

Bathusi  
Environmental  
Consulting

a gateway to ecological specialist services

### Riaan A. J. Robbeson (Pr.Sci.Nat.)

**Name of Firm:** Bathusi Environmental Consulting cc  
**Position:** Member, Specialist Investigator  
**Profession:** Environmental Scientist, Ecologist, Botanist  
**Date of Birth:** 13<sup>th</sup> April 1969  
**Consulting experience:** 15 years  
**Nationality:** South African  
**Cellular Contact:** 0027 82 3765 933  
**email:** riaan@bathusi.org

#### Membership in Professional Societies:

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) (weblink:www.infoveld.com/sarnap/EXEC/4/04c7jg21y2fpby11qc2dh1ikyr8m)	2003
Professional Member	Grassland Society of Southern Africa	2008

#### Fair and Reasonable Opinions:

YEAR	CLIENT	RESPONSIBILITY	DESCRIPTION
2002	Deneys Reitz Attorneys	Environmental Due Diligence	Determining the fire damage to the structural layers of the vegetation in Sabi Sand Private Game Reserve
2007	Cameron Cross Inc	Environmental Due Diligence	Investigating findings of GDACE in negative ROD for the proposed Greengate Residential Establishment

Abbreviated list of Current Tasks & Completed Projects:

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
2009	PBA International	Power Utility	Masa Selomo 765kV Lines Ecological EIA
	Mills & Otten	Infrastructure	Bakgatla Ecological EIA
	GCS	Power Utility	Kangra PS Ecological EIA
	Savanna Environmental	Power Utility	Kyalami Strengthening
	NuCoal Mining	Biological Monitoring	Environmental monitoring of ecological environment
	SSI	Power Utility	Watershed Sephaku Biodiversity EIA
	PB Power	Power Utility	Environmental Monitoring Committee
	PBA International	Power Utility	Epsilon Substation Biodiversity Scoping Assessment
2008	Bohlweki	Power Utility	Biodiversity EIA – Boulders – Marathon 132kV
	Bombela CJV	Infrastructure	Biodiversity Monitoring of construction activities
	Marsh Vikela	Mining	GOPE Biodiversity EIA
	PB Power	Power Utility	Medupi Power Station Environmental Monitoring
	Kwezi V3 Engineers	Mining	Greenfield Expansion Biodiversity EIA
	Savannah Env	Power Utility	Mokopane Integration Biodiversity EIA
	Bohlweki	Power Utility	Vygeboom EMP Upgrade
	Bohlweki	Power Utility	Majuba CCGT EIA
	Iliso Consulting	Infrastructure	Kaalplaasspruit Remedial EMP
2007	PBA International	Power Utility	Biodiversity Impact Assessment of the Matimba – Marang Power lines
	PBA International	Power Utility	Biodiversity Impact Assessment of the Matimba – Dinaledi Power lines
	PBA International	Power Utility	Biodiversity Impact Assessment of the Mmamabula – Delta Power lines
	Marsh Vikela	Development	Biodiversity Impact Assessment of the farm Leeuwpoot
	Bohlweki	Power Utility	Biodiversity Impact Assessment of the proposed Steelpoort Pumped Storage Scheme
	SIVEST	Development	Biodiversity Assessment of the Bultfontein Development
	SIVEST	Development	Biodiversity Assessment of the Newmarket Development
	PBA International	Power Utility	Biodiversity Scoping Assessment of the proposed Epsilon Sub station
	AgriDev International	Development	Biodiversity Impact Assessment of Golwe
	Bombela JV	Transport	Red Data species location and relocation for the Gautrain Development
	Woestalleen Colliery	Mining	Development and implementation of bio-monitoring programme
	Eko-Info cc	Mining	Floristic Surveys of the proposed Nu-Largo coal mine
	Eko-Info	Mining	Floristic Surveys of the proposed Mmamabula coal mine
	Bohlweki	Mining	Floristic Impact Assessment of the proposed Underground Gasification Concept mining
	Bohlweki	Power utility	Biodiversity Impact Assessment of the Matimba B

			Power Station
2006	PBA International	Power utility	Biodiversity Scoping assessment of the proposed Matimba Integration
	Digby Wells	Mining	Biodiversity Assessment of the proposed Mareesburg mine
	Bohlweki	Power utility	Floristic Assessments of the Kabokweni and Kiepersol power lines
	African EPA	Development	Bryntirion, Paardeplaats, Willows, Simon Vermooten Floristic Assessments
	Eko-Info	Development	Floristic sampling of Lula, Mozambique
	Mills & Otten	Development	Olievenhoutbosch, Brakfontein, Kosmosdal, Blue Hills, Garstfontein Biodiversity Assessments
Pre 2006	Agricultural Research Council	Research	Management Guidelines and Impact Assessment of Quelea control activities in wetlands
	SEF	Research	Floristic sampling of the Tshwane Municipal area
	University of Pretoria	Research	Floristic sampling of the Kglalagadi Transfrontier Park, Botswana
	Confidential	Development	Biodiversity assessment of selected sites in the Okavango Delta for limited lodge development and hunting concessions
	African EPA	Development	Red Data investigation for development purposes
	Groundwater Consulting	Mining	Ecological investigation of Wildebeestpan
	Groundwater Consulting	Mining	Ecological investigation of Teutfontein
	Groundwater Consulting	Mining	Ecological investigation of Aasvoelkrans
	Groundwater Consulting	Mining	Ecological investigation of Klipspruit
	Deneys Reitz Attorneys	Research	Quantification of fire damage to the vegetation structure in Sabi Sand Private Game Reserve
	Northam Platinum Limited	Mining	Development of an alien control programme for the mining area.
	SEF	Development	Removal and relocation of medicinal plants from Calswald development site.
	Woestalleen Collier	Mining	Development and installation of a natural wind and visual break between mining and provincial roads
	Confidential	Research	Vegetation structure analysis of waterpans in the Chobe National Park, Botswana
	Institute for Soil, Climate and Water	Research	Floristic sampling and development of a GIS remote sensing tool for the assessment of natural degradation of vegetation in the Gauteng Province
	Institute for Soil, Climate and Water	Research	Floristic sampling and development of a GIS remote sensing tool for the assessment of natural degradation of vegetation in the Mpumalanga Province

