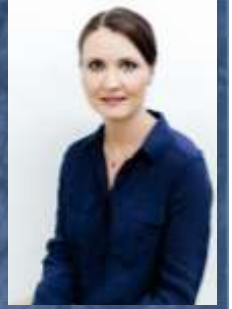
Eskom.

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"> <li>▪ Describing of the global PV industry and its trends</li> <li>▪ Profiling of the local PV industry</li> </ul>



	<ul style="list-style-type: none"> <li>▪ Analysing of the local PV value chain considering three market segments, i.e. rooftop, commercial and utilities</li> <li>▪ Analysing of financial dynamics of the market and standardisation requirements</li> <li>▪ Determining the potential for localisation in the country</li> <li>▪ Developing a strategy for the future roll-out</li> </ul> <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>
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	<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"> <li>▪ The identification of various CSP technologies and systems that are promoted internationally</li> <li>▪ And various designs and configuration of each technology.</li> <li>▪ 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</li> <li>▪ The identification of key technical and technology partner in the development of the manufacturing facility</li> <li>▪ Engagement with the potential technical partner to determine whether the IDC can capacitate the supplier to manufacture components and systems locally</li> <li>▪ Identification of a suitable location for the new facility or expansion of existing local CSP component manufacturing facilities in South Africa</li> <li>▪ The amount of potential jobs that will be created from expansion or creation of a new facility, preliminary financial model and CAPEX budget.</li> </ul>
<b>Activities Performed:</b>	Global CSP industry analysis, value chain analysis, local industrial capabilities assessment, demand analysis, job creation potential analysis
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	<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"> <li>▪ Description of the status and potential of the local renewable energy sector</li> <li>▪ Investigation of the potential to establish clean and green sustainable development projects in the Province in line with the optimal mix identified.</li> <li>▪ Identification of income generation opportunities for the purpose of revitalising rural communities</li> <li>▪ Assessment of the institutional capacity and capability</li> <li>▪ Strategy and implementation plan formulation</li> </ul>
<b>Activities Performed:</b>	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
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	<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"> <li>• Current context and framework for technology commercialisation in South Africa</li> <li>• Identification of critical factors and resources required for successful commercialisation</li> <li>• On-line survey</li> <li>• Interviews with numerous stakeholders (universities, businesses, government organisations)</li> <li>• Case study analysis of policies and interventions in other countries</li> <li>• Profiling of the current policy environment, funding mechanisms and stakeholders</li> <li>• Identification of mechanisms and interventions to assist in commercialisation of technologies</li> <li>• Formulation of a guide for commercialisation</li> </ul>
<b>Activities Performed:</b>	Project management and quality control, presentation of study findings
<b>Project:</b> <b>Year:</b>	<p>Assessment of policy to enable the implementation of energy efficiency in the building sector  December 2014-April 2015</p>

<b>Location:</b> <b>Client:</b> <b>Project Features:</b>	National SANEDI/Department of Energy <ul style="list-style-type: none"> <li>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</li> <li>Interview various stakeholders</li> <li>Review of interventions and support mechanisms</li> <li>Undertake case studies</li> <li>Provide policy recommendations</li> </ul>
<b>Position held:</b> <b>Activities Performed:</b>	Project manager Project management and quality control, presentation of study finding
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	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"> <li>Developing a model of electricity usage by various economic sectors based on information supplied by City Power</li> <li>Profiling economic structure of City of Joburg regions</li> <li>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;</li> <li>Interview large electricity users in the City</li> <li>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</li> </ul>
<b>Position held:</b> <b>Activities Performed:</b>	Senior economist Economic modelling, report quality control, presentation of findings
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	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"> <li>Profiling of full range of Energy Efficiency options currently being utilised globally in the building and industrial/mining sectors</li> <li>Assessment of technologies favoured by countries that have successfully implemented EE measures</li> <li>Explore policy initiatives and incentives that contribute to both the greening of industries and the establishment of new green industries</li> <li>Developing a cost and savings potential model to evaluate technologies</li> </ul>
<b>Position held:</b> <b>Activities Performed:</b>	Project manager Project management and quality control, presentation of study findings, costing and saving model development
<b>Project:</b> <b>Year:</b> <b>Location:</b> <b>Client:</b> <b>Project Features:</b>	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"> <li>Profile HTA technologies</li> <li>Assess South Africa's readiness and need for HTA</li> <li>Assess the current and projected future requirements for HTA</li> <li>Evaluating the prospects (technical and economic) of HTA in South Africa</li> <li>Determine RDI opportunities for the country</li> <li>Formulate and action plan and providing recommendations appropriate for the implementation programme</li> </ul>
<b>Position held:</b> <b>Activities Performed:</b>	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 activates 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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## Contact details:

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# 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"> <li>Investigation into the domestic and export market opportunities</li> <li>Interviews with various industry players and municipalities</li> <li>Review of the existing competition, and</li> <li>Identification of factors that constraint as well as create opportunities.</li> </ul>
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"> <li>Conduct scoping assessment</li> <li>Assess Need and Desirability of project</li> <li>Assess Socio-economic impacts</li> </ul>

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

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- Cell Phone: +27 82 463 2325

### Contact details:

- Ndivhuwo Malemagoba
- Email: [ndivhuwo@urban-econ.com](mailto: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**

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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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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.



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Signature of the specialist:

Bathusi Environmental Consulting cc (CK CK99/052182/23

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Name of company (if applicable):

2017 08 21

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Date:



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA


### DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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;

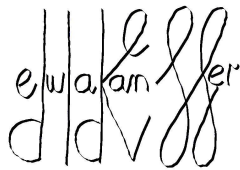
I will comply with the Act, Regulations and all other applicable legislation;

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.



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Signature of the specialist:

ECOCHECK

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Name of company (if applicable):

2017/08/21

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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:	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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		



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.



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Signature of the specialist:

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Name of company (if applicable): Pachnoda Consulting CC

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Date: 21 August 2017



## 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:	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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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

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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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		



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.



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Signature of the specialist:

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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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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.



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Signature of the specialist:

Digby Wells Environmental

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Name of company (if applicable):

21 August 2017

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Date:



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA


### DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	14/12/16/3/3/2/826/ or 12/9/11/L
NEAS Reference Number:	DEA/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, 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:	ARC-Institute for Soil, Climate and Water		
Contact person:	D G Paterson		
Postal address:	Private Bag X79, Pretoria		
Postal code:	0001	Cell:	083 556 2458
Telephone:	012 310 2601	Fax:	012 323 1157
E-mail:	garry@arc.agric.za		
Professional affiliation(s) (if any)	Soil Science Society of SA, SA Council for Natural Scientific Professions, South African Soil Surveyors Association		

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, **DG Paterson**, 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:

**ARC-INSTITUTE FOR SOIL, CLIMATE & WATER**

---

Name of company (if applicable):

**22<sup>nd</sup> August 2017**

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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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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:

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Name of company (if applicable): CTS Heritage

21/08/2017

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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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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:	<a href="mailto:morne@menco.co.za">morne@menco.co.za</a>	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		





## 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:	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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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):

21<sup>st</sup> 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)
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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:	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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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.



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Signature of the specialist:

Urban-Econ Development Economists (Pty) Ltd

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Name of company (if applicable):

22/08/2017

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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:	<a href="mailto:joanne@savannahsa.com">joanne@savannahsa.com</a>		

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.



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Signature of the specialist:

Techso (Pty) Ltd

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Name of company (if applicable):

2017/08/21

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Date: