

CURRICULUM VITAE
JO-ANNE THOMAS

Profession : Environmental Consultant
Specialisation : Environmental Management; Strategic environmental advice;
Environmental compliance advice & monitoring; Environmental Impact Assessments; Policy, strategy & guideline formulation; Project Management; General Ecology
Years experience : Twelve (12) years in the environmental field

KEY RESPONSIBILITIES

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

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

SKILLS BASE AND CORE COMPETENCIES

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

EDUCATION AND PROFESSIONAL STATUS

Degrees:

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

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

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

Courses:

Environmental Impact Assessment, *Potchefstroom University*, 1998

Environmental Law, *Morgan University*, 2001

Professional Society Affiliations:

Professional Natural Scientist (Registration No 400024/00).

EMPLOYMENT

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

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

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

PROJECT EXPERIENCE

Current projects include:

Electricity Sector Projects: Wind Energy

- Project manager for the proposed Klipheuwel/Dassiesfontein wind energy facility and associated infrastructure at a site within the Overberg area of the Western Cape (for BioTherm Energy)
- Project manager for the proposed Suurplaat wind energy facility and associated infrastructure at a site within the Western Cape (for Moyeng Energy)
- Project manager for the proposed West Coast One wind energy facility and associated infrastructure at a site within the Western Cape (for Moyeng Energy)
- Project manager for the proposed Rheboksfontein wind energy facility and associated infrastructure at a site within the Western Cape (for Moyeng Energy)
- Project manager for the proposed EXXARO West Coast wind energy facility and associated infrastructure at a site within the Western Cape (for EXXARO Resources)
- Project manager for the proposed Oyster Bay wind energy facility, Eastern Cape Province (for Renewable Energy Resources Southern Africa)
- Project manager for the proposed Spitskop Bay wind energy facility, Eastern Cape Province (for Renewable Energy Resources Southern Africa)
- EIA and EMP for the proposed wind energy facility and associated infrastructure at a site within the Western Cape (for Eskom Generation)
- EIA and EMP for the proposed wind energy facility and associated infrastructure at a site near Hopefield, Western Cape Province (for Umoya Energy)

Electricity Sector Projects: Solar Energy

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

Electricity Sector Projects: Eskom

- Project manager for the EIA and EMP for the proposed Mokopane Integration Project, Limpopo Province (for Eskom Transmission)
- Project manager for the proposed transmission lines from the Koeberg-2 Nuclear Power Station site, Western Cape Province (for Eskom Transmission)
- Project manager for the proposed Tshwane strengthening project, Phase 1, Gauteng Province (for Eskom Transmission)
- Project manager for the EIA and EMP for the proposed Kyalami Strengthening Project, Gauteng Province (for Eskom Transmission)
- Project manager for the EIA and EMP for the proposed Steelpoort Integration Project, Limpopo Province (for Eskom Transmission)
- Project manager for the EIA and EMP for the proposed conversion of the existing Open Cycle Gas Turbine (OCGT) Ankerlig Power Station (located in Atlantis Industria) to a Combined Cycle Gas Turbine (CCGT) power station, and the associated 400 kV transmission power line between Ankerlig Power Station and the Omega Substation (for Eskom Generation)
- Project manager for the EIA and EMP for the proposed conversion of the existing Open Cycle Gas Turbine (OCGT) Gourikwa Power Station (located near Mossel Bay) to a Combined Cycle Gas Turbine (CCGT) power station, and the associated 400 kV transmission power line between Gourikwa Power Station and the Proteus Substation (for Eskom Generation)
- Basic Assessment for proposed wind monitoring masts on a site north of Koekenaap, Western Cape Province (for EXXARO Resources)
- Basic Assessment for proposed wind monitoring masts on a site in the Overberg area, Western Cape Province (for BioTherm Energy)
- Basic Assessment for proposed wind monitoring masts on a site near Beaufort West, Western Cape Province (for Umoya Energy)
- Basic Assessment for proposed wind monitoring masts on a site near Laingsburg, Western Cape Province (for Umoya Energy)