## Key Qualifications & Attributes

Riaan A.J. Robbeson is an experienced ecologist and botanist, 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. His involvement in specialist environmental studies followed naturally after graduation and he has since 1998 been 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 several biodiversity monitoring programmes on mining areas. International projects include areas such as Botswana and Mozambique. Project management include the management of other specialist investigators and the ecological integration 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. He also is a social ultra distance runner and has completed 4 Comrades marathons.

## 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

## 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	EkoInfo 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

## Languages

English: RWS - Excellent  
Afrikaans: RWS - Excellent

### 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 faint, illegible stamp or watermark.

Riaan A.J. Robbeson (Pr.Sci.Nat.)  
2009 - 06 - 22

**The South African Council  
for Natural Scientific Professions**  
certifies in terms of Section 20(3)(a) of the  
Natural Scientific Professions Act, 2003, that

**Mr R A J Robbeson**

is registered as a Professional Natural Scientist, Reg. no.  
in the following field(s) of practice

**400005/03**

**Botanical Science Ecologi-  
cal Science**

**Expiry Date 31 May 2010**

2617

**The South African Council  
for Natural Scientific Professions**  
certifies in terms of Section 20(3)(a) of the  
Natural Scientific Professions Act, 2003, that

**Mr. R A J Robbeson**

is registered as a Professional Natural Scientist, Reg. no.  
in the following field(s) of practice

**400005/03**

**Botanical Science  
Ecological Science**

**Expiry Date : 31 May 2009**

2416

# Curriculum Vitae ~ Dewald Kamffer

## PRECIS

### Personal Details:

- Born in and current resident of South Africa
- 33 year old white male in good health
- Married without children
- Interests include wildlife photography and sports
- Proficient in English writing, reading and speaking

### Academic History:

- B.Sc.(Zoology & Entomology); University of Pretoria (1995)
- B.Sc.(Hons)(Entomology); University of Pretoria (1996)
- M.Sc.(Grassland Conservation Ecology); University of Pretoria (2004)

### Career History:

- 2001: Game Ranger at Mala-Mala Private Game Reserve
- 2002-2009: Director and Senior Environmental Specialist of Ecocheck (faunal specialist EIA company)

### Professional Affiliation:

- Ecological and Zoological Scientist with the South African Council for Natural Scientific Professions (400204/05)

### Contact Details:

- E-mail: [ecocheck@ee-sa.com](mailto:ecocheck@ee-sa.com)
- Fax: 0027 12 365 3217
- Cell: 0027 82 940 8708

## **Post Graduate Study: M.Sc.**

### **Community-level effects of fragmentation of the afro-montane grassland in the escarpment region of Mpumalanga, South Africa**

Supervisor: Prof. J.W.H. Ferguson

Co-Supervisor: Prof. A.S. Van Jaarsveld

#### **ABSTRACT**

Large scale afforestation, resulting in habitat destruction and fragmentation of the afro-montane grassland in the Drakensberg escarpment of Mpumalanga, South Africa, has led to the necessity of describing the flora and fauna aspects of the remaining grassland fragments, allowing forestry companies to mitigate the effects of afforestation on the biodiversity of these fragments and for initiating a management program for the remaining grassland. This study aims, firstly, to determine if any marked human-induced disturbance to the plant communities in the grassland fragments has occurred. I do this by comparing the plant communities of eighteen fragments with those of six control plots outside of the plantations with no marked disturbance to the grassland, by determining whether the plant assemblages in the fragments can be assigned to any of the natural and intact plant communities that Matthews (1993) described from a large-scale survey of undisturbed mountain areas and by ascertaining the presence of any known intruder plant species within the fragments. I also compare the faunal biodiversity in grassland fragments within afforested areas to that of control plots in undisturbed grassland and determine to which degree the Coleoptera, Orthoptera, Lepidoptera and bird communities reflect recognized plant communities, and are restricted to specific plant communities. Secondly, the study aims to compare the habitat specificity (degree of stenotopy) of the different taxonomic groups and trophic levels of animals and to make recommendations for the conservation of the



