

### Personal Details

**Surname** : Broughton  
**Names** : Elena  
**Date of Birth** : 11 September 1980  
**Nationality** : Russian  
**Residency** : RSA Permanent Resident  
**Profession** : Senior Development Economist



### Key Qualifications

**Elena Broughton** completed her BCom (Hon) 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 has 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 BSc (Hon) 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 later 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.

### Academic Qualifications

Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained:
2008-2011	MSc in Technology Management
2006 - 2007	BSc (Hon) in Technology Management
2004, Parkland College, USA	Computer Integrated Accounting
2004, Parkland College, USA	Independent Business
2003, Parkland College, USA	Intermediate Accounting
2003, Parkland College, USA	Records Management
2003, Parklands College, USA	Financial Accounting
2003, Parklands College, USA	Managerial Accounting
2002, Nizhny Novgorod University, Russia	BCom (Hon) in Economics



## Language Proficiency

	Reading	Writing	Speaking
Russian	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

## Employment Record

2004: Urban-Econ: Development Economist

## Projects Undertaken

- **Go to Market Strategy for a PV Panel Manufacturer:** Urban-Econ Development Economists 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 comprised of two major parts. The first components 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 comprising 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 Development Economists was appointed by SunCorp to develop a Socio-Economic Development and Enterprise Development Plans 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 Development Economists** 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 an 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 Development Economists 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 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.
- **Northern Cape Renewable Energy Strategy:** Urban-Econ Development Economists with a support from EScience Associates and Centre for Renewable and Sustainable Energy Studies (CRSES) was appointed to develop a renewable energy strategy for the Northern Cape. The objective of the study was to undertake a situational assessment of the Northern Cape economy to identify the opportunities and constraints with respect to renewable energy development, and accordingly to formulate a plan to unlock the existing potential of the province to harness renewable energy to the benefit of its communities and economy and to position the province to attract a maximum share of investment under the IRP2010 Renewable Energy Target and beyond.
- **The localisation potential of Photovoltaics and a strategy to support large scale roll-out in South Africa:** A consortium comprising of EScience Associates, Urban-Econ Development Economists and Chris Ahlfeldt (the project team was appointed to undertake the study on the localisation potential of solar PV. The specific objectives of the study included profiling of the industry, analysis of the PV industry value chain, and development of the strategy for the future roll-out of the industry in the country.
- **Feasibility study into establishing CSP component manufacturing facilities in South Africa:** The Industrial Development Corporation (the IDC) has commissioned Urban-Econ Development Economists supported by EScience Associates to undertake a feasibility study to determine the viability of the establishment of a manufacturing facility of CSP modules and components in South Africa.
- **Eskom CSP Macro-Economic Impact Assessment:** 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 impacts.



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- **Proposed Exxaro IPP Coal-Powered Power Station near Lephalale, Limpopo Scoping Inputs:** Urban-Econ Development Economists 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, in the Limpopo province.
  - **Mafube Nooitgedacht and Wildfontein EIA/EMP Sustainable Development Investigation Study:** Urban-Econ Development Economist 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 most preferred alternative.
  - **Thaba Metsi Sustainable Development Investigation Study:** The objective of the Thabametsi 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 Thabametsi project. Urban-Econ Development Economists provided a specialist input into the sustainable development Investigation that aimed to quantify and assess 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 macroeconomic 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.
  - **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'nbiekiespan PV Solar Energy Facility near Boshof, the Free State Province (75 MW PV solar facility)
  - **Energy-Related Proposals Evaluation for the Department of Science and Technology:** Urban-Econ Development Economists 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 involves the development of a decision framework on the basis of a Multi-Criteria Decision Method that will be used to compare proposals and determine the one that are not only suitable for funding but those that should be prioritised above others.
  - **Independent evaluation of the Wireless Mesh Network in Government Broadband:** Urban-Econ Development Economists was appointed to undertake an independent evaluation of the Community Wireless Mesh Networks in the Government Broadband project. Urban-Econ's responsibility is to evaluate the progress of the project to this date and provide recommendations that can be implemented to improve its design and execution.
  - **Department of Science and Technology Economic Analysis Model:** Urban-Econ was appointed by the Department of Science and Technology (DST) to assist them in developing a
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decision-making framework that would allow them to evaluate various proposals from an economic perspective and identify the ones that would create the largest economic benefits.

- **Eskom Ariadne-Eros Power Lines Economic and Agricultural Impact Assessment:** Urban-Econ was appointed to undertake an Agricultural Potential and Economic Impact Assessments 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 until 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 Impacts 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 analyses 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 proposes possible solutions to address the key challenges.
- **Mopani Investment Strategy:** Urban-Econ Development Economists 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 Of The 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 Payout Machine Licences in the Mpumalanga Province. The assistance requested 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, a hotel, and office space.

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- **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 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 and comprising such components as affordable housing, shopping centre, office park, industrial park, community and social facilities, bulk service infrastructure, and public open space.
  - **Amanzi Economic and Social Impact Assessments:** Urban-Econ was requested to undertake an economic and social impact studies 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. Study included analysis of the economic potential of the selected areas, development of scenarios and formulation of recommendations. Managed the team of sub-consultants.
  - **North West PGDS Monitor 2007:** 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 a economic impact assessment of the proposed development utilising an Input/Output model.
  - **Mooifontein Coal Mine Comparative Analysis, Mpumalanga:** Urban-Econ Development Economists were appointed to undertake a sustainable development investigation exercise that includes a comparative economic analysis between the status quo, i.e. farming, and an alternative land use, i.e. mining. The study made use of the economic modelling techniques to estimate the contribution of the current activities towards the country’s economy and the expected contribution of the proposed scenario. The impacts were calculated for a period of 100 years and compared to identify the most beneficial scenario from an economic perspective.
  - **Hanglip Sustainability Model:** Urban-Econ was appointed to develop a model that would have assisted the decision makers in identifying the most preferred alternative/s for the Hanglip Development. The model was based on the multi-criteria decision-making process.
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- **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 EC was appointed by the Eastern Cape Socio-Economic Consultative Council (ECSECC) to undertake an industrial sector study for the Eastern Cape Province. The study is envisioned to provide inputs to the Provincial Industrial Strategy that is currently being prepared. The focus of the strategy is on provision of support to the 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 Geographical 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.
  - **North West Sustainable Development Indicators:** Urban-Econ Development Economists have 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 Development Economists, assisted by Nyeleti Consulting Engineering, were 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, implications associated with its development, and the initiatives, including programmes 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.
  - **The North West Barometer 2006: Economic Module Update.** Urban-Econ Development Economists have 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. This report details the project roll-out plan and project progress to date.
  - **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
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Bekkersdal, which can be utilized by public and private entities. The document includes Skills Audit and Business Audit Databases in Access format.

- **Baralink economic and market study.** Urban-Econ: Development Economists have 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 more 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: Development Economists were 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.** Mining industry is a cornerstone of the South African economy. So far it has experienced rises and downfalls. 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 Labour Plan, preparation of which became a prerequisite for every mine in the country. Urban-Econ's suster company, Econo-Mine, 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.
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**Wouter Fourie**  
**Professional Heritage Specialist and Director PGS Heritage**

**Summary of Experience**

Specialised expertise in Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia*:

Involvement with various Heritage Impact Assessments, within South Africa, including:

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects

Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring

Involvement with various Heritage Impact Assessments, outside South Africa, including:

- Heritage Impact Assessments in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation projects in DRC

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave “rescue” excavations in the various provinces of South Africa

**Key Qualifications**

BA [Hons] (Cum laude): Archaeology and Geography

BA: Archaeology, Geography and Anthropology

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA):

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age

Accredited with Amafa KZN and Eastern Cape PHRA

**Key Work Experience**

2008- current: Director –Professional Grave Solutions (Pty) Ltd t/a PGS Heritage

2007 – 2008: Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007: Director - Professional Grave Solutions (Pty) Ltd

2000-2004: CEO– Matakoma Consultants

1998-2000: Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998: Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

## CURRICULUM VITAE

Andrea Gibb

**Name** Andrea Gibb

**Profession** Environmental Practitioner

**Name of Firm** SiVEST SA (Pty) Ltd

**Present Appointment** Environmental Practitioner and Visual Specialist:  
Environmental Division

**Years with Firm** 6 Years

**Date of Birth** 29 January 1985

**ID Number** 8501290020089

**Nationality** South African



### Education

Matriculated 2003, Full Academic Colours, Northcliff High School, Johannesburg, South Africa

### Professional Qualifications

#### **BSc (Hons) Environmental Management** (University of South Africa 2008-2010)

Coursework: Project Management, Environmental Risk Assessment and Management, Ecological and Social Impact Assessment, Fundamentals of Environmental Science, Impact Mitigation and Management, Integrated Environmental Management Systems & Auditing, Integrated Environmental Management, Research Methodology.

Research Proposal: Golf Courses and the Environment

#### **BSc Landscape Architecture** (with distinction) (University of Pretoria 2004-2007)

Coursework: Core modules focused on; design, construction, environmental science, applied sustainability, shifts in world paradigms and ideologies, soil and plant science, environmental history, business law and project management.

Awards: Cave Klapwijk prize for highest average in all modules in the Landscape Architecture programme, ILASA book prize for the best Landscape Architecture student in third year design, Johan Barnard planting design prize for the highest distinction average in any module of plant science.

#### **ArcGIS Desktop 1** (ESRI South Africa December 2010)

#### **Environmental Impact Assessment (EIA) 2014 Legal Regime Workshop** (Imbewu 2015)

### Employment Record

Aug 2010 – to date SiVEST SA (Pty) Ltd: Environmental Practitioner

Jan 2008 – July 2010 Cave Klapwijk and Associates: Environmental Assistant and Landscape Architectural Technologist

Feb 2006 – Dec 2006 Cave Klapwijk and Associates: Part time student

### Language Proficiency

LANGUAGE	SPEAK	READ	WRITE
English	Fluent	Fluent	Fluent

## Key Experience

Specialising in the field of Environmental Management and Visual Assessment.

Andrea joined SiVEST in August 2010 and holds the position of Environmental Practitioner in the Johannesburg Office. She has 8.5 years' work experience and specialises in managing large scale multifaceted EIAs and Basic Assessment (BAs), primarily related to renewable energy generation and electrical distribution. She also specialises in undertaking visual impact and landscape assessments. She has extensive experience in overseeing public participation and stakeholder engagement processes and has been involved in environmental baseline assessments, fatal flaw / feasibility assessments and environmental negative mapping / sensitivity analyses. From a business and administrative side, Andrea is actively involved in maintaining good client relationships, mentoring junior staff and maintaining the financial performance of the projects she leads.

### Skills include:

- Project Management (MS Project)
- Environmental Impact Assessment (EIA)
- Basic Assessment (BA)
- Public Participation Management
- Visual Impact Assessment (VIA)
- Landscape Assessment
- Strategic Environmental Planning
- Documentation / Quality Control
- Project Level Financial Management

## Projects Experience

### Aug 2010 – to date

#### **ENVIRONMENTAL IMPACT ASSESSMENT (EIA) / BASIC ASSESSMENT (BA)**

- EIA for the proposed development of the Tlisitseng 1 and 2 75MW Solar Photovoltaic (PV) Energy Facilities near Lichtenburg, North West Province.
- EIAs for the proposed development of the Sendawo 1, 2, and 3 75MW Solar PV Energy Facilities near Vryburg, North West Province.
- EIA for the proposed construction of the Sendawo Common Collector Substation and power line near Vryburg, North West Province.
- EIA for the proposed construction of the Aletta 140MW Wind Energy Facility near Copperton, Northern Cape Province.
- Application for an Amendment of the Environmental Authorisation (EA) for the proposed construction of the 100MW Limestone Solar Thermal Power Project near Danielskuil, Northern Cape Province.
- Applications for the Amendment of the EAs for the proposed construction of three 75MW solar PV facilities near Prieska, Northern Cape Province.
- Applications for the Amendment of the EAs for the proposed construction of the 75MW Arriesfontein and Wilger Solar Power Plants near Danielskuil, Northern Cape Province.
- Completion and submission of the final EIA report for the proposed Rooipunt PV Solar Power Park Phase 1 and proposed Rooipunt PV Solar Power Park Phase 2 near Upington, Northern Cape Province.
- EIAs for the proposed construction of the Helena 1, 2 and 3 75MW Solar PV Energy Facilities near Copperton, Northern Cape Province.
- EIA for the proposed construction of the Nokukhanya 75MW Solar PV Power Plant near Dennilton, Limpopo Province.
- EIA for the proposed development of the Dwarsrug Wind Farm near Loeriesfontein, Northern Cape Province.

- BA for the proposed construction of two 132kV power lines and associated infrastructure from the Redstone Solar Thermal Power Project site to the Olien MTS near Lime Acres, Northern Cape Province.
- BA for the proposed construction of two 132kV power lines and associated infrastructure from Silverstreams DS to the Olien MTS near Lime Acres, Northern Cape Province.
- BA for the proposed Construction of the SSS1 5MW Solar PV Plant on the Western Part of Portion 6 (Portion of Portion 5) of Farm Spes Bona 2355 near Bloemfontein, Free State Province.
- BA for the proposed Construction of the SSS2 5MW Solar PV Plant on the Eastern Part of Portion 6 (Portion of Portion 5) of Farm Spes Bona 2355 near Bloemfontein, Free State Province.
- BA for the proposed Mookodi Integration Phase 2: Proposed Construction of a 132kV power line from the proposed Bophirima Substation to the existing Schweizer-Reneke Substation, North West Province.
- BA for the proposed Mookodi Integration Phase 2: Proposed Construction of a 132kV power line from the Mookodi Substation to the existing Magopela Substation, North West Province.
- BA for the proposed Mookodi Integration Phase 2: Proposed Construction of the Mookodi - Ganyesa 132kV power line, proposed Ganyesa Substation and Havelock LILO, North West Province.
- Amendment of the Final Environmental Impact Report for the Proposed Mookodi 1 Integration Project near Vryburg, North West Province.
- BA for the proposed 132kV power line and associated infrastructure for the proposed Redstone Solar Thermal Energy Plant near Lime Acres, Northern Cape Province.
- BA for the proposed construction of a 132kV power line and substation associated with the 75MW PV Plant on the Farm Droogfontein (PV 3) in Kimberley, Northern Cape Province.
- BA for the proposed establishment of a Learning and Development Retreat and an Executive Staff and Client Lodge at Mogale's Gate, Gauteng Province.
- Application for an Amendment of the EA to increase the output of the proposed 40MW PV Facility on the farm Mierdam to 75MW, Northern Cape Province.
- BA for the proposed construction of a power line and substation near Postmasburg, Northern Cape Province.
- BA for the proposed West Rand Strengthening Project – 400kV double circuit power line and substation extension in the West Rand, Gauteng.
- EIA for the proposed construction of a wind farm and PV plant near Prieska, Northern Cape Province.
- Public Participation assistance as part of the EIA for the proposed Thyspunt Transmission Lines Integration Project – EIA for the proposed construction of 5 x 400kV transmission power lines between Thyspunt to Port Elizabeth, Eastern Cape Province.
- EIA assistance for the proposed construction of three Solar Power Plants in the Northern Cape Province.
- Public Participation as part of the EIA for the proposed Delareyville Kopela Power Line and Substation, North West Province.
- Public Participation as part of the EIA for the Middelburg Water Reclamation Project, Mpumalanga Province.

#### **VISUAL IMPACT ASSESSMENT (VIA)**

- VIA (Scoping Phase) for the proposed construction of a 3000MW Wind Farm and associated infrastructure near Richmond, Northern Cape Province.
- VIA for the proposed construction of a power line and associated infrastructure for the proposed Kalkaar Solar Thermal Power Plant near Kimberley, Free State and Northern Cape Provinces.
- VIA for the proposed construction of a power line and associated infrastructure for the proposed Rooipunt Solar Thermal Power Plant near Upington, Northern Cape Province.
- VIAs (Impact Phase) for the proposed construction of the Sendawo 1, 2 and 3 solar PV energy facilities near Vryburg, North West Province.

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- VIA (Impact Phase) for the proposed construction of the Sendawo substation and associated power line near Vryburg, North West Province.
  - VIAs (Impact Phase) for the proposed construction of the Tlisitseng 1 and 2 solar PV energy facilities near Lichtenburg, North West Province.
  - VIA for the proposed construction of the Tlisitseng substation and associated 132kV power line near Lichtenburg, North West Province.
  - VIA (Scoping Phase) for the proposed construction of the Sendawo substation and associated power line near Vryburg, North West Province.
  - VIA (Scoping Phase) for the proposed construction of the Sendawo 1, 2 and 3 solar PV energy facilities near Vryburg, North West Province.
  - VIA (Scoping Phase) for the proposed construction of the Tlisitseng 1 and 2 solar PV energy facilities near Lichtenburg, North West Province.
  - Visual recommendations for Phase 1 of the proposed Renishaw Estate Mixed Use Development, KwaZulu-Natal Province.
  - VIA for the proposed Tinley Manor South Banks Development, KwaZulu-Natal Province.
  - VIAs (Impact Phase) for the proposed construction of the Helena 1, 2 and 3 75MW Solar PV Energy Facilities near Copperton, Northern Cape Province.
  - VIA (Scoping Phase) for the proposed construction of the Helena 1, 2 and 3 75MW Solar PV Energy Facilities near Copperton, Northern Cape Province.
  - Visual Due Diligence Report for the possible rapid rail extensions to the Gauteng network, Gauteng Province.
  - Visual Status Quo and Constraints Report for the possible rapid rail extensions to the Gauteng network, Gauteng Province.
  - VIA for the proposed agricultural components of the Integrated Sugar Project in Nsoko, Swaziland.
  - VIA for the proposed Tweespruit to Welroux power lines and substation, Free State Province.
  - VIA for the proposed construction of the Nokukhanya 75MW Solar PV Power Plant near Dennilton, Limpopo Province.
  - VIA (Impact Phase) for the proposed development of the Dwarsrug Wind Farm near Loeriesfontein, Northern Cape Province.
  - VIA for the proposed amendment to the authorised power line route from Hera Substation to Westgate Substation, Gauteng Province.
  - VIA (Impact Phase) for the Eastside Junction Mixed Use Development near Delmas, Mpumalanga Province.
  - VIA for the proposed construction of two 132kV power lines and associated infrastructure from the Redstone Solar Thermal Power Project site to the Olien MTS near Lime Acres, Northern Cape Province.
  - VIA for the proposed construction of two 132kV power lines and associated infrastructure from Silverstreams DS to the Olien MTS near Lime Acres, Northern Cape Province.
  - VIA (Scoping Phase) for the proposed development of the Dwarsrug Wind Farm near Loeriesfontein, Northern Cape Province.
  - VIA for the proposed Rorqual Estate Development near Park Rynie on the South Coast of KwaZulu Natal.
  - VIA (Scoping Phase) for the proposed construction of a Coal-fired Power Station, Coal Mine and Associated Infrastructure near Colenso, KwaZulu-Natal Province.
  - VIA for the proposed Mookodi Integration Phase 2: Proposed Construction of the Mookodi - Ganyesa 132kV power line, proposed Ganyesa Substation and Havelock LILO, North West Province.
  - VIA for the proposed construction of the Duma transmission substation and associated Eskom power lines, KwaZulu-Natal Province.
  - VIA for the proposed construction of the Madlanzini transmission substation and associated Eskom power lines, Mpumalanga Province.
  - VIA for the proposed rebuild of the 88kV power line from Normandie substation to Hlungwane substation, Mpumalanga and KwaZulu-Natal Provinces.
  - VIA for the proposed construction of the Nzalo transmission substation and associated Eskom power lines, KwaZulu-Natal Province.