Compliance Monitoring

- ECO compliance monitoring for the construction of the De Hoop Dam and the deviation of the R555, Limpopo Province
- Project manager – ECO compliance monitoring for the rehabilitation of Blaauwpan Dam, Gauteng Province
- Project manager – ECO compliance monitoring for the expansion of Waterval WCW, Gauteng Province
- Project manager - ECO compliance monitoring for the Mine Water Recovery Project at Duvha Power Station, Mpumalanga Province

Strategic and Regional Assessments

- Strategic Assessment for the location of wind energy facilities within the Western Cape Province (for Western Cape Department of Environmental Affairs and Development Planning)
- Regional Assessments for wind energy developments within identified areas in the Overberg Area of the Western Cape Province (for BioTherm Energy)
- Regional Assessment for wind energy developments within an identified area in the Sutherland Area of the Northern and Western Cape Province (for Investec Bank Limited)
- Regional Assessment for wind energy developments within an identified area on the West Coast of the Western Cape Province (for Investec Bank Limited)
- Regional Assessment for wind energy developments within an identified area on the West Coast of the Western Cape Province (for Eskom Holdings Limited)

Environmental Management Tools

- Review the effectiveness and efficiency of the environmental impact management (EIA) system in South Africa on behalf of the Department of Environmental Affairs and Tourism
- Development of a comprehensive site-specific EMP for the construction and operation of the Eskom Braamhoek Integration Project, Free State and KwaZulu-Natal Provinces
- Compilation of Provincial Guidelines for off-road routes within the Western Cape Province
- Water use permit applications for water use at Tiffindell Ski Resort, Eastern Cape Province
- Water use permit applications for various properties within the Olifants West Game Reserve, Limpopo Province
- Environmental Risk Analysis for Salbro Property Holdings, Gauteng Province
- Project integration and compilation of a Strategy for Sustainable Development for Gauteng Province
- Advice regarding environmental compliance of existing and future development at Tiffindell Ski, Eastern Cape Province
- Advice regarding environmental compliance at Salberg factory, Gauteng Province

Peer Review

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

Infrastructure Projects

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

Mining Sector Projects

- Environmental Impact Assessment and Environmental Management Programme in terms of the MPRDA for the proposed Elitheni Coal Mine near Indwe, Eastern Cape Province
- Environmental Management Programmes for three borrow pits associated with the proposed Groot Letaba River Development Project, Limpopo Province

Water resources projects

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

Projects undertaken on behalf of Bohlweki Environmental include:

Specialist projects

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

Transport sector projects

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

Electricity Sector projects

- Project manager for the undertaking of an EIA and compilation of an EMP for the proposed Open Cycle Gas Turbine (OCGT) Power Station and associated 400 kV Transmission lines and substation at Atlantis, Western Cape Province
- Environmental Scoping Study for a new coal-fired power station in the Lephalale area, Limpopo Province
- Project manager for the undertaking of Environmental Scoping Study and compilation of an Environmental Management Plan for various 132 kV Sub-Transmission lines and substations within the Mpumalanga Province
- Project manager for the undertaking of an EIA for the proposed 765 kV Transmission line between the existing Hydra Substation (near De Aar) and the proposed Gamma Substation (near Victoria West), Northern Cape Province
- Detailed Environmental Scoping Study and public participation for the proposed Capacity Increase Project at Arnot Power Station, Mpumalanga Province
- Project manager for the undertaking of an Environmental Scoping Study and EMP for the proposed 132 kV sub-Transmission line between the GaRankuwa and Dinaledi substations, North West Province