Afromontane grassland fauna in the remaining grassland fragments in afforested areas. Thirdly, I aim to quantify the effect of several environmental characteristics (slope, rainfall, geology, etc) on the faunal community structure of the grassland fragments, to quantify the effects of degree of isolation on species richness, species diversity and assemblage structure of plants, insects and birds in grassland remnants and to test for the effects of edges on the extant insect biodiversity in the grassland fragments inside plantations. Lastly, the study aims to quantify the effects of fragment size on species richness, species diversity and assemblage structure of plants, insects and birds and to rank the grassland fragments in an order of conservation importance using factors such as biodiversity and uniqueness of the floral community. The results indicate that afforestation and habitat fragmentation have not significantly impacted on the flora of the grassland fragments. Fragments are still identifiable as natural communities, described by previous workers during provincial-scale surveys. Also, no obvious invader – or disturbed plant communities are discernible even though some of the fragments have been isolated for as long as 40 years and the plant communities of conservation importance described by previous workers coincide with the important communities recognized in this study. Rare and endangered plant species, as well as species endemic to the region, are more frequently found on the scarce Black Reef quartzite of the region, which is more evident to the Northern part of the study area. Two plant communities are of particular conservation importance, not only as a result of their geological base, but also because of the high risk associated with the few grassland examples left of these communities. The high levels of habitat specificity of many of the taxonomic and trophic faunal groups indicate that many of the invertebrate taxa are probably endemic to the region, and that the plant endemism encountered in the Afromontane grasslands is reflected by a similar degree of animal endemism. The similarity in faunal assemblages and

diversity between isolated fragments and large areas of grassland emphasizes the conservation importance of the fragments, even when smaller than 5 Ha in extent. Fragments therefore have a high conservation importance, since they represent natural grassland areas and are sometimes the only representative of a particular plant community remaining in the area. I detected no significant edge effects on the faunal communities 10, 20 and 50 meters from the edge of the plantation. Birds (and probably other vertebrates in these grasslands) are affected by fragment size, while invertebrates are much less affected and plants do not show any measurable effect of fragment size. Fragments in the wetter northern part of the study area, characterized by high levels of plant endemism, have a higher conservation importance as judged by faunal biodiversity. Experimental management involving grazing, mechanical cutting, grazing and burning is needed to derive an efficient management plan, so that the grassland biodiversity can be conserved in a planned way. Such work will also allow empirical testing of the efficiency of the indicator species suggested in this study.

## **Work experience as faunal Environmental Impact Assessment specialist for**

### **ECOCHECK**

Summary: 153 projects in eleven provinces and three countries. Projects include linear structures such as roads, pipelines and power lines; as well as residential developments and various mines.

<b><u>YEAR</u></b>	<b><u>LOCATION</u></b>	<b><u>PROJECT</u></b>	<b><u>CLIENT</u></b>
2002	Gauteng, South Africa	Giel v/d Berg residential development	Die Giel v/d Berg Trust
2002	Mpumalanga, South Africa	Carlswald opencast coal mine	Tribal Consultants
2002	Mpumalanga, South Africa	CBM opencast coal mine	Tribal Consultants
2002	NW Province, South Africa	Brakspruit granite mine	Helio Alliance
2002	Gauteng, South Africa	Supplier Park industrial development	Tribal Consultants
2002	Mpumalanga, South Africa	Hartbeesfontein mine	Eco-Afrika Consulting
2002	Gauteng, South Africa	Willows residential development	EkoInfo
2003	Kwazulu-Natal, South Africa	Utreight mine	GCS
2003	Mpumalanga, South Africa	Roosenekal opencast mine	Eco-Afrika Consulting
2003	Gauteng, South Africa	Cradle-of-humankind development	Eco Assessments
2003	Gauteng, South Africa	Summerset residential development	Tribal Consultants
2003	Gauteng, South Africa	Amandasig residential development	EkoInfo

2003	Gauteng, South Africa	Olienhoutbosch residential development	Tribal Consultants
2003	Gauteng, South Africa	Kromdraai development	Eco Assessments
2003	Gauteng, South Africa	Feather Wood residential development	Eco Assessments
2003	Gauteng, South Africa	Supplier Park 2 industrial development	Tribal Consultants
2003	Mpumalanga, South Africa	Highlands Gate Golf Estate development	Eco Assessments
2003	Gauteng, South Africa	Irene Township development	Tribal Consultants
2003	NW Province, South Africa	Frontier granite mine	Helio Alliance
2003	Gauteng, South Africa	Sterrewag residential development	EkoInfo
2003	Gauteng, South Africa	Brakfontein development	Tribal Consultants
2003	Gauteng, South Africa	Valley View residential development	Tribal Consultants
2003	Gauteng, South Africa	Bordeaux residential development	EkoInfo
2003	Gauteng, South Africa	Randjiesfontein equestrian development	EkoInfo
2004	Gauteng, South Africa	Olienhoutbosch road	KV3 Engineers
2004	NW Province, South Africa	Sun City vacation club development	Sun International
2004	Free State, South Africa	Reitz Quelea research project	Agri Research Council
2004	Gauteng, South Africa	Louwardia residential development	Tribal Consultants
2004	Gauteng, South Africa	Maruladal development	Tribal Consultants
2004	Gauteng, South Africa	Craigavon residential development	Tribal Consultants
2004	Northern Cape, South Africa	Frances Baard municipality SEA	EkoInfo