- VIA for the proposed construction of the Sheepmoor traction substation with two 20MVA transformer bays and a new associated 88kV turn-in power line, Mpumalanga Province.
- VIA for the proposed rebuild of the 88kV power line from Uitkoms substation to Antra T-off, Mpumalanga Province.
- VIA for the proposed rebuild of the 88kV power line from Umfolozi substation to Eqwasha traction substation including an 88kV turn-in power line to Dabula traction substation, Kwazulu-Natal Province.
- VIA for the proposed construction of the new 88/25kV Vryheid traction substation with two 20MVA transformer bays and a new associated 88kV turn-in power line, KwaZulu-Natal Province.
- VIA for the proposed construction of a 132kV power line and substation associated with the 75MW PV Plant on the Farm Droogfontein (PV 3) in Kimberley, Northern Cape Province.
- VIA (Impact Phase) for the proposed Construction of a Solar PV Power Plant near De Aar, Northern Cape Province.
- VIA for the (Impact Phase) proposed Construction of the Renosterberg Wind Farm near De Aar, Northern Cape Province.
- VIA for the (Impact Phase) proposed Construction of the Renosterberg Solar PV Power Plant near De Aar, Northern Cape Province.
- VIA for the proposed construction of a 132kV power line for the Redstone Thermal Energy Plant near Lime Acres, Northern Cape Province.
- VIA for the proposed Mookodi Integration phase 2 132kV power lines and Ganyesa substation near Vryburg, North West Province.
- VIA for the proposed 132kV power lines associated with the PV Plants on Droogfontein Farm near Kimberley, Northern Cape Province.
- VIA (Scoping phase) for the Eastside Junction Mixed Use Development near Delmas, Mpumalanga Province.
- VIA for the proposed development of a learning and development retreat and an executive and staff lodge at Mogale's Gate, Gauteng Province.
- VIA for the proposed construction of a substation and 88kV power line between Heilbron (via Frankfort) and Villiers, Free State Province.
- Visual Status Quo Assessment for the Moloto Development Corridor Feasibility Study in the Gauteng Province, Limpopo Province and Mpumalanga Province.
- VIA the West Rand Strengthening Project – 400kV double circuit power line and substation extension in the West Rand, Gauteng.
- VIA for the proposed construction of a wind farm and solar photovoltaic plant near Loeriesfontein, Northern Cape Province.
- Visual sensitivity mapping exercise for the proposed Mogale's Gate Expansion, Gauteng.
- VIA (Scoping Phase) for the proposed Renosterberg Solar PV Power Plant and Wind Farm near De Aar, Northern Cape Province.
- Scoping level VIAs for the proposed construction of three Solar Power Plants in the Northern Cape Province.
- VIAs for the Spoornet Coalink Powerline Projects in KZN and Mpumalanga.
- Visual Constraints Analysis for the proposed establishment of four Wind Farms in the Eastern and Northern Cape Province.
- VIA (Scoping Phase) for the proposed development of a solar energy facility in De Aar, Northern Cape.
- VIA (Scoping Phase) for the proposed development of a solar energy facility in Kimberley, Northern Cape.

### **STRATEGIC ENVIRONMENTAL PLANNING**

- Assistance with the Draft Environmental Management Framework for the Mogale City Local Municipality, Gauteng Province.
- Sensitivity Negative Mapping Analysis for the proposed Mogale's Gate Development, Gauteng Province.

**OTHER****Jan 2008 – July 2010**

Environmental management, research, report writing, and landscape design for several development projects:

- Report writing, coordination and public participation for several BAs.
- Planting design (including rehabilitation) in accordance with natural ecological processes, endemic species and appropriate techniques.
- Graphic presentations and mapping for several VIAs and landscape architectural designs, including three-dimensional imagery.

**Feb 2006 – Dec 2006**

Landscape Architectural drafting, rendering and planting design for a variety of projects including the Oprah Winfrey Academy for girls and the New UNISA Student Entrance Building.

<b>Name</b>	Stephan Hendrik Jacobs
<b>Profession</b>	Environmentalist
<b>Name of Firm</b>	SiVEST SA (Pty) Ltd
<b>Present Appointment</b>	Graduate Environmental Consultant
<b>Years with Firm</b>	Joined May 2015
<b>Date of Birth</b>	28 May 1991
<b>ID Number</b>	9105285065080
<b>Nationality</b>	South African



### Education

Pretoria Boys High, Pretoria, South Africa, Matriculated 2009.

### Professional Qualification

- BSc Hons Environmental Management and Analysis, (Post Graduate) University Of Pretoria Honours (2014).
- BSc Environmental Sciences (Undergraduate) University Of Pretoria (2012-2013)

### Employment Record

May 2015 – current	SiVEST SA (Pty) Ltd – Graduate Environmental Consultant
Nov 2014 – Feb 2015	Sodwana Bay Fishing Charters – Assistant Manager
Oct 2014 – Mar 2015	Ufudu Turtle Tours – Tour Guide

### Language Proficiency

LANGUAGE	SPEAK	READ	WRITE
English	Excellent	Excellent	Excellent
Afrikaans	Good	Good	Good

### Key Experience

Stephan joined SiVEST in May 2015 and holds the position of Graduate Environmental Consultant in the Johannesburg office.

Stephan specialises in the field of Environmental Management and has been involved in the compilation of Environmental Impact Assessments (EIAs) and Basic Assessments (BAs). Stephan has also assisted extensively in the undertaking of field work and the compilation of reports for specialist studies such as surface water and visual impact assessments. Stephan also has experience in Environmental Compliance and Auditing and has acted as an Environmental Control Officer (ECO) for several infrastructure projects.

Stephan has been educated and achieved his degrees (BSc and BSc Hons) at the University of Pretoria in Environmental Sciences (Environmental Management & Analysis).

Throughout his time at SiVEST, Stephan has acquired the following skills:

- Strong computer skills (Work, excel, powerpoint etc);
- Strong Proposal and report writing skills;
- Report compilation skills for Environmental Impact Assessments (EIAs) and Basic Assessments (BAs);



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- Report compilation skills for Environmental Management Plans/Programmes (EMPr);
  - Compilation and conducting Visual Impact Assessments;
  - Assisting in Surface Water / Wetland Delineations and Assessments.

Key experience includes:

- Environmental Impact Assessment (EIA) of small, medium and large-scale infrastructure projects,
- Basic Assessment (BA), of small, medium and large-scale infrastructure projects,
- Environmental Management Plans (EMPr), of small, medium and large-scale infrastructure projects,
- Proposal and tender compilation,
- Environmental Compliance and Auditing (ECO);
- Various site inspections, and
- Visual Impact Assessments (Field work and report compilation).

### Projects Experience

Stephan is responsible for the following activities: report writing, proposal writing, assisting in specialist surface water delineation and functional assessments, assisting in visual impact assessments and environmental compliance and auditing procedures. Current and completed projects / activities are outlined in detail below:

- Environmental Control Officer (ECO) for the Polokwane Integrated Rapid Public Transport System (IRPTS), Limpopo Province.
- Basic Assessment (BA) for the construction of a Non-Motorised Transport (NMT) Training and Recreational Park adjacent to the Peter Mokaba Stadium in Polokwane, Limpopo Province.
- Basic Assessment (BA) for the Proposed Expansion of the Tissue Manufacturing Capacity at the Twinsaver Kliprivier Operations Base, Gauteng Province.
- Environmental Control Officer (ECO) for Phase 1 and Phase 2 of the Newmarket Retail Development, Gauteng Province.
- Environmental Review of the Xakwa Coal Operations, adjacent to the proposed Eastside Junction Development.
- Environmental Due Diligence for the Woodlands and Harrowdene Office Parks in Woodmead, Gauteng Province.
- Visual Impact Assessment for the Helena Solar PV Plant, Northern Cape Province.
- Visual Impact Assessment for the Nsoko Msele Integrated Sugar Project, Swaziland.
- Visual Impact Assessments for the proposed construction of the Sendawo Solar 1, Sendawo Solar 2 and Sendawo Solar 3 Photovoltaic (PV) Energy Facilities near Vryburg, North West Province.
- Visual Impact Assessments for the proposed construction of the Sendawo Substation and Associated 400kV Power Line near Vryburg, North West Province.
- Visual Impact Assessments for the proposed construction of the Tlisitseng Solar 1 and Tlisitseng Solar 2 Photovoltaic (PV) Energy Facilities near Lichtenburg, North West Province.
- Visual Impact Assessment for the proposed construction of the 3000MW PhilCo Green Energy Wind Farm and Associated Infrastructure near Richmond, Northern Cape Province.

- Visual Impact Assessment for the proposed construction of the Aletta 140MW Wind Energy Facility neat Copperton, Northern Cape Province.
- Visual Impact Assessment for the proposed construction of the Eureka 140MW Wind Energy Facility and associated Infrastructure near Copperton, Northern Cape Province.
- Visual Impact Assessment for the proposed construction of the Eureka 400kV Substation and 400kV Power Line neat Copperton, Northern Cape Province.
- Basic Visual Impact Assessments for the proposed construction of the Tlisitseng 1 and Tlisitseng 2 Substations and Associated 132kV Power Lines near Lichtenburg, North West Province.
- Basic Visual Impact Assessment for the proposed construction of up to a 132kV Power Line and Associated Infrastructure for the Rooipunt Solar Thermal Power Plant near Upington, Northern Cape Province.
- Basic Visual Impact Assessment for the proposed construction of up to a 132kV Power Line and Associated Infrastructure for the proposed Kalkaar Solar Thermal Power Plant near Kimberly, Free State and Northern Cape Provinces.
- Surface Water Assessment for the Steve Thswete Local Municipality, Mpumalanga Province.
- Surface Water Delineation and Assessment for the proposed coal Railway Siding at the Welgedacht Marshalling Yard and associated Milner Road Upgrade near Springs, Ekurhuleni Metropolitan Municipality.

# Johann Lanz

## Curriculum Vitae

### Education

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

### Professional work experience

I am registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science, registration number 400268/12.

- **Soil Science Consultant** **Self employed** **2002 - present**  
I run a soil science consulting business, servicing clients in both the environmental and agricultural industries. Typical consulting projects involve:
  - Soil specialist study inputs to EIA's, SEA's and EMPR's. These have focused on impact assessments and rehabilitation on agricultural land, rehabilitation and re-vegetation of mining and industrially disturbed and contaminated soils, as well as more general aspects of soil resource management. Recent clients include: CSIR; SRK Consulting; Aurecon; Mainstream Renewable Power; SiVEST; Savannah Environmental; Subsolar; Red Cap Investments; MBB Consulting Engineers; Enviroworks; Sharples Environmental Services; Haw & Inglis; BioTherm Energy; Tiptrans.
  - Soil resource evaluations and mapping for agricultural land use planning and management. Recent clients include: Cederberg Wines; Unit for Technical Assistance - Western Cape Department of Agriculture; Wedderwill Estate; Goedgedacht Olives; Zewenwacht Wine Estate, Lourensford Fruit Company; Kaarsten Boerdery; Thelema Mountain Vineyards; Rudera Wines; Flagstone Wines; Solms Delta Wines; Dornier Wines.
  - I have conducted several research projects focused on conservation farming, soil health and carbon sequestration.
- **Soil Science Consultant** **Agricultural Consultants International (Tinie du Preez)** **1998 - end 2001**  
Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.
- **Contracting Soil Scientist** **De Beers Namaqualand Mines** **July 1997 - Jan 1998**  
Completed a contract to make recommendations on soil rehabilitation and re-vegetation of mined areas.