- EIA & public participation for the proposed new Ikaros Substation and associated 400 kV Transmission line infrastructure, North West Province
- Environmental Scoping Study public participation for the Establishment of Eskom Infrastructure for Power Supply to the C-Cut Development at Premier Mine, Cullinan, Gauteng Province
- EIA & public participation for the proposed 3rd 400 kV Transmission line between the Poseidon and Grassridge Substations in the Eastern Cape Province
- EIA & public participation for the proposed new 400 kV Transmission line between Matimba Substation (near Lephalale) and Witkop Substation (near Polokwane), Limpopo Province
- Environmental Impact Study and public participation for the proposed 2nd 400 kV Transmission line between the Grassridge Substation and the Poseidon Substation in the Eastern Cape.
- Public Participation Process for the proposed Return-to-Service of the Camden Power Station, Mpumalanga Province
- Detailed Environmental Scoping Study and public participation for the Breyten Strengthening Project: proposed new Breyten Substation and associated 88 kV Distribution line, Mpumalanga Province
- Environmental Pre-Scoping Study for the proposed Concentrating Solar Plant, in the Northern Cape Province
- Environmental Impact Assessment public participation for the proposed new nine 132 kV power lines between the Grassridge Substation and the Coega Industrial Development Zone, Eastern Cape Province

Pipelines

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

EIAs for Technology projects

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

Mining sector projects

- Environmental Management Programme Report (EMPR) for the proposed small-scale kaolin clay mine near Ndwedwe, KwaZulu-Natal Province
- Environmental Management Programme Report (EMPR) for prospecting activities within the Premier Mine Game Farm, Cullinan for De Beers Consolidated Mines Limited

- Environmental Management Plan for the Proposed C-Cut Development at Premier Mine, Cullinan
- Environmental Management Programme Report for the Proposed C-Cut Development at Premier Mine, Cullinan
- Environmental Impact Assessment and public participation process for the Proposed C-Cut Development at Premier Mine, Cullinan

Development projects

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

Water resources projects

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

CURRICULUM VITAE

ALICIA GOVENDER

Profession : *Environmental Consultant*

Years experience : *3.5 years in the environmental field*

KEY RESPONSIBILITIES

- Professional execution of consulting services
- Reporting for a variety of projects
- Review of specialist reports
- Authority Consultation
- Site visits
- ECO audits
- ECO reports
- Attendance at EMC Meetings
- Minute taking
- Attendance at Tender Briefings
- Preparation of Tenders
- Put together Budgets
- Project Research
- Advise on South African legislation
- Liaison with Government officials, specialists and I&APs
- Representative at project team meetings
- Compose and Issue Letters of Appointments to Specialists
- Involvement in the Public Participation process
 - Presentations at Public Meetings
 - Preparation of presentations
 - Arrange meetings
 - Preparation of content of newspaper adverts
 - Letters to stakeholders and I&APs
 - Identification of I&APs
 - Compose and maintain stakeholder database
 - Continuous communication with I&APs
 - Obtaining landowner details using deed search
 - Working with landowner maps

SKILLS BASE AND CORE COMPETENCIES

- Microsoft office
- Geographic Information Systems (ArcView 8.3, ArcMap, Idrisi) (to 3rd year level)

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- 2004 - 2006, B.Sc (*Social Science*), Geography and Environmental Management, University of KwaZulu-Natal
- 2010, B.Sc. (*Honours*), Environmental Management, University of South Africa