2004	Mpumalanga, South Africa	Schoonoord coal mine	African EPA
2004	Gauteng, South Africa	Witkoppen residential development	Tribal Consultants
2004	Gauteng, South Africa	Valley Farm development	Plan Practice
2004	Gauteng, South Africa	Heaven-on-earth residential development	EkoInfo
2004	Limpopo Province, South Africa	BJF Game Range Environ. Audit	EkoInfo
2004	Gauteng, South Africa	Broadacres residential development	EIMS (Pty) Ltd
2005	Gauteng, South Africa	Silverton residential development	BEC
2005	Mpumalanga, South Africa	Lakenvlei development	African EPA
2005	Limpopo Province, South Africa	Leopard's Bend Lodge development	EkoInfo
2005	Gauteng, South Africa	Honingklip residential development	EkoInfo
2005	Gauteng, South Africa	Modderfontein development	EkoInfo
2005	Gauteng, South Africa	North Riding residential development	Tswelopele Environ.
2005	NW Province, South Africa	Amarosa development	BEC
2005	NW Province, South Africa	Waterval residential development	BEC
2005	Gauteng, South Africa	Lion Park development	EkoInfo
2005	Vilanculos, Mozambique	Lula Lodge Environmental Audit	EkoInfo
2005	Mpumalanga, South Africa	Impomelelo development	EkoInfo
2005	Limpopo Province, South Africa	Kololo Lodge development	EkoInfo
2005	Gauteng, South Africa	Paardeplaats development	Landev (Pty) Ltd

2005	Gauteng, South Africa	Cashan residential development	BEC
2005	Limpopo Province, South Africa	Matimba B Power Station	ESKOM
2005	NW Province, South Africa	Elandsfontein residential development	EkoInfo
2005	Gauteng, South Africa	Rietvallei development	EkoInfo
2005	Mpumalanga, South Africa	Middelkraal opencast coal mine	African EPA
2005	Gauteng, South Africa	Simon Vermooten Road extensions	BEC
2005	Gauteng, South Africa	Klapperkop SEA	EkoInfo
2005	Gauteng, South Africa	The Hills residential development	EkoInfo
2005	Gauteng, South Africa	Wallmansthal development	BEC
2005	Gauteng, South Africa	Waterkloof Heights residential development	BEC
2005	NW Province, South Africa	Beau Rivage residential development	BEC
2005	NW Province, South Africa	Le Chateau residential development	BEC
2005	Gauteng, South Africa	Zuickerboschfontein residential development	Zuicker. Property Trust
2005	Gauteng, South Africa	Garsfontein residential development	BEC
2005	Gauteng, South Africa	Rooihuiskraal residential development	EkoInfo
2006	Limpopo Province, South Africa	Kapama Game Lodge development	EkoInfo
2006	Free State, Northern Cape - SA	Perseus-Hydra high voltage power line	ESKOM
2006	NW Province, South Africa	Schurveberg residential development	Viking Properties 330
2006	NW Province, South Africa	De Rust development	BEC

2006	Gauteng, South Africa	Zesfontein landfill site	Ekurhuleni Municipality
2006	Mpumalanga, South Africa	Zone-of-Integration development	BEC
2006	Gauteng, South Africa	Doornkraal development	BEC
2006	Gauteng, South Africa	Zwartkoppies residential development	BEC
2006	Gauteng, South Africa	Rigel South Risk Assessment	EkoInfo
2006	Gauteng, South Africa	SWM development	Germiston Uitgewers
2006	Gauteng, South Africa	Boschkop residential development	Viking Properties 330
2006	Gauteng, South Africa	Donkerhoek residential development	BEC
2006	Gauteng, South Africa	Willowbrae residential development	Vexma Properties
2006	Gauteng, South Africa	Equestria residential development	ASG Rental Solutions
2006	Mpumalanga, South Africa	Mareesburg mine extension	BEC
2006	Gauteng, South Africa	Sedibeng township development	EkoInfo
2006	Gauteng, South Africa	Cullinan residential development	EkoInfo
2006	Gauteng, South Africa	Bronberg South residential development	EkoInfo
2006	Limpopo Province, South Africa	Koedoesfontein Lodge development	EkoInfo
2006	Gauteng, South Africa	Voortrekker Monument development	EkoInfo
2006	Gauteng, South Africa	Zambezi residential development	EkoInfo
2006	Gauteng, South Africa	Midrand residential development	EkoInfo
2006	Central District, Botswana	Mmamabula opencast coal mine	EkoInfo