### Publications

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

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

**Name** Kerry Lianne Schwartz

**Profession** GIS Specialist

**Name of Firm** SiVEST SA (Pty) Ltd

**Present Appointment** Senior GIS Consultant:  
Environmental Division

**Years with Firm** 24 Years

**Date of Birth** 21 October 1960

**ID No.** 6010210231083

**Nationality** South African



### Professional Qualifications

BA (Geography), University of Leeds 1982

### Employment Record

1994 – Present SiVEST SA (Pty) Ltd - Environmental Division: GIS/Database Specialist.  
1988 - 1994 SiVEST (formerly Scott Wilson Kirkpatrick): Town Planning Technician.  
1984 – 1988 Development and Services Board, Pietermaritzburg: Town Planning Technician.

### Language Proficiency

LANGUAGE	SPEAK	READ	WRITE
English	Fluent	Fluent	Fluent

### Key Experience

Kerry is a GIS specialist with more than 20 years' experience in the application of GIS technology in various environmental, regional planning and infrastructural projects undertaken by SiVEST.

Kerry's GIS skills have been extensively utilised in projects throughout South Africa in other Southern African Countries. These projects have involved a range of GIS work, including:

- Design, compilation and management of a demographic, socio-economic, land use, environmental and infrastructural databases.
- Collection, collation and integration of data from a variety of sources for use on specific projects.
- Manipulation and interpretation of both spatial and alphanumeric data to provide meaningful inputs for a variety of projects.
- Production of thematic maps and graphics.
- Spatial analysis and 3D modelling, including visual and landscape assessments.

## Projects Experience

### **STRATEGIC PLANNING PROJECTS**

Provision of database, analysis and GIS mapping support for the following:

- Water Plan 2025: Socio-economic, Land Use and Demographic Update – Umgeni Water (KwaZulu-Natal).
- Eskom Strategic Plan – Eskom (KwaZulu-Natal).
- Umgeni Water Quality Management Plan – Department of Water Affairs and Umgeni Water (KwaZulu-Natal).
- KwaZulu-Natal Development Perspective – Department of Economic Affairs (KwaZulu-Natal).
- Indlovu Regional Integrated Plan – Department of Local Government and Housing (KwaZulu-Natal).
- Umgeni Water and Sanitation Needs Analysis – Umgeni Water (KwaZulu-Natal).
- Metro Waste Water Management Plan – Durban Waste Water management, City of Durban (KwaZulu-Natal).
- KwaZulu-Natal Electrification Prioritisation Model – Eskom (KwaZulu-Natal).
- Umzinyathi Regional Development Plan – Umzinyathi Regional Council (KwaZulu-Natal).
- GIS driven model to assess future population growth in quaternary catchments under different growth scenarios – Umgeni Water (KwaZulu-Natal).
- Ubombo Master Water Plan Study – Mhlathuze Water Board (KwaZulu-Natal).
- Development strategy for local economic development and social reconstruction of the Germiston-Daveyton Activity Corridor – Eastern Gauteng Services Council (Gauteng).
- Structure Plan for the Cities of Beira and Dondo in Mozambique – World Bank.
- Land identification study for low cost housing in the Indlovu Region – Indlovu Regional Council (KwaZulu-Natal).
- Local Development Plan for Manzini – Manzini Town Council (Swaziland).
- Indlovu Project Prioritisation Model – Indlovu Regional Council (KwaZulu-Natal).
- Structure Plans for the Cities of Ndola and Luanshya - Ministry of Local Government and Housing (Zambia).
- Database development for socio-economic and health indicators arising from Social Impact Assessments conducted for the Lesotho Highlands Development Association – Lesotho.
- Development Plan for the adjacent towns of Kasane and Kazungula - Ministry of Local Government, Land and Housing (Botswana).
- Development Plan for the rural village of Hukuntsi - Ministry of Local Government, Land and Housing (Botswana).
- Provision of data platform for the spatial analysis of water supply, demand and affordability in Bulawayo – City of Bulawayo and NORAIID (Zimbabwe).
- Integrated Development Plans for various District and Local Municipalities including:
  - Nquthu Local Municipality (KwaZulu-Natal)
  - Newcastle Local Municipality (KwaZulu-Natal)
  - Amajuba District Municipality (KwaZulu-Natal)
  - Jozini Local Municipality (KwaZulu-Natal)
  - Umhlabuyalingana Local Municipality (KwaZulu-Natal)
- uMhlathuze Rural Development Initiative – uMhlathuze Local Municipality (KwaZulu-Natal).
- Rural roads identification – uMhlathuze Local Municipality (KwaZulu-Natal).
- Mapungubwe Tourism Initiative – Development Bank (Limpopo Province).
- Northern Cape Tourism Master Plan – Department of Economic Affairs and Tourism (Northern Cape Province).

- Spatial Development Framework for Gert Sibande District Municipality (Mpumalanga) in conjunction with more detailed spatial development frameworks for the 7 Local Municipalities in the District, namely:
  - Albert Luthuli Local Municipality
  - Msukaligwa Local Municipality
  - Mkhondo Local Municipality
  - Pixley Ka Seme Local Municipality
  - Dipaleseng Local Municipality
  - Govan Mbeki Local Municipality
  - Lekwa Local Municipality
- Land Use Management Plans/Systems (LUMS) for various Local Municipalities including:
  - Nkandla Local Municipality (KwaZulu-Natal)
  - Hlabisa Local Municipality (KwaZulu-Natal)
  - uPhongolo Local Municipality (KwaZulu-Natal)
  - uMshwathi Local Municipality
- Spatial Development Framework for uMhlathuze Local Municipality (KwaZulu-Natal).
- Spatial Development Framework for Greater Clarens – Maloti-Drakensberg Transfrontier Park (Free State).
- Land use study for the Johannesburg Inner City Summit and Charter – City of Johannesburg (Gauteng).
- Port of Richards Bay Due Diligence Investigation – Transnet
- Jozini Sustainable Development Plan – Jozini Local Municipality (KwaZulu-Natal)
- Spatial Development Framework for Umhlabuyalingana Local Municipality (KwaZulu-Natal)

### **BUILT INFRASTRUCTURE**

- EIA and EMP for a 9km railway line and water pipeline for manganese mine – Kalagadi Manganese (Northern Cape Province).
- EIA and EMP for 5x 440kV Transmission Lines between Thyspunt (proposed nuclear power station site) and several substations in the Port Elizabeth area – Eskom (Eastern Cape Province).
- Initial Scoping for the proposed 750km multi petroleum products pipeline from Durban to Gauteng/Mpumalanga – Transnet Pipelines.
- Detailed EIA for multi petroleum products pipeline from Kendall Waltloo, and from Jameson Park to Langtaagte Tanks farms –Transnet Pipelines.
- Environmental Management Plan (operational management plan) including visual impact assessment, noise impact assessment and flight path determination for the commercialization of Skukuza Airport – SANParks (Mpumalanga Province).
- Environmental Management Plan for copper and cobalt mine (Democratic Republic of Congo).
- EIA and Agricultural Feasibility study for Miwani Sugar Mill (Kenya).
- EIAs for Concentrated Solar and Photovoltaic power plants and associated infrastructure (Northern Cape, Free State, Limpopo and North West Province).
- EIAs for Wind Farms and associated infrastructure (Northern Cape and Western Cape).
- Basic Assessments for 132kV Distribution Lines (Free State, KwaZulu-Natal, Mpumalanga and North West Province).
- Environmental Assessment for the proposed Moloto Development Corridor (Limpopo).
- Environmental Advisory Services for the Gauteng Rapid Rail Extensions Feasibility Project.
- Environmental Screening for the Strategic Logistics and Industrial Corridor Plan for Strategic Infrastructure Project 2, Durban-Free State-Gauteng Development Region.

**STATE OF THE ENVIRONMENT REPORTING**

- 2008 State of the Environment Report for City of Johannesburg.
- Biodiversity Assessment – City of Johannesburg.

**STRATEGIC ENVIRONMENTAL ASSESSMENTS AND ENVIRONMENTAL MANAGEMENT FRAMEWORKS**

- SEA for Greater Clarens – Maloti-Drakensberg Transfrontier Park (Free State).
- SEA for the Marula Region of the Kruger National Park, SANParks.
- SEA for Thanda Private Game Reserve (KwaZulu-Natal).
- SEA for KwaDukuza Local Municipality (KwaZulu-Natal).
- EMF for proposed Renishaw Estate (KwaZulu-Natal).
- EMF for Mogale City Local Municipality, Mogale City Local Municipality (Gauteng).
- SEA for Molemole Local Municipality, Capricorn District Municipality (Limpopo).
- SEA for Blouberg Local Municipality, Capricorn District Municipality (Limpopo).

**WETLAND STUDIES**

- Rehabilitation Planning for the Upper Klip River and Klipspruit Catchments, City of Johannesburg (Gauteng).
- Wetland assessments for various Concentrated Solar and Photovoltaic power plants and associated infrastructure (Limpopo, Northern Cape, North West Province and Western Cape).
- Wetland assessments for Wind Farms and associated infrastructure (Northern Cape and Western Cape).
- Wetland assessments for various 132kV Distribution Lines (Free State, KwaZulu-Natal, Mpumalanga and North West Province).