SELECTED RELEVANT PROJECT EXPERIENCE

- EIA & EMP for the upgrade of the Hartebeestfontein Wastewater Care Works: ERWAT
- EIA & EMP for the extension of the Welgedacht Wastewater Care Works: ERWAT
- Operational EMP for the Medupi Power Station: Eskom
- Educational Booklet for the Environmental Management Plan for Medupi Power Station construction
- ECO Audit Reports for De Hoop Dam: DWA
- Public Participation for the Tshwane Strengthening Project:-Phase1: Eskom Transmission
- Basic Assessment for Wind Monitoring Masts for sites-Laingsburg and Beaufort West: Umoya
- Basic Assessments for Wind Monitoring Masts for properties-North of Koekenaap: Mulilo
- Basic Assessment & EMP for the Proposed Bus and Taxi facility in the Dilokong Area, Limpopo Province: SANRAL
- Basic Assessment for Proposed establishment of wind monitoring masts on two sites East of Cape Town in the Overberg near Boontjieskraal in the Western Cape: BioTherm Energy (Pty) Ltd
- EIA for the proposed wind energy facility near Caledon in the Overberg area in the Western Cape Province: BioTherm Energy (Pty) Ltd
- EIA for the proposed construction of the Ngotwane River Bridge and P224-1 road upgrade between South Africa and Botswana: SANRAL.
- EIA for the proposed Exxaro West Coast Wind Farm Development, north west of Vredendal in the Western Cape Province: Exxaro Resources
- Public Participation for the Arggenis- Oranjemond Transmission Line in the Northern Cape: Eskom Transmission
- ECO monitoring for the rehabilitation of Blaauwpan and associated storm water channel, Gauteng: Airports Company South Africa (ACSA).
- EIA for the proposed Ilanga Solar Thermal Power Plant as Part of the Future Karoshoek Solar Thermal Park, Northern Cape: Ilangaethu Solar Power (Pty) Ltd
- Public Participation for the new proposed Coal fired power station near Oggies/Phola, Mpumalanga Province: Rukki SA.
- Basic Assessment for Wind Energy Facility near Koingnaas, Northern Cape Province: Just Palmtree Power.
- EIA for the proposed Photovoltaic Facility on a site South-East of De Aar, Northern Cape: INCA De Aar (Pty) Ltd
- Basic Assessment for Project Blue Wind Energy Facility near Kleinzee, Northern Cape Province: WWK Development (Pty) Ltd
- EIA for the proposed Kleinzee 300 MW wind energy facility, Northern Cape Province: Eskom Generation
- Basic Assessment and Public Participation for Remediation of Asbestos Contaminated Land in Limpopo and KZN Provinces: Transnet Freight Rail

**CURRICULUM VITAE
DESHNEE GOUNDEN**

Profession : Environmental Consultant (Trainee)
Years experience : 3 Months

KEY RESPONSIBILITIES

Public participation
EIA reporting

SKILLS BASE AND CORE COMPETENCIES

Research
Administrative tasks
Report Writing

EDUCATION AND PROFESSIONAL STATUS

Degrees: BSC Botany and Zoology obtained from the University of Johannesburg in 2010.

EMPLOYMENT

1. March 2010 – July 2011

Name of Employer: British American Tobacco

Position: Export Demand Co-ordinator

2. July 2011 - Present

Name of Employer: Savannah Environmental (Pty) Ltd

Position: Junior Environmental consultant

PROJECT EXPERIENCE

Current projects include:

- Public Participation process for Asbestos remediation project in Limpopo, Mpumalanga and KwaZulu-Natal railway stations.
- EIA for the Hidden Valley Wind Energy Facility, Northern Cape
- Emalahleni Master Plan
- Toyota - proposed photovoltaic rooftop installation, Gauteng Province
- Proposed mainstream Aberdeen Wind Energy facility, Eastern Cape Province

Curriculum Vitae

Robert Winston Randolph

Apex Environmental (AIA)

Technical Manager and Managing Member

Professional Qualifications

- MPH: Occupational Hygiene, University of Witwatersrand, Gauteng
- Certified Occupational Hygienist (SAIOH)
- Senior Certification Examiner for SAIOH

Year of Birth

1966

Languages

English, Afrikaans, Spanish

Professional Affiliations

Southern African Institute for Occupational Hygiene (SAIOH)

Career Profile

In 1991, I formed a partnership offering Occupational Hygiene services to industry. From 1993 to 1996 I undertook a B-Tech degree in Environmental Health at the Durban University of Technology. I obtained a Masters degree in Public Health (Occupational Hygiene) at the University of Witwatersrand. Over the last 18 years, our company, a Department of Labour Approved Inspection Authority, has grown considerably providing me with substantial knowledge and experience in a wide range of occupational hygiene services. Since 1993 I have also undertaken guest lecturing, on an annual basis, at the Durban University of Technology and Nelson R Mandela School of Medicine (KZN).

I am currently a Certified Occupational Hygienist (SAIOH) as well as a Senior Certification Examiner for SAIOH. I also serve as Deputy Chairman for SAIOH – KZN Branch.