2006	Gauteng, South Africa	Jameson Field residential development	BEC
2006	Gauteng, South Africa	Olympus Agric Holdings development	BEC
2006	Gauteng, South Africa	Willows 281 residential development	BEC
2006	Gauteng, South Africa	Fountains Valley development	Ekoinfo
2006	Mpumalanga, South Africa	Xstrata opencast coal mine	Xstrata Coal
2006	Limpopo Province, South Africa	Soutpansberg mining operation	ERM
2006	Free State, South Africa	Vredefort Dome SEA	African EPA
2006	Mpumalanga, South Africa	Trichardt residential development	Prohibio
2006	Limpopo Province, South Africa	Musina Weigh Bridge	BEC
2007	Gauteng, South Africa	Ashlea Gardens residential development	BEC
2007	Gauteng, South Africa	Gautrain	BEC
2007	Limpopo Province, South Africa	Thornclyff mine	AGES SA
2007	Gauteng, South Africa	Shoshanguve residential development	Ekoinfo
2007	Gauteng, South Africa	Rabie Ridge residential development	BEC
2007	Mpumalanga, South Africa	R40 (Nelspruit-Baberton) road extensions	BEC
2007	Gauteng, South Africa	Dainfern residential development	Golden Creek Investments
2007	Limpopo Province, South Africa	Vhurivhuri tribal area development	BEC
2007	Gauteng, South Africa	Kliprivier development	Kenric Investments
2007	Gauteng, South Africa	Kievitskroon residential development	Ekoinfo



2007	Gauteng, South Africa	The Hills Road	Ekoinfo
2007	Gauteng, South Africa	Raslouw residential development	Ekoinfo
2007	Gauteng, Mpumalanga - SA	Petronet multipurpose pipeline	BEC
2007	Central District, Botswana	TATI Nickel mine	Marsh Vikela
2007	Gauteng, South Africa	Newmarket residential development	BEC
2007	Gauteng, South Africa	Leeupoort residential development	BEC
2007	Gauteng, South Africa	Bultfontein residential development	BEC
2007	Mpumalanga, South Africa	Steelpoort mining	BEC
2007	Gauteng, Limpopo - South Africa	Marang high voltage power line	ESKOM
2007	NW, Limpopo - South Africa	Dinaledi high voltage power line	ESKOM
2007	Gauteng, South Africa	Klipdrift residential development	BEC
2007	Gauteng, South Africa	Selcourt residential development	BEC
2007	Gauteng, South Africa	Piensaarspoort residential development	Krysanthe Properties
2007	Eastern Cape, South Africa	Xolobeni mine	Pachnoda Consulting
2007	Limpopo Province, South Africa	Rockdale Ferrochrome mine	BEC
2007	NW Province, South Africa	PTM platinum mine	Oryx Environmental
2007	Limpopo Province, South Africa	Mmamabula-delta high voltage power line	ESKOM
2007	Gauteng, South Africa	Mooiplaats residential development	Pachnoda Consulting
2007	Mpumalanga, South Africa	Schoemanskloof residential development	GO EnviroScience

2008	Limpopo Province, South Africa	Cooyong residential development	Polygon Environ. Planners
2008	Central District, Botswana	Selkirk Lionore mine	AGES SA
2008	Gauteng, South Africa	SANRAL KWV3 road	Jeffares and Green
2008	Ghanzi District, Botswana	GOPE diamond mine (Central Kalahari)	Marsh Vikela
2008	Gauteng, South Africa	Ingwenya Lodge development	Ekoinfo
2008	Mpumalanga, South Africa	Boulders-Malelane high voltage power line	ESKOM
2008	Gauteng, South Africa	Crystal Park residential development	BEC
2008	Gauteng, South Africa	Klipdrift Weir	Magalies Water
2008	Mpumalanga, South Africa	Majuba power generation plant	ESKOM
2008	NW Province, South Africa	Sun City golf course development	Sun International
2008	Mpumalanga, South Africa	Dorstfontein Coal Mine	GCS
2008	NW Province, South Africa	Lonmin Mine: Biodiversity Assessment	Ekoinfo
2008	Gauteng, South Africa	Houtkop Development	BEC
2008	Gauteng, South Africa	Willow Park Development	Zotec Developments
2008	Gauteng, South Africa	Fairland Road Development	Arcus Gibb
2008	Gauteng, South Africa	Klipdrift Water Works, Pienaars River	Enviro-Namic
2008	NW Province, South Africa	Waste Management Services Assessment	GCS
2008	OFS & Northern Cape, SA	Perseus-Hydra Power Line Walk Down	Ekoinfo
2008	KZN & Mpumalanga, SA	Majuba-Venus Power Line EIA	Ekoinfo

2008	NW Province, South Africa	Watershed – Mmabatho Power Line	BEC
2008	Mpumalanga, South Africa	Kusipongo Red data assessment	BEC
2008	Gauteng, South Africa	Greenfield Expansion Development	BEC
2008	Limpopo Province, South Africa	Medupi Borrow Pits	BEC
2009	Mpumalanga, South Africa	Kangra Site Selection	BEC
2009	Mpumalanga, South Africa	Maquasa West	BEC
2009	Gauteng, South Africa	Elandsfontein Development	BEC
2009	Gauteng, South Africa	Crystal Park Development	BEC
2009	Gauteng, South Africa	Doornpoort Development Wetland Mammals	First Land Developments
2009	Gauteng, South Africa	NECSA pipelines assessment	EIMS
2009	OFS & Mpumalanga, SA	GNP SASOL Pipeline	SPEC
2009	Limpopo Province, South Africa	Leopard's Bend Lodge development	EkoInfo
2009	Gauteng, South Africa	Springvalley Development	BEC
2009	Gauteng, South Africa	Glockner – Kookfontein Power Lines	Baagi
2009	NW & Limpopo Provinces, SA	Delta-Epsilon Power Lines	BEC
2009	Gauteng, South Africa	Klipfontein Development	BEC
2009	Mpumalanga, South Africa	Boulders-Malelane Power Lines	BEC
2009	NW Province, South Africa	Watershed-Sephaku Power Lines	BEC