**VISUAL IMPACT ASSESSMENTS**

- Visual Impact Assessment for the proposed relocation of the Skukuza Conference Centre, SANParks.
- Visual Impact Assessment for the proposed re-commercialisation of the Skukuza Airport.
- Visual Impact Assessment for the redevelopment of the Newmarket Racecourse, Alberton, Gauteng
- Visual Impact Assessment for the Thyspunt Transmission Lines Integration Project
- Visual Impact Assessments for various Solar Power Plants in the Northern Cape
- Visual Impact Assessments for various Wind Farms in the Northern Cape
- Visual Impact Assessments for various 132kV Distribution Lines (Free State, KwaZulu-Natal, Mpumalanga and North West Province).
- Landscape Character Assessment for Mogale City Environmental Management Framework

**Name** Shaun Taylor

**Profession** Environmental Scientist

**Name of Firm** SiVEST SA (Pty) Ltd

**Present Appointment** Environmental Scientist:  
Environmental Division

**Date of Birth** 02 February 1984

**ID Number** 8402025020082

**Nationality** South African



### Education

MSc – Aquatic Health  
 BSc (Hons) – Geography & Environmental Studies  
 BA – Geography and Environmental Science

### Professional Qualifications

MSc – Aquatic Health, Johannesburg University  
 Research Project: The physico-chemical and biological characteristics of selected seasonal pans in the Kruger National Park, South Africa

BSc (Hons) – Geography & Environmental Studies, Witwatersrand University (First class)  
 Research Project: Sitatunga Habitat Suitability in the Okavango Delta, Botswana

BA – Geography & Environmental Science, Monash University South Africa (Distinction)

Certification in Wetland Delineation and Rehabilitation Training Course from the School of Continuing Education, University of Pretoria

### Language Proficiency

LANGUAGE	SPEAK	READ	WRITE
English	Excellent	Excellent	Excellent
Afrikaans	Fair	Fair	Fair

### Employment Record

Oct 2010 – Present SiVEST SA (Pty) Ltd Environmental Division – Environmental Scientist  
 Oct 2009 – Mar 2010 Envirokey cc – Junior Environmental Consultant and GIS support  
 Aug 2007 – Sep 2009 Holgate, Meyer and Associates Environmental Management Services  
 – Junior Environmental Consultant



## Key Experience

Shaun joined SiVEST in October 2010 and is based in the Johannesburg office in the capacity of an Environmental Scientist.

Shaun has a passion for working in the environmental and water (wetlands) field. From an environmental management perspective, Shaun has completed a number of environmental impact assessments, basic assessments, strategic environmental assessments, environmental management programmes/plans, various exemption and amendment applications, and conducted environmental auditing. Within the water field, Shaun has undertaken water use licensing (WUL) and WUL compliance monitoring for various developments. In terms of specialist work, Shaun has completed numerous surface water (including wetlands and riparian) assessments for renewable energy projects, linear projects as well as site specific projects.

Through his time at SiVEST, Shaun has acquired the following skills:

- Strong computer skills (Word, excel, powerpoint etc.);
- Strong proposal and report writing skills
- Surface water assessment techniques;
- Environmental Impact Assessments;
- Environmental Management Programmes/Plans;
- Environmental Compliance and Auditing;
- Environmental Amendment and Exemption Applications;
- Water Use License Applications.

## Projects Experience

Shaun is responsible for the following activities: conducting EIA, BA and WULA processes, undertaking amendment and exemption applications, general project management, report writing, proposal writing, invoicing, conducting specialist surface water delineation and functional assessments, environmental and water related compliance monitoring and auditing. Current and completed projects / activities are outlined in detail below:

### STRATEGIC ENVIRONMENTAL ASSESSMENTS

- Molemole Local Municipality Strategic Environmental Assessment, Limpopo Province (2014/2015).

### ENVIRONMENTAL IMPACT ASSESSMENTS

- Mookodi Integration Project Environmental Impact Assessment (2011/2012);
- Noupoot Wind Farm, Northern Cape Province (2011/2012);
- Loeriesfontein Wind Farm and PV Plant, Northern Cape Province (2011/2012);
- Renosterberg Wind Farm and PV Plant near De Aar, Northern Cape Province (2012).

### BASIC ASSESSMENTS

- Proposed Installation of a 500m<sup>3</sup> Bulk Storage Fuel Oil Tank at Grootvlei Power Station, Mpumalanga Province (2011/2012);
- Proposed development of a 19MW Photovoltaic Solar Power Plant near Kimberley, Northern Cape Province (2012);
- Proposed development of a 19MW Photovoltaic Solar Power Plant near Danielskuil, Northern Cape Province (2012);

## CURRICULUM VITAE

Shaun Taylor

- Frankfort Strengthening Project: 88kV Power Line from Heilbron (via Frankfort) to Villiers, Free State Province (2013);
- Wilger 132kV Overhead Distribution Power Line, Northern Cape Province (2013/2014);
- Limestone 1 – 132kV Overhead Distribution Power Line, Northern Cape Province (2013/2014);
- Limestone 2 – 132kV Overhead Distribution Power Line, Northern Cape Province (2013/2014);
- Proposed Tweespruit to Welroux Power Line and Substations, Free State Province (2014/2015);
- Sir Lowry's Pass River Flood Alleviation Project, Western Cape Province (2014/2015).

### ENVIRONMENTAL MANAGEMENT PLANS / PROGRAMMES

- Eskom Thyspunt Nuclear Integration Project Environmental Management Plan – Transmission Infrastructure (2011);
- Eskom Thyspunt Nuclear Integration Project Environmental Management Plan – Substations (2011);
- Mookodi Integration Project Environmental Management Plan – Transmission Infrastructure and Substations (2011/12);
- Noupoot Wind Farm Environmental Management Programme (2012);
- Environmental Management Programme for a 500m<sup>3</sup> Bulk Storage Fuel Oil Tank at Grootvlei Power Station (2012);
- Environmental Management Programme for a 19MW Photovoltaic Solar Power Plant near Kimberley, Northern Cape Province (2012);
- Environmental Management Programme for a 19MW Photovoltaic Solar Power Plant near Danielskuil, Northern Cape Province (2012);
- Karowe Diamond Mine Environmental Management Plan Review and Update, Boteti District, Botswana (2012);
- Environmental Management Programme for the Frankfort Strengthening Project: 88kV power line from Heilbron (via Frankfort) to Villiers, Free State Province (2013);
- Environmental Management Programme for the Wilger 132kV Overhead Distribution Power Line, Northern Cape Province (2013);
- Environmental Management Programme for the Limestone 1 – 132kV Overhead Distribution Power Line, Northern Cape Province (2013);
- Environmental Management Programme for the Limestone 2 – 132kV Overhead Distribution Power Line, Northern Cape Province (2013);
- Environmental Management Programme for the Tweespruit to Welroux Power Line and Substations, Free State Province (2014/2015).

### AMENDMENT APPLICATIONS

- Loeriesfontein 140MW Wind Farm, Northern Cape Province: Substantive and Minor Amendments (2013/2014);
- Khobab 140MW Wind Farm, Northern Cape Province: Substantive and Minor Amendments (2013/2014);
- Loeriesfontein 50MW Wind Farm, Northern Cape: Environmental Authorisation Minor Amendments (2013/2014);
- Loeriesfontein 100MW Solar Photovoltaic Plant, Northern Cape: Environmental Authorisation Minor Amendments (2013/2014);
- Noupoot 188MW Wind Farm, Northern Cape: Environmental Authorisation Minor Amendments (2013/2014).

### ENVIRONMENTAL CONSTRAINTS\FATAL FLAWS

- Social Housing Projects in Sasolburg and Secunda Final Environmental Constraints Analysis Report (2011);

## CURRICULUM VITAE

Shaun Taylor

- Establishment of Wind Farms in Northern and Eastern Cape Provinces Environmental Constraints Analysis Report (2011).

### ENVIRONMENTAL AND WATER USE LICENSE COMPLIANCE AUDITING

- Environmental Compliance Auditing for the Nigel Substation to Jameson Park (Inland Terminal 2) 88kV power lines – Construction Phase (2011);
- Water Use License Compliance Auditing for Grootvlei Power Station, Mpumalanga Province, South Africa (2012);
- Environmental Compliance Auditing for the Meadow Feeds Standerton Broiler Feed Mill, Mpumalanga Province (2012/2013);
- Transnet Rail WUL Audit, (2014);
- Kusile Power Station Armcors WUL Audit (2014);
- Kusile Power Station Ash Dump WUL Audit (2014);
- Kusile Power Station Pollution Dams WUL Audit (2014);
- Kusile Power Station Stream Diversion and Water Pipeline Crossings WUL Audit (2014/2015).

### WETLAND AND RIPARIAN DELINEATION AND FUNCTIONAL ASSESSMENTS (RECENT)

- Approximately 40 wetland and riparian delineations and functional assessments for renewable energy, linear and site specific developments from 2010-2013 (Full list available on request).
- Mamatwan Manganese Mine, Northern Cape Province: Surface Water Assessment (2014);
- Two 5MW Photovoltaic Plants, Free State Province: Surface Water Assessment (2014);
- Dwarsrug Wind Farm, Northern Cape Province: Surface Water Assessment (2014);
- Manzimtoti Sewer Line Project, Kwa-Zulu Natal Province: Surface Water Assessment (2014);
- Compensation Flats Development, Kwa-Zulu Natal Province: Surface Water Assessment (2014);
- Tinley Manor South Road Development, Kwa-Zulu Natal Province: Surface Water Assessment (2014);
- Ntuzuma Sewer Line Project, Kwa-Zulu Natal Province: Surface Water Assessment (2014);
- Esphiva Sewer Line Project, Kwa-Zulu Natal Province: Surface Water Assessment (2014);
- Frankfort Wetland Walk-down Assessment, Free State Province (2014);
- Grootvlei Power Station Wetland Assessment, Mpumalanga Province (2014/2015).

### WETLAND AND RIPARIAN REHABILITATION / POST-REHABILITATION / AUDITING ASSESSMENTS

- Post-rehabilitation Assessment of Three Wetland Crossing Sites for Chemwes (Pty) Ltd for the Re-working of a Tailings Dam Project near Stilfontein, North West Province, South Africa (2011);
- Wetland and River Rehabilitation Plan (2011);
- Post-rehabilitation Assessment of the Inland New Multi-Purpose Pipeline in the Mpumalanga and Gauteng Provinces of South Africa (2012);
- John Ross Highway Wetland Rehabilitation Plan (2014).