Curriculum Vitae

Areas of Expertise

- Project Management for the Rehabilitation of Asbestos Contaminated Soil (TNPA, TCP, TPT, RME).
- Occupational and Environmental management of asbestos in soil.
- Occupational and Environmental air and soil monitoring of asbestos.
- A wide range of Occupational Hygiene Services.
- Occupational health investigations associated with occupational illness and disease.
- Providing management with guidance and advice on Occupational and Environmental Health issues.
- Managing an occupational hygiene / environmental consulting company.
- Occupational and Environmental presentations to industry and local authorities.

Countries Worked

South Africa, Zimbabwe, Mozambique, Malawi.

Employment History

Apex Environmental: July 1991 to Present

- Managing an occupational hygiene consulting company.
- Management of consultants: Assistants, Technologists and Hygienists.
- Undertaking occupational hygiene surveys: Measurement of Noise (Occupational and Environmental), Lighting, Ventilation, Heat / Cold Stress, Airborne Contaminants including Lead and Asbestos. Assessments and Audits on Food Hygiene, Pollution, Ergonomics, Hazardous Chemical Substances, Hazardous Biological Agents, Asbestos Identification and various Health Risk Assessments.
- Drawing up and approving Asbestos Plans of Work.

Post Matric: January 1984 to 1990:

- Studied Mechanical Engineering (not completed) at Durban University of Technology (1984 – 1986).
- Traveled and worked abroad for two years (1987 – 1987).
- Undertook compulsory military service (1989 – 1990).

The table below provides information on several (recent) contracts involving asbestos contaminated soil undertaken by Apex Environmental since February 2008.

FOR WHOM DONE – CONTRACT DETAILS AND REFERENCES	Nature Of Work	Year Completed
AMP – TNPA Anesh Harisinker Tel: 083 303 6097	Development of an Asbestos Management Plan for (TNPA) Port Of Durban	2009
Rail Inspections TNPA Durban Anesh Harisinker Tel: 083 303 6097	Inspection of all TNPA railway lines and yards throughout the Port of Durban	2009
TCP – OHTE Kevin Nel Tel: 031 361 1769	Monitoring and inspection of asbestos contaminated soil) Kingsrest Yard and Tank Washout)	2010
TNPA Anesh Harisinker Tel: 083 303 6097	Monitoring and inspection of asbestos during remediation project throughout the Port of Durban (link lines and yards)	2011
TCP – Ysite C. Botha Tel: 031 361 1769	Monitoring and Inspection of Asbestos in Soil – Y-Site Rehabilitation	2010
TNPA Anesh Harisinker Tel: 083 303 6097	Assessment and Quantification of Asbestos Contaminated Sites throughout the Port Of Durban	2008

Curriculum Vitae

Petrus Stephanus Rossouw

Known as: PS
Date of birth: 09-02-1981
Present address: Boardwalk Meander, Fearie Glen, Pretoria
Telephone number: 076 9073 422
E-mail address: ps@terrasoil.co.za

Profile

PS Rossouw is a soil scientist. He is a member of the Soil Science Society of South Africa (SSSSA) and the South African Soil Surveyors Organisation (SASSO). He has experience in research and consultation and presented research papers at national and international conferences. PS has a special interest in soil chemistry and the remediation of contaminated land.

Education

University of Pretoria:

MSc. Agric. Soil Science (2008)

- Thesis title: Environmental extractability of chromium(III) and nickel from soils of South Africa's Eastern Highveld
- Courses passed on 700 level: Soil chemistry, soil physics, plant nutrition and soil fertility

BSc. Agric. Soil Science (2004)

- Courses passed on 300/400 level: Soil chemistry, soil physics, soil dynamics, soil mineralogy and pedology, soil classification, soil water relations and irrigation, natural product chemistry;

- Courses passed on 200 level: Environmental chemistry, physical chemistry, organic chemistry, anorganic chemistry, analytical chemistry.

University of South Africa and University of Pretoria:

Courses passed for non-degree purposes:

- Advanced courses in **Literary Theory, Theory of Poetry, Theory of Narrative, Theory of Drama, Afrikaans Text Editing, Creative Writing (Afrikaans), History of Afrikaans Poetry** and **History of Afrikaans Prose** (2006 to 2009), as well as introductory courses to certain aspects of **Metallurgical Engineering** (2000).