**The South African Council  
for Natural Scientific Professions**

**certifies in terms of Section 20(3)(a) of the  
Natural Scientific Professions Act, 2003, that**

**Mr D Kamffer**

**is registered as a Professional Natural Scientist, Reg. no.  
in the following field(s) of practice**

**Ecological Science**

**Zoological Science**

**400204/05**

**Expiry Date 2010-05-31**

## **JONATHAN JAMES SMALLIE**

### **Curriculum Vitae**

- Date of birth:** 20 October 1975
- Qualifications:** BSC – Agriculture (Hons)  
University of Natal - Pietermaritzburg
- Occupation:** Field Biologist – Endangered Wildlife Trust –  
Industries Partnership (a working group of  
Endangered Wildlife Trust)
- Duties:** Conduct investigations, impact assessments, studies,  
research on wildlife interactions with power line  
infrastructure and wildlife hazards at airports.

The following projects have been completed since 2000.

#### **1) Wildlife interactions with power lines**

*Bird Impact Assessment Studies for Electrical infrastructure:*

Transmission lines:

- Mercury – Perseus 400kV
- Eros – Neptune – Grassridge 400kV
- Kudu-Juno 400kV
- Garona Aries 400kV
- Perseus Hydra 765kV
- Tabor – Witkop 275kV
- Tabor Spencer 400kV
- Moropule Orapa 220kV (Botswana)
- Coega Electrification
- Gamma Grassridge 765kV
- Gourikwa Proteus 400kV

Distribution lines:

- Kanoneiland 22kV
- Hydra-Gamma 765kV
- Komani-Manzana 132kV
- Rockdale-Middelburg 132kV
- Irenedale 132 kV
- Zandfontein 132kV

- Venulu-Makonde 132 kV
- Spencer-Makonde 132 kV
- Dalkeith-Jackal Creek 132kV
- Glen Austin 88kV
- Bulgerivier 132kV
- Ottawa-Tongaat 132kV
- Disselfontein 132kV
- Voorspoed Mine 132kV
- Wonderfontein 132kV
- Kabokweni Hlau Hlau 132kV
- Hazyview Kiepersol 132kV
- Mayfern Delta 132kV
- VAAL Vresap 88kV
- Arthursview Modderkuil 88kV
- Orapa, AK6, Lethakane substations and 66kV lines (Botswana)
- Dagbreek Hermon 66kV
- Uitkoms Majuba 88kV
- Pilanesberg Spitskop 132kV
- Qumbu PG Bison 132kV
- Louis Trichardt Venetia 132kV
- Rockdale Middelburg Ferrochrome 132kV
- New Continental Cement 132kV
- Hillside 88kV
- Marathon Delta 132kV
- Malelane Boulder 132kV
- Nondela Strengthening 132kV
- Spitskop Northern Plats 132kV
- West Acres Mataffin 132kV
- Westgate Tarlton Kromdraai 132kV
- 

Generation projects:

- Eskom Concentrated Solar Power Plant
- West Coast Wind Energy Facility
- Hopefield Wind Energy Facility

Substations:

- Nooitgedacht distribution
- Pilanesberg distribution
- Gamma Transmission

*Risk Assessments on existing power lines:*

- Hydra-Droerivier 1,2 & 3 – 400kV
- Hydra-Poseidon 1,2 – 400kV
- Butterworth – Ncora 66kV
- Nieu-Bethesda 22kV
- Maclear 22kV (Joelshoek Valley Project)
- Wodehouse 22kV (Dordrecht district)
- Burgersdorp - Aliwal North - Jamestown 22kV
- Cradock 22kV
- Colesberg area 22kV
- Loxton self build 11kV
- Kanoneiland 22kV
- Stutterheim Municipality 22kV
- Majuba-Venus 400kV
- Chivelston-Mersey 400kV
- Marathon-Prairie 275kV
- Delphi-Neptune 400kV
- Ingagane – Bloukrans 275kV
- Ingagane – Danskraal 275kV
- Danskraal – Bloukrans 275kV

*Bird mortality investigations & other studies:*

- Bird Impact Assessment for Lizzard Point Golf Estate - Vaaldam
- Bird Impact Assessment for Lever Creek Estates housing development
- Investigation into rotating Bird Flapper saga – Aberdeen 22kV
- Investigation of in excess of 80 separate incidents of bird mortalities on power line networks from August 1999 to present
- Investigation of bird mortalities at 3 separate substations
- Special investigation into faulting on Ariadne-Eros 132kV
- Special investigation into Bald Ibis faulting on Tutuka Pegasus 275kV
- Special investigation into bird related faulting on 22kV Geluk Hendrina line
- Special investigation into bird related faulting on Camden Chivelston 400kV line