### WATER USE LICENSES

- Integrated Water Use License Application for the Construction of a CSP and CPV/ PV Plant in De Aar, Northern Cape Province of South Africa (2010);
- Water Use License for Ga-rankuwa Substation, Gauteng Province (2013);
- Water Use License for Klevebank to Dalkieth 88kV Power Line, Gauteng Province (2013);
- Water Use License Application for the Frankfort Strengthening Project: 88kV Power Line from Heilbron (via Frankfort) to Villiers, Free State Province (2014/2015);
- Water Use Licensing for the Integrated Polokwane Rapid Public Transport Network (2014/2015).

**ENVIROKEY CC - JUNIOR ENVIRONMENTAL CONSULTANT AND GIS SUPPORT - OCT 2009 – MAR 2010**

Responsible for managing basic assessments, report writing, conducting specialist wetland assessments, auditing procedures and GIS mapping. Full list of activities completed available on request.

**JUNIOR ENVIRONMENTAL CONSULTANT AUG 2007 – SEP 2009**

Responsible for managing basic assessments, report writing, conducting specialist wetland assessments, environmental auditing procedures and GIS mapping. Full list of activities completed available on request.

**Conferences and Publications**

Taylor, S. R., 2008: A Critical Review of Strategic Environmental Assessment in South Africa and looking towards Future Considerations, presented at the South African Students Geography Conference, University of Cape Town, Cape Town.

**Academic and Work Related Achievements**

- Awarded Monash Dean's recognition award for outstanding academic results for second semester of 2006;
- Awarded Monash Dean's recognition award for outstanding academic results for first semester of 2007;
- Awarded Monash Dean's recognition award for outstanding academic results for second semester of 2007;
- Awarded Golden Key membership and certificate to the International Honours Society for outstanding academic achievements in undergraduate studies for Monash 2008;
- Awarded Study Sponsorship from Holgate, Meyer and Associates for Honours study in 2008/09;
- Awarded Certificate of Merit from University of Witwatersrand for outstanding work for the course of Honours in 2009/10;
- Awarded Merit Bursary for MSc from the University of Johannesburg 2010 for excellent academic results;
- Numerous short-course certificates (Grass identification, wildflower identification, veld management, water use licensing).

## Short CV/Summary of Expertise – Simon Todd

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Fish Hoek

7975

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- Profession: Independent Ecological Consultant - Pr.Sci.Nat 400425/11
- Specialisation: Plant & Animal Ecology
- Years of Experience: 16 Years

### *Skills & Primary Competencies*

- Research & description of ecological patterns & processes in Nama Karoo, Succulent Karoo, Thicket, Arid Grassland, Fynbos and Savannah Ecosystems.
- Ecological impacts of land use on biodiversity
- Ecological management plans and advice
- Vegetation surveys & degradation assessment & mapping
- Long-term vegetation and fauna monitoring
- Faunal surveys & assessment.
- GIS & remote sensing

### *Tertiary Education:*

- 1992-1994 – BSc (Botany & Zoology), University of Cape Town
- 1995 – BSc Hons, Cum Laude (Zoology) University of Natal
- 1996-1997- MSc, Cum Laude (Conservation Biology) University of Cape Town

### *Employment History*

- 1997 – 1999 – Research Scientist (Contract) – South African National Biodiversity Institute
- 2000-2004 – Specialist Scientist (Contract ) - South African National Biodiversity Institute
- 2004-2007 – Senior Scientist (Contract) – Plant Conservation Unit, Department of Botany, University of Cape Town
- 2007 Present – Senior Scientist (Associate) – Plant Conservation Unit, Department of Botany, University of Cape Town.

- 2007 – Present – Independent Ecological Consultant as sole proprietor of Simon Todd Consulting. Providing specialist ecological assessments and ecological management advice to mines, renewable energy developments, private conservation areas etc.

#### *General Experience & Expertise*

- Conducted a large number of fauna and flora specialist assessments distributed widely across South Africa. Projects have ranged in extent from <50 ha to more than 50 000 ha.
- Provided ecological management and monitoring advice for private conservation areas, mines, renewable energy developments etc.
- Widely-recognized arid ecology specialist. Published numerous peer-reviewed scientific publications based on various ecological studies across the country. Past chairman of the Arid Zone Ecology Forum and current executive committee member.
- Extensive experience in the field and exceptional level of technical expertise, particularly with regards to GIS capabilities which is essential with regards to producing high-quality sensitivity maps for use in the design of final project layouts.
- Strong research background which has proved invaluable when working on several ecologically sensitive and potentially controversial sites containing some of the most threatened fauna in South Africa.
- Published numerous research reports as well as two book chapters and a large number of papers in leading scientific journals dealing primarily with human impacts on the vegetation and ecology of the arid and semi-arid parts of South Africa.
- Maintain several long-term vegetation monitoring projects distributed across Namaqualand and the karoo.
- Guest lecturer at two universities and have also served as an external examiner.
- Reviewed papers for more than 10 international ecological journals.
- Past chairman and current committee member of the Arid Zone Ecological Forum.
- SACNASP registered as a Professional Natural Scientist, (Ecology) No. 400425/11.

A selection of recent work is as follows:

#### **Specialist Assessments:**

##### **Wind Farm Developments:**

Proposed Spitskop Wind Energy Facility near Cookhouse: Fauna & Flora Specialist Study for Impact Assessment. Savannah Environmental 2013.

Environmental Impact Assessment for the Proposed Roggeveld Wind Energy Facility and Associated Grid Connection Infrastructure: Fauna & Flora Specialist Report for EIA. Savannah Environmental 2013.

Proposed Mainstream South Africa Springfontein Wind Energy Facility: Terrestrial Fauna & Flora Specialist Study for EIA. Savannah Environmental 2012.

Environmental Impact Assessment for the Establishment of the Wolseley Wind Farm, Western Cape Province. Fauna & Flora Specialist Report. Arcus Gibb 2012.

Proposed Eskom 300MW Kleinsee Wind Energy Facility. Fauna Specialist Report For Impact Assessment. Savannah Environmental 2012.

Proposed Inca Energy Swellendam Wind Energy Facility: Fauna Specialist Report For Impact Assessment. Savannah Environmental 2012.

Proposed Moorreesburg Wind Energy Facility: Fauna & Flora Specialist Scoping Report For Impact Assessment. Savannah Environmental 2012.

Terrestrial Ecology Specialist Study for the Proposed Establishment of a Renewable Energy Facility near Sutherland, Western and Northern Cape Provinces. Environmental Resources Management (ERM) 2011.

Roggeveld Wind Farm: Ecological and Biodiversity Assessment: Terrestrial Vertebrate Fauna & Botanical Specialist Study. Specialist Report for Environmental Resources Management (ERM). 2011.

Zen Wind Energy Facility. Fauna & Flora Specialist Impact Assessment Report. Savannah Environmental. 2012.

Proposed Project Blue Wind and Solar Energy Facility, Near Kliensee. Fauna Specialist Report For Impact Assessment. Savannah Environmental 2012.

Garob Wind Farm: Fauna & Flora Specialist Report for Impact Assessment. Savannah Environmental 2012.

Loeriesfontein Wind Energy Facility – Substation & Grid Connection. Fauna & Flora Specialist Report for Basic Assessment. Savannah Environmental 2012.

Noblesfontein Wind Energy Facility, Victoria West. Ecological Walk-Through Report. Savannah Environmental 2012.

Gouda Wind Energy Facility. Fauna And Flora Walk Through Report. Savannah Environmental 2012.

Noblesfontein Wind Energy Facility, Victoria West. Ecological Walk-Through Report. Savannah Environmental 2012.

Klawer Wind Farm: Ecological and Biodiversity Assessment: Terrestrial Vertebrate Fauna & Botanical Specialist Study. Specialist Report for Environmental Resources Management. 2011.

Lambert's Bay Wind Farm: Ecological and Biodiversity Assessment: Terrestrial Vertebrate Fauna & Botanical Specialist Study. Specialist Report for Environmental Resources Management. 2011.

Richtersveld Wind Farm: Ecological and Biodiversity Assessment: Terrestrial Vertebrate Fauna & Botanical Specialist Study. Specialist Report for Environmental Resources Management (ERM). 2011.

Witberg Wind Farm: Ecological and Biodiversity Assessment: Terrestrial Vertebrate Fauna & Botanical Specialist Study. Specialist Report for Environmental Resources Management (ERM). 2011.

#### **Solar Energy Developments:**

Environmental Impact Assessment for the Proposed Re Capital 3 Solar Energy Facility and Associated Grid Connection Infrastructure, Dyason's Klip, Northern Cape. Fauna & Flora Specialist Report for EIA. CapeEAPrac 2013.

Environmental Impact Assessment for the Proposed Richtersveld Solar Farm and Associated Grid Connection Infrastructure. Fauna & Flora Specialist Report for EIA. CapeEAPrac 2014.

Environmental Impact Assessment for the Proposed Bosjesmansberg Solar Energy Facility East of Copperton, Northern Cape Province. Fauna & Flora Specialist Report for EIA. Savannah Environmental 2013.

Specialist Vegetation Assessment for EIA. The Proposed Commercial Concentrated Solar Power Tower Facility and Concentrated Photovoltaic Facility at Van Roois Vley Near Upington. WSP 2012.

Proposed Les Marais \ Buitenfontein 5MW Solar Energy Facility in the Free State: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Savannah Environmental 2013.

Proposed Stella Helpmekaar Solar Energy Facility in the North West Province: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Savannah Environmental 2013.

Proposed Wolmaransstad Municipality 5MW Solar Energy Facility in the North West Province: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Savannah Environmental 2013.

Proposed Heuningspruit PV1 and PV2 Solar Energy Facilities Near Koppies, Free State Province: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Savannah Environmental 2013.

Proposed Hibernia PV Solar Energy Facility near Lichtenburg: Terrestrial Fauna & Flora Specialist Study For Basic Assessment. Savannah Environmental 2013.

Proposed Steynsrus PV1 And PV2 Solar Energy Facilities: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Savannah Environmental 2013.

Proposed Photovoltaic Solar Energy Facility on Konkoonsies, Northern Cape: Fauna & Flora Specialist Report for Impact Assessment. EScience Associates 2012.

Proposed Padrooi 13 Photovoltaic Solar Energy Facility, Northern Cape: Fauna & Flora Specialist Report for Impact Assessment. EScience Associates 2012.