University of Kwazulu-Natal in collaboration with Jiří Šimunek

Advanced modelling of water flow and solute transport in the vadose zone with Hydrus (2010)

- The course entailed a conceptual and mathematical description of water flow and solute transport processes in the vadose zone and an overview of the use of finite element techniques for solving the governing flow and transport equations. The course introduces a new generation of Windows-based numerical models for simulating water, heat and/or contaminant transport in variably-saturated porous media. These include the HYDRUS-1D and HYDRUS (2D/3D) codes.

Ezendalo Environmental Solutions

Understanding the Waste Management Act (2010)

- The course introduced the Waste Management Act and emphasised environmental auditing procedures and environmental management practises.

CityVarsity

Film camera and lighting (2010)

- The course stretched over a period of six weeks and covered the fundamentals of camera work and lighting for television and film and culminated in the shooting of a music video.

De Compagnie Wynlandgoed

Kreatiwiteit en kreatiewe skryfkuns (2009)

- The course in creativity and Afrikaans creative writing was presented by Dr Riana Scheepers and entailed the “wokshopping” of short stories and poems.

Eenheid vir kreatiewe skryfkuns, Universiteit van Pretoria (through CE@UP)

Kreatiewe Skryfkuns Winterskool (2008)

- This course in Afrikaans creative writing was coordinated by Prof. H.J. Pieterse and the workshop presented by Dr. Riana Scheepers. The course also entailed lectures by various writers.

Scientific presentations

PS presented papers at the Combined Conference of SASCP, SAWSS, SSSSA and SASH (2007 and 2011), the Tenth International Symposium on Soil and Plant Analyses (2007) and the Silicon in Agriculture Conference (2008). More detail regarding these papers are attached as **Appendix A**.

Specialised skills

- Forensic soil chemistry: Determining the fate and transformation of pollutants in soil, including critical evaluation of approaches and extraction methods used to determine the pollution status of soil
- Pedochemical modelling using the PHREEQC code
- Water flow and solute transport modelling using the Hydrus 1D and Hydrus (2D/3D) programs

Experience

PS worked as a researcher in the Department of Plant Production and Soil Science, University of Pretoria from November 2006 to May 2010. He was a founding member of TerraFirma Soil Science cc, a consultation firm, which was incepted in 2006. He joined Terra Soil Science cc in June 2010. He has experience in the following fields:

- Soil pollution and chemistry:
 - Assessment of the pollution status of chemically impacted soils and surface waters; and
 - Investigation and recommendation of mitigation, management and monitoring measures and remediation procedures.
- Pedology:
 - Baseline soil, agricultural potential and land capability surveys including recommendation of mitigation measures, management practises and monitoring protocols for the impact of mining and/or housing development.
 - Pedohydrology and aspects related to soil water movement in order to delineate wetland systems and assess the environmental risk posed by contaminants.
 - Design of wetland type systems

- Soil rehabilitation:
 - Assessment of the physical and chemical fertility status of soils on rehabilitated sites; and
 - Recommendations regarding soil amendments and fertilisation programs.

Research and consultation projects that PS has worked on are discussed in **Appendix B**.

PS worked as assistant-cameraman and gaffer on *Klits, Klets en Kuier deur Namibië* throughout 2009. This 13 episode production was produced for *KykNet Televisie*, a M-NET affiliate.

Other interests

PS has an intense interest in almost all aspects of the natural environment. He is an avid collector and grower of succulents and holds the study of butterflies, frogs, the earth and the universe as hobbies. He is fascinated by Africa and travels as much as possible. He believes in the sustainable utilisation of natural resources and hopes to combine aspects of soil science and remediation with his interests in ecology, anthropology, philosophy and creative writing.

More detail regarding work experience, or any other aspect, is available on request.