*Avifaunal "walk thoughts" (EMP's):*

- Beta Delphi 400kV
- Mercury Perseus 765kV
- Perseus 765kV Substation
- Beta Turn 765kV in lines

- Spencer Tabor 400kV line
- Kabokweni Hlau Hlau 132kV
- Mayfern Delta 132kV
- 

*Strategic Environmental Assessments for Master Electrification Plans*

- Northern Johannesburg area
- Southern KZN and Northern Eastern Cape
- Northern Pretoria
- Western Cape Peninsula

*Research projects:*

- Southern Region Proactive GIS Blue Crane collision project

*Conferences attended:*

- September 2000: 5<sup>th</sup> World Conference on Birds of Prey in Seville, Spain.
- 2003: Presented a talk on "Birds & Power lines" at the 2003 AGM of the Amalgamated Municipal Electrical Unions – in Stutterheim - Eastern Cape
- June 2005: IASTED Conference at Benalmadena, Spain – presented a paper entitled "Impact of bird streamers on quality of supply on transmission lines: a case study"
- March 27 – 30 2006: International Conference on Overhead Lines, Design, Construction, Inspection & Maintenance, Fort Collins Colorado USA. Presented a paper entitled "Assessing the powerline network in the Kwa-Zulu Natal Province of South Africa from a vulture interaction perspective".

*Courses & training:*

- Successfully completed a 5 day course in High Voltage Regulations (modules 1 to 10) conducted by Eskom – Southern Region
- Successfully completed training on, and obtained authorization for, live line installation of Bird Flappers

*Papers:*



- Smallie, J. & Van Rooyen, C. 2003. Risk assessment of bird interaction on the Hydra-Droërvier 1 and 2 400kV. Unpublished report to Eskom Transmission Group. Endangered Wildlife Trust. Johannesburg. South Africa
- Van Rooyen, C. Jenkins, A. De Goede, J. & Smallie J. 2003. Environmentally acceptable ways to minimise the incidence of power outages associated with large raptor nests on Eskom pylons in the Karoo: Lessons learnt to date. Project number 9RE-00005 / R1127 Technology Services International. Johannesburg. South Africa
- Smallie, J. & Van Rooyen, C. 2005. Impact of bird streamers on quality of supply on transmission lines: a case study. Proceedings of the Fifth IASTED International Conference on Power and Energy Systems, Benalmadena, Spain.

## **2) Wildlife hazards at airports**

### *Risk assessments:*

Assessments of the bird strike hazard posed to aircraft have been conducted at the following airports:

- Kigali International Airport - Rwanda
- Port Elizabeth Airport – specialist study as part of the EIA for the proposed Madiba Bay Leisure Park
- Manzini International Airport (Swaziland)
- Polokwane International Airport
- Mafekeng International Airport
- Lanseria Airport

### *Courses and training:*

- One day course in Airside Induction & Safety successfully attended

### *Conferences attended:*

- May 2005: International Bird Strike Committee 27<sup>th</sup> meeting – Athens, Greece. Presented a paper entitled Bird Strike Data analysis at SA airports 1999 to 2004.

*Papers:*

- Smallie, J. & Froneman, A. 2005. Bird Strike data analysis at South African Airports 1999 to 2004. Proceedings of the 27<sup>th</sup> Conference of the International Bird Strike Committee, Athens Greece.

## CURRICULUM VITAE (CV) FOR PROFESSIONAL STAFF OF WATER GEOSCIENCES CONSULTING

1. **Position:** HYDROGEOLOGIST
2. **Name of Firm:** Water Geosciences Consulting
3. **Name of Expert:** Jude Cobbing
4. **Date of Birth:** 29 October 1971
5. **Nationality:** South African
6. **Expertise:**
  - o Aquifer testing and groundwater sampling, quality assessment and evaluation
  - o Groundwater input to Environmental Impact Assessment and compliance
  - o Groundwater resource evaluation, including vulnerability assessments
  - o Down-hole borehole geophysical logging and log data interpretation
  - o Water borehole drilling and construction supervision
  - o Training of groundwater professionals
  - o Mine water assessment and remediation of mine-related water pollution

### 7. Education:

Name of institution	Degree(s) or Diploma(s) obtained:	Date of obtainment
University of London (University College)	MSc (Hydrogeology) Dissertation: The spatial variability of arsenic in groundwater at Magura, western Bangladesh	2000
University of South Africa (UNISA)	Post-Graduate Certificate in Education (PGCE) specialising in science and English teaching	1999
University of Cape Town	BSc (Geology)	1994

### 8. Membership of Professional Associations:

Professional Natural Scientist registered with the SA Council for Natural Scientific Professions (SACNASP Registration Number 400156/06)  
 Member of the Geological Society of South Africa  
 Fellow of the Geological Society of London and Chartered Geologist  
 Member of the International Association of Hydrogeologists (IAH)  
 Member of the Burdon Commission of the IAH, an African hydrogeology specialist group  
 Member of the European Federation of Geologists