Adams Photovoltaic Solar Energy Facility, Northern Cape: Fauna & Flora Specialist Report for Impact Assessment. EScience Associates 2012.

Proposed Photovoltaic Solar Energy Facility on Klein Swart Bast, Northern Cape: Fauna & Flora Specialist Report for Impact Assessment. EScience Associates 2012.

Proposed Khoi-Sun Solar Facility. Fauna & Flora Specialist Report for Impact Assessment. Cape EAPrac 2012.

Suurwater 62, Boesmanland 75mw Solar Farm, Aggeneys. Fauna & Flora Specialist Report for Impact Assessment. Cape EAPrac 2012.

Karoshhoek Solar Valley Development, Upington: Fauna & Flora Specialist Impact Assessment Report. Savannah Environmental. 2012.

O’Kiep 3 PV Solar Energy Facility on a Site In O’kiep Near Springbok, Northern Cape Province. Fauna & Flora Specialist Report for Basic Assessment. Savannah Environmental 2012.

Photovoltaic Solar Energy Facility on Voëlklip, South of Springbok. Fauna & Flora Specialist Report for Basic Assessment. Savannah Environmental 2012.

Namaqua Photovoltaic Solar Energy Facility on a Site North of Kamieskroon. Fauna & Flora Specialist Report for Basic Assessment. Savannah Environmental 2012.

Inca Graafwater Photovoltaic Solar Energy Facility, Graafwater, Western Cape Province. Faunal Ecology Specialist Report for Impact Assessment. Savannah Environmental 2012.



Aberdeen Solar Facility. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Venetia Solar Facility. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Southern Cross Solar Energy Facility: Southern Farm 425. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Tutwa Solar Energy Facility: Portion 4 of Narries 7. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Valleydora Photovoltaic Solar Power Plant, Free State. Fauna & Flora Specialist Report. CSIR, 2012.

Reddersburg Solar Facility - Fauna & Flora Specialist Assessment. CSIR, 2012.

Melkvllei Photovoltaic Solar Power Plant. Fauna & Flora Specialist Report for Basic Assessment. Specialist report for ERM. 2012.

Ruinte Photovoltaic Solar Power Plant. Fauna & Flora Specialist Report for Basic Assessment. Specialist report for ERM. 2012.

Genoegsaam Solar Park. Fauna & Flora Specialist Report for Basic Assessment. Specialist report for ERM. 2012.

Genoegsaam Solar Park. Fauna & Flora Specialist EIA Report. Specialist report for ERM. 2012.

Graspan Solar Facility. Fauna & Flora Specialist Report for Impact Assessment. Specialist report for ERM. 2012.

Olyven Kolk Solar Power Plant, Northern Cape: Botanical and Faunal Specialist Assessment. Specialist Report for Environmental Resources Management (ERM). 2011.

Skuitdriif Solar Facility. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Cape EAPrac. 2012.

Beaufort West Solar Facility, Erf 7388 - Fauna & Flora Specialist Assessment. Specialist Report for Cape EAPrac. 2012.

Khoi-Sun Solar Facility. Fauna & Flora Specialist Scoping Report. Specialist Report for Cape EAPrac. 2012.

Boesmanland Solar Farm. Fauna & Flora Specialist Scoping Study. Specialist Report for Cape EAPrac. 2012.

Bitterfontein Solar Plant - Fauna & Flora Specialist Assessment. Specialist Report for Cape EAPrac. 2012.

**Power Lines/Grid Connections:**

Karoshhoek Grid Integration Infrastructure. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Garob to Kronos Power Line - Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Loeriesfontein Wind Energy Facility – Substation & Grid Connection. Fauna & Flora Specialist Report for Basic Assessment. Specialist Report for Savannah Environmental. 2012.

Gouda Wind Energy Facility – Grid Connection. Walk-Through of Overhead Power Line - Gouda WEF to Eskom Windmill Substation. Specialist Report for Savannah Environmental. 2012.

Proposed Kappa-Omega 765 KV Transmission Line. Fauna, Flora & Ecology Walk-Through Report. Specialist Report for ACER Africa. 2013.

**Infrastructure/Mining Developments:**

Thembaletu Upgraded Informal Settlement Project (UISP): Bulk Services Terrestrial Fauna & Flora Specialist Study For Basic Assessment. Cape EAPrac 2013.

Section 24G Application: Unauthorised Vegetation Clearing On Farm Klein Melkbosch No. 94, Blaauberg: Faunal Ecology Specialist Assessment Report. Doug Jeffery Environmental Consultants 2014.

Specialist Vegetation Assessment of the Steenkampskraal Monazite Mine and Adjacent Properties. SMM 2014.

Environmental Impact Assessment for the Proposed Putsberg Open Cast Mine Near Pofadder, Northern Cape. Fauna & Flora Specialist Report for EIA. Ecopartners 2013.

Proposed Establishment of the Gamsberg Zinc Mine, Concentrator Plant and Associated Infrastructure near the Town of Aggeneys, Northern Cape. Fauna & Flora Specialist Report for ESIA. ERM 2013.

Pella Water Board – Infrastructure Upgrade. Fauna & Flora Specialist Report for Basic Assessment. Environmental Resources Management 2012.

Transnet Manganese Ore Line Upgrade. Fauna & Flora Specialist Report for Basic Assessment. Environmental Resources Management 2012.

Proposed Vryburg Wastewater Treatment Works: Terrestrial Fauna & Flora Specialist Study for Basic Assessment. Endemic Vision 2013.

Proposed Mamatwane Compilation Yard, Northern Cape: Fauna & Flora Specialist Report for Impact Assessment. Environmental Resources Management 2013.

Rare Earth Separation Plant Near Vredendal, Western Cape Province. Fauna & Flora Specialist Report for Basic Assessment. Savannah Environmental 2012.

Improvements to the Ou Kaapse Weg / Silvermine Road Intersection. Specialist Faunal Study For Basic Assessment. Khula Environmental Consultants, 2012.

Upgrading of Tourism Facilities at Goegap Nature Reserve. Specialist Ecological Assesment. Van Zyl Environmental Consultants. 2012.

Plant Sweeps on Portion 2 of the Farm Demaneng 546, Kuruman District, Northern Cape Province for SA Manganese. 2011.

**Strategy/Conceptual Documents:**

Renewable Energy Sector Spatial Planning Tool: To Form Part of the NDM Green Economy Strategy. Conservation South Africa, 2013.

Terrestrial Environment: Characteristics and Categorization. Contribution to the development of standards for EIA processes on behalf of the DEA. Anchor Environmental 2012.

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## CURRICULUM VITAE – CHRIS VAN ROOYEN

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**Name of organisation:** Chris van Rooyen Consulting  
**Profession:** Ornithological Consultant  
**Position in Firm:** Director/Co-owner  
**Date of Birth:** 30 April 1964  
**Relevant Experience:** 17 years

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### SPECIALIST FIELD

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Ornithological consultant offering specialist advice related to the impact of industrial developments on avifauna, especially in the electricity energy sector.

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### TERTIARY EDUCATION

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1988	B.A. (Law)	Rand Afrikaans University
1991	LLB	Rand Afrikaans University

I work under the supervision of and in association with Albert Froneman (SACNASP Zoological Science Registration number 400177/09) as stipulated by the Natural Scientific Professions Act 27 of 2003.

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### KEY EXPERIENCE IN ELECTRICITY INDUSTRY

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#### WIND ENERGY SITES

- St Helena Bay, Seeland, Electrawind
- Caledon, Caledon Wind
- Caledon, Langhoogte, SAGIT
- Langebaan, Langfontein, Oelsner Group
- Darling, Kerrifontein Oelsner Group
- Jeffreys Bay, Mainstream
- Ubuntu, Windcurrent
- Bana ba pifhu, Windcurrent
- Coega, Electrawind
- Swellendam, Excelsior, Biotherm
- Vredendal, Inca Energy
- Vredendal, Electrawind
- Morreesburg, Swartberg, Electrawind
- Oyster Bay, Renewable Energies South Africa
- Laingsburg, Spitskopvlakte, Biotherm
- Port Nolloth, Kannikwavlakte, Biotherm
- Vleesbaai, Vleesbaai Independent Power Producer
- Loeriesfontein, Mainstream
- Noupoort, Mainstream
- Indwe, Biotherm
- Pofadder, Mainstream
- Namies, JUWI
- De Aar, Mulilo North
- De Aar, Mulilo South

#### SOLAR ENERGY SITES:

- Bokpoort, Concentrated Solar Thermal Power (CSP)
- Solar Park, Upington
- Mainstream De Aar PV
- Droogfontein (Kimberley) PV

#### POWER LINES:

- Chobe 33kV Distribution line
- Athene - Umfolozi 400kV
- Beta-Delphi 400kV
- Cape Strengthening Scheme 765kV
- Flurian-Louis-Trichardt 132kV
- Ghanzi 132kV (Botswana)
- Ikaros 400kV
- Matimba-Witkop 400kV
- Naboomspruit 132kV
- Tabor-Flurian 132kV
- Windhoek - Walvisbaai 220 kV (Namibia)
- Witkop-Overysseel 132kV
- Breyten 88kV
- Adis-Phoebus 400kV
- Dhuva-Janus 400kV
- Perseus-Mercury 400kV
- Gravelotte 132kV
- Ikaros 400 kV
- Khanye 132kV (Botswana)
- Moropule – Thamaga 220 kV (Botswana)
- Parys 132kV
- Simplon –Everest 132kV
- Tutuka-Alpha 400kV
- Simplon-Der Brochen 132kV
- Big Tree 132kV
- Mercury-Ferrum-Garona 400kV
- Pebble Rock 132kV
- Reddersburg 132kV
- Thaba Combine 132kV
- Nkomati 132kV
- Louis Trichardt – Musina 132kV
- Endicot 44kV
- Apollo Lepini 400kV
- Tarlton-Spring Farms 132kV
- Kuschke 132kV substation
- Bendstore 66kV Substation and associated lines
- Kuiseb 400kV (Namibia)
- Gyani-Malamulele 132kV
- Watershed 132kV
- Bakone 132kV substation
- Eerstegoud 132kV LILO lines
- Kumba Iron Ore: SWEP - Relocation of Infrastructure
- Kudu Gas Power Station: Associated power lines
- Steenberg Booyseendal 132kV
- Toulon Pumps 33kV
- Thabatshipi 132kV
- Witkop-Silica 132kV
- Bakubung 132kV
- Nelsriver 132kV
- Rethabiseng 132kV
- Tiilburg 132kV
- and LILO lines
- Styltdrift 132kV
- Taunus – Diepkloof 132kV
- Bighorn NDP 132kV
- Waterkloof 88kV
- Camden – Theta 765kV
- Dhuva – Minerva 400kV Diversion
- Lesedi –Grootpan 132kV
- Waterberg NDP
- Bulgerivier – Dorset 132kV
- Bulgerivier – Toulon 132kV
- Nokeng-Fluorspar 132kV
- Mantsole 132kV
- Tshilamba 132kV
- Thabamooop - Tshebela – Nhlovuko 132kV
- Arthurseat 132kV
- Borutho 132kV MTS
- Grootboom 132kV
- DWAF Steelpoort 132kV
- Chloe – Gilead 66kV
- Pietersburg – Chloe 66kV
- Tshatane – Lesideng 132kV
- Lesego – Jane Furse 132kV
- DWAF 1 – DWAF 2 132kV
- Pitso 132kV Substation
- Lebowa – Dithabaneng – Boynton LILO 132kV