Appendix A: Papers presented at national and international conferences

PS presented, or co-author, the following papers:

- Rossouw, P.S., Van der Waals, J.H. De Jager, P.C. 2011. Chromium(III) and nickel extractability as influenced by soil water potential levels. Annual Combined Conference of the SASCP, SAWSS, SSSSA and SASHS, Pretoria, Gauteng, Republic of South Africa.
- Rossouw, P.S., De Jager, P.C., Claassens, A.S. 2008. The influence of an external source of silicon on chromium(III) and nickel extractability. Silicon in Agriculture Conference, Wild Coast Sun, Republic of South Africa.
- Rossouw, P.S., De Jager, P.C., Claassens, A.S., Van der Waals, J.H. 2007. The extractability of chromium(III) and nickel as influenced by wetting and drying cycles in soil. Tenth International Symposium on Soil and Plant Analysis, Budapest, Hungary.
- Rossouw, P.S., Van der Waals, J.H., De Jager, P.C. 2007. Chromium and nickel transformation on soil mineral surfaces. Annual Combined Conference of the SASCP, SAWSS, SSSSA and SASHS, Badplaas, Mpumalanga, Republic of South Africa.
- Van der Waals, J.H., Rossouw, P.S., Potgieter, J.J.C., De Jager, P.C. 2007. Uranium mobility in soil. Annual Combined Conference of the SASCP, SAWSS, SSSSA and SASHS, Badplaas, Mpumalanga, Republic of South Africa.

Appendix B: Research and consultation projects

Research projects

PS worked as a researcher in the Department of Plant Production and Soil Science, University of Pretoria from November 2006 to May 2010 on the following projects:

- **Heavy metal dynamics in the soil environment (Nov 2006 to Jul 2008):** The South African Iron and Steel Institute (SAISI) approached the University of Pretoria to research the possible detrimental effect of heavy metals, contained in steel plant slag, on environmental quality. Steel plant slag is used as an agricultural liming agent in South Africa. The research conducted focussed on:
 - The characterisation of the steel plant slag from AcelorMittal (Vanderbijlpark and Newcastle plants), Highveld Steel, Columbus Steel and Scaw Metals in terms of heavy metal content and extractability, as well as slag alkalinity and reactivity including computing calcium carbonate equivalence values;
 - The assessment of extraction methods used to determine the pollution status of heavy metal contaminated soil,
 - The sequestration of chromium and nickel by soils from South Africa's Eastern Highveld (*data derived for this study was used to write up a thesis in order to obtain the degree MSc. Agric. Soil Science*),
 - The release of chromium and nickel from two commercially available slag samples after ameliorating soils with differing textures and pH buffer capacities (*data derived for this study was used to write up a thesis in order to obtain the degree MSc. Agric. Soil Science*).
 - The release of vanadium from two commercially available slag samples after ameliorating soils with differing textures and pH buffer capacities.

- **First draft guidelines for the sustainable use of steel plant slag (aglime) in agriculture (Nov 2006 to Nov 2008):** The South African Iron and Steel Institute proposed the compilation of guidelines for the sustainable use of slag in agriculture. The first draft guidelines was compiled and is based on a four key criteria: A and B deals with slag characteristics (heavy metal content and alkalinity), C deals with the

interaction of certain heavy metals with soil constituents and D is a monitoring protocol.

- **The phyto-availability of heavy metals (Jan 2009 to May 2010):** This project was a continuation of the abovementioned projects and entailed investigations into the phyto-availability of Cr(III), Ni and Pb. In addition, the plant uptake of Cr, Ni, Al, Fe, Mn, Zn, Co, Mo, Pb, Hg, Cd, Li, Ag, Ga, Sr, In and V from soils amended with commercially available slag samples (aglime) were also researched. Microbiological analyses were also conducted on these soils in order to assess the response of micro-organisms to heavy metal pollution.