### 9. Other Training:

2006	One week course on Reactive Transport Groundwater Modelling, University of the Western Cape (co-organiser)
2006	One day course on the Department of Water Affairs and Forestry South African Groundwater Decision Tool (SAGDT)
2004	Three day course on ARCGIS 8 Geographical Information System software
2003	One week course in PRINCE2 Project Management Skills
2003	One week course on Quaternary geology and geomorphology
2003	Two day course in advanced WORD
2002	Two day course on geological core logging
2002	One day course on the use of portable down-hole geophysical logging equipment
2001 and 2002	Health and Safety courses including advanced driving, off-road driving and fire safety awareness

**10. Countries of Work Experience:** *[List countries where expert has worked in the last ten years]*

South Africa, Great Britain, N. Ireland, Malawi, Ghana, Nigeria, Bangladesh

**11. Languages:** *[For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing.]*

Language	Reading	Speaking	Writing
English	Good	Good	Good
Afrikaans	Fair	Fair	Fair
Xhosa	Poor	Poor	Poor
French	Poor	Poor	Poor

**12. Employment Record:**

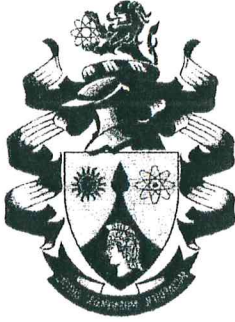
From [Year]: July 2007		TO [Year]: Present
Employer:	Water Geosciences Consulting	
Positions held:	Hydrogeologist	
Purpose of position:	Manage contracts and deliverables for various areas of interest to the company, including mining, environmental and state sectors.	

From [Year]: July 2005		TO [Year]: June 2007
Employer:	Council for Scientific and Industrial Research (CSIR)	
Positions held:	Hydrogeologist	
Purpose of position:	To conduct research into groundwater and groundwater-related issues in South Africa, as part of the Water Resources Competence Area at the CSIR. The CSIR stressed high-quality research outputs in a multi-disciplinary environment, targeted in innovative ways at some of the most pressing water problems facing both South Africa and the greater SADC region.	

From [Year]: November 2000		TO [Year]: May 2005
Employer:	British Geological Survey	
Positions held:	Hydrogeologist (Higher Scientific Officer)	
Purpose of position:	To conduct research into various aspects of hydrogeology and groundwater, both in the United Kingdom and elsewhere in the world, as part of the overall BGS research strategy. Projects ranged from two or three days to more than three years, and funding was sourced from both the public and the private (commercial) sectors. Part of my job was also to answer queries from members of the public regarding all matters related to groundwater.	

From [Year]: May 1996		TO [Year]: August 1999
Employer:	Various	
Positions held:	Construction worker, map-shop manager, school teacher	
Purpose of position:	I worked in various positions in the United Kingdom whilst studying towards my PGCE qualification, and saving for the MSc qualification.	

From [Year]: March 1995		TO [Year]: April 1996
Employer:	Lima Community Development Organisation	
Positions held:	Water resources project manager	
Purpose of position:	To manage the provision of community water supplies, including spring protection systems and boreholes, within the budget of this small non-governmental organisation (NGO). The work took place in the rural Eastern Cape Province, near the town of Mqanduli and the village of Zithulele.	



**Die Suid-Afrikaanse Raad vir Natuurwetenskaplike Professions**  
**The South African Council for Natural Scientific Professions**

---

Verw.  
Ref.

156/06

11 July 2006

Privaatsak/  
Private Bag X540  
SILVERTON  
0127

Mr J.E. Cobbing Pr.Sci.Nat.  
Suite 240  
Private Bag X1  
MENLO PARK  
0102

GAUTENG PROV.  
Republiek van Suid-Afrika  
Republic of South Africa

Dear Mr Cobbing

Suite B313  
Geowetenskap Gebou/  
Geoscience Buildings  
Pretoriaweg 280, Pretoria Rd  
SILVERTON, PRETORIA

PROFESSIONAL REGISTRATION IN TERMS OF SECTION 20(3)(a) OF THE  
NATURAL SCIENTIFIC PROFESSIONS ACT, 2003 (ACT 27 OF 2003)

It is our pleasure to confirm your registration as a *Professional Natural Scientist* in the field of practice *Earth Science* on 11 July 2006. *Your registration number is 400156/06.*

Tel: +27 (12) 841 1075

Fax: +27 (12) 841 1057

In terms of section 22(1)(a) and (b) of the Act you may use the title "Professional Natural Scientist" and affix the prescribed abbreviation "Pr.Sci.Nat." after your name.

epos/email:  
sarnap@geoscience.org.za

<http://www.sacnasp.org.za>

A *registration card*, which lapses every year on 31 May, is issued to all registered persons in the category Professional Natural Scientist. Your card for the period ending 31 May 2007 is included.

The Council also issues a certificate of registration to each registered person for the category and field of practice in which he or she is registered. *Your certificate will follow shortly.*

*In terms of section 24 of the Act the certificate remains the property of the Council and*

- (a) must be returned to the Registrar when a registered person voluntarily cancels his or her registration; or*
- (b) within 30 days after directed to do so in writing, if a person's registration has lapsed after failing to pay the prescribed annual fee or portion thereof, within 60 days from it becoming due. [Section 21(1)(a)(iii).]*

With kind regards

Yours sincerely

  
A.J. DE KLERK  
REGISTRAR