Consultation projects for TerraFirma Soil Science cc

PS, as a member of TerraFirma Soil Science, completed a number of consultation projects since the firms' inception in 2006. These include:

- Asbestos contamination assessment and mitigation recommendation at South African Railway Services sites in Pretoria, Gauteng (**Jan 2010 to April 2010**).
- Assessment of the suitability of soils and saprolitic materials for use as water impermeable layers and topsoil layers to support vegetation growth in the rehabilitation of steel plant slag dumps (**Oct 2010 to Dec 2010**).
- Baseline soil, land capability and agricultural potential surveys (pedological studies) and impact assessments (including guidelines for topsoil handling) of proposed coal and ferricrete mining developments on approximately 12 sites around Newcastle, KwaZulu Natal, near Bronkhorstspuit, Gauteng and near Ogies, Mpumalanga (**2006 to 2009**).
- Baseline soil, land capability and agricultural potential surveys (pedological studies) and impact assessments of housing developments on approximately 15 sites in Gauteng and Mpumalanga (**2006 to 2009**).
- Soil and surface water pollution status assessment (heavy metals, salinisation and acid drainage potential) at two historic coal wash plants and railway sidings outside

Newcastle, KwaZulu Natal for the purpose of an application to re-instate these facilities (**June 2008 to Nov 2008**).

- Uranium and zinc mobility in soils at a site adjacent to the Zincor base-metals refinery in Springs that was previously utilised for the storage of gold mine tailings. The tailings dam was removed and the levels and movement of heavy metals, especially uranium and zinc that leached from the tailings dam into the soil, were investigated (**May 2006 to July 2006**).

Consultation projects for Terra Soil Science cc

PS joined Terra Soil Science cc in June 2010. The projects that he has worked on are grouped:

- Hydrocarbon transport in the marine sediment material of the Dom Pedro Key, Port Elizabeth. This study entailed a laboratory based column study that included the characterisation of the hydrocarbons and soil material, as well as an investigation of water solubility of specific hydrocarbon compounds and the transport of these compounds in soil. Coefficient of distribution values are still to be computed for modelling purposes. (**May 2011 to current**)
- Assessing the feasibility of using wetland systems for treating acid mine drainage from pits that have been mined for coal. This includes, collection of field data, hydrological and chemical modelling as well as a laboratory based column study. (**May 2011 to current**)
- Assessment of the pollution status of soils in the vicinity of a fertiliser storage facility and proposals for possible remediation. (**April 2011 to current**)
- Assessment of the pedohydrological and pedochemical characteristics, including hydrological and chemical modelling, of a pan wetland system that falls in an area that is earmarked for mining. The study encompasses: 1. understanding the functioning of the current pan wetland, 2. assessing the impact of coal mining on the system, and 3. proposing a design for a wetland system that will replace the current system post-mining. The specific mine is in the process of applying for a water use licence in order to

mine through the pan wetland system. The pan wetland will have to be recreated post-mining. **(Aug 2010 to current)**

- Assessing the pollution potential of cattle feedlot areas on surface water bodies and soil. This includes the modelling of water flow and solute transport in soil, as well as surface runoff potential. Three such studies were conducted to date: one in the vicinity of Groot Marico, North West Province **(Feb 2011 to May 2011)** and two in the vicinity of Lichtenburg, North West Province **(April 2011 to current)**.
- Assessing the pollution status of heavy metal contaminated soil and risk posed by these soils to the environment. **(June to July 2010)**
- Baseline soil, land capability and agricultural potential surveys (pedological studies) and impact assessments of solar power, wind energy and housing developments on four sites in the Northern and Eastern Cape Province **(Oct to Nov 2010)**, one in Gauteng Province **(July to Aug 2010)** and one in North West Province **(Feb 2011)**.
- Assessment of the suitability of soils and saprolitic materials, regarding fertility status, for use in the landscaping of rehabilitated mined areas. **(Jan to Feb 2011)**
- Assessment of the impact of pipeline water (NMPP-pipeline) that has been treated with a biocide and oxygen scavenger on the soil environment and surface water bodies, as well as proposals on how to treat the water in order to negate negative environmental impacts. **(Aug to Sept 2010)**
- Numerous wetland delineation studies for development and mining purposes in Gauteng, Kwazulu-Natal, Free State, Mpumalanga and North West. Province (throughout the period **June 2010 to April 2011)**