- Zeus-Perseus 765kV
- Matimba B Integration Project
- Caprivi 350kV DC (Namibia)
- Gerus-Mururani Gate 350kV DC (Namibia)
- Mmamabula 220kV (Botswana)
- Steenberg-Der Brochen 132kV
- Venetia-Paradise T 132kV
- Burgersfort 132kV
- Majuba-Umfolozi 765kV
- Delta 765kV Substation
- Braamhoek 22kV
- Steelpoort Merensky 400kV
- Mmamabula Delta 400kV
- Delta Epsilon 765kV
- Gerus-Zambezi 350kV DC Interconnector: Review of proposed avian mitigation measures for the Okavango and Kwando River crossings
- Giyani 22kV Distribution line
- Lihobong-Kao 132/11kV distribution power line, Lesotho
- 132kV Leslie – Wildebeest distribution line
- A proposed new 50 kV Spoornet feeder line between Sishen and Saldanha
- Cairns 132kv substation extension and associated power lines
- Pimlico 132kv substation extension and associated power lines
- Gyani 22kV
- Matafin 132kV
- Nkomazi\_Fig Tree 132kV
- GaKgapanne 66kV
- Knobel Gilead 132kV
- Bochum Knobel 132kV
- Madibeng 132kV
- Witbank Railway Line and associated infrastructure
- Spencer NDP phase 2 (5 lines)
- Akanani 132kV
- Hermes-Dominion Reefs 132kV
- Cape Pensinsula Strengthening Project 400kV
- Magalakwena 132kV
- Benfiosa 132kV
- Dithabaneng 132kV
- Taunus Diepkloof 132kV
- Taunus Doornkop 132kV
- Tweedracht 132kV
- Jane Furse 132kV
- Majeje Sub 132kV
- Tabor Louis Trichardt 132kV
- Riversong 88kV
- Mamatsekele 132kV
- Kabokweni 132kV
- MDPP 400kV Botswana
- Marble Hall NDP 132kV
- Bokmakiere 132kV Substation
- Thulamela 132kV
- Marang 132kV
- Thulamela 132kV
- Merensky 132kV
- Amandla – Makometsane - Moutse 132kV
- Lebathlane 132kV
- Sun City Substation and associated powerlines
- Solar Park 400kV Integration Project
- Mamatsekele 132kV
- KwaMhlanga 132kV
- Malelane – Buffelspruit 132kV
- Gutshwa 132kV
- Taung-Gold 88kV
- Bredasdorp 66kV
- Vaalkop Dam 88kV
- Freedom Park 88kV
- Winterveld 132kV
- Ohrigstad – Phiring – Lemara 132kV
- Blouwater – Uiekraal 66kV
- Houhoek 400kV substation and LILO lines
- Zandfontein – Carmona 88kV
- Bracken – Roscco 88kV
- Victor 132kV
- Gamma – Kappa 765kV
- Kappa – Omega – Aurora 765kV

#### POWER STATIONS:

- Open Cycle Gas Turbine Plants & The Associated Transmission Lines & Substation At Atlantis, Western Cape
- Kangra Power Station: Siting Report

#### OTHER PROJECTS:

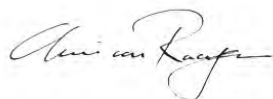
- Lizard Point Golf Estate
- Lever Creek Estates
- Leloko Lifestyle Estates
- Vaalowers Residential Development
- Clearwater Estates Grass Owl Impact Study
- Somerset Ext. Grass Owl Study
- Proposed Three Diamonds Trading Mining Project (Portion 9 and 15 of the Farm Blesbokfontein)
- N17 Section: Springs To Leandra –“Borrow Pit 12 And Access Road On (Section 9, 6 And 28 Of The Farm Winterhoek 314 Ir)
- South African Police Services Gauteng Radio Communication System: Portion 136 Of The Farm 528 Jq, Lindley.
- Report for the proposed upgrade and extension of the Zeekoegat Wastewater Treatment Works, Gauteng.
- Bird Impact Assessment for Portion 265 (a portion of Portion 163) of the farm Rietfontein 189-JR, Gauteng.
- Bird Impact Assessment Study for Portions 54 and 55 of the Farm Zwartkop 525 JQ, Gauteng.
- Bird Impact Assessment Study Portions 8 and 36 of the Farm Nooitgedacht 534 JQ, Gauteng.
- Shumba’s Rest Bird Impact Assessment Study
- Randfontein Golf Estate Bird Impact Assessment Study
- Ziikaatsnek Wildlife Estate
- Regenstein Communications Tower (Namibia)
- Input into Richards Bay Comparative Risk Assessment Study
- Maquasa West Open Cast Coal Mine
- Glen Erasmia Residential Development, Kempton Park, Gauteng
- Bird Impact Assessment Study, Weltevreden Mine, Mpumalanga
- Bird Impact Assessment Study, Olifantsvlei Cemetery, Johannesburg
- Camden Ash Disposal Facility, Mpumalanga
- Proposed Desalination Project at Mile 6 near Swakopmund, Namibia

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#### CERTIFICATION

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

Date: 17 July 2014



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# Nicolene Venter



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<b>Name of firm</b>	<b>Zitholele Consulting</b>
<b>Profession</b>	<b>Senior Public Participation Practitioner</b>
<b>Specialisation</b>	<b>Public Participation</b>
<b>No. of years with firm</b>	<b>2 months</b>
<b>Nationality</b>	<b>South African, ID No. 600421 0065 088</b>

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**Key Experience**

Nicolene has over the past 15 years established herself as an experienced and well recognized public participation practitioner, facilitator and strategic reviewer. She has project managed several high profile public participation projects and excels in not only stakeholder engagements but with humility for street level consultation. Nicolene first formed her own consultancy business in 1997 and joined SiVEST in October 2007, and returned to her own consultancy business in October 2011. She lead public participation and stakeholder engagement projects with insightful strategic thinking to ensure the delivery of highly professional and a target orientated public participation process to her clients as the project dictates. She also has sound knowledge of the Equator Principles especially in terms of the Public Participation Process required for projects that are funded internationally. Nicolene's skills base also includes the facilitation of workshops, public and focus group meetings. As the Public Participation Practitioner, her proven leadership skills ensures the managing, development and motivation of the public participation team to achieve project objectives and to maintain high quality standards.

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## Professional Registrations

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<b>Education</b>	International Association for Public Practitioners (IAP2) (Modules 1 and 2)	IAPP	2009
	Diploma in Public Relations	Public Relations Institute of South Africa	1989
	Higher Secretarial Diploma	Pretoria Technikon	1979

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## Employment Record

2013 - Present	Zitholele Consulting	Public Participation
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## Project Experience

### Mining Projects

<b>Proposed AK6 Diamond Mine</b>	<b>Boteti, Botswana</b>
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Drafting of the Community Consultation Plan for inclusion in the Closure Plan for the updated Environmental Management Plan

## **Power Plants**

### **Zimbabwe Ethenol Plant**

**Zimbabwe**

Consultation process undertaken for the proposed construction of an ethanol plant in Chisumbanje, Middle Sabie, Zimbabwe in terms of the Zimbabwe's Environmental Management Agency (EMA). Not only did consultation take place with Government Officials, but an intensive consultation process has taken place with the local community.

### **EIA: Hendrina Ash Dam Expansion**

**Mpumalanga Province, South Africa**

Expansion of Eskom's Hendrina Power Station's Ash Dam Facilities at Pullenshope, Mpumalanga Province

### **EIA: Wind farms and/or Solar Energy Facilities**

**Northern Cape Province, South Africa**

Proposed construction of wind farms and/or solar energy facilities as proposed by Mainstream Renewable Power South Africa, Northern Cape Province.

### **Basic Environmental Assessment: Grootvlei Power Station**

**Mpumalanga Province, South Africa**

Proposed installation of an additional 500M3 bulk storage fuel tank at Eskom's Grootvlei power Station, Mpumalanga Province

### **EIA: Solar Energy Facility**

**Kimberly, South Africa**

(Droogfontein, Kimberley; Kaalplats, Loeriesfontein; Paarde Valley, De Aar). The proposed construction of Concentrating Solar Plants (CSP) and Concentrating/Photovoltaic (CPV/PV) Plants as proposed by Mainstream Renewable Power South Africa in the Northern Cape Province.

## **Linear Infrastructure**

### **EIA: Aggeneis-Oranjemond**

**Northern Cape Province, South Africa**

Proposed construction of a new 400kV Eskom Transmission Power Line between Aggeneys and Oranjemond, and the expansion of the Aggeneis and Oranjemond Transmission Substations, Northern Cape Province

### **Impact Phase of EIA: Invubu-Theta**

**KwaZulu Natal, South Africa**

Proposed construction of a double circuit 400kV Eskom Transmission Power Line between Richards Bay and Empangeni, KwaZulu-Natal Province

### **Basic Environmental Assessment: Westrand**

**Gauteng Province, South Africa**

Proposed construction of a 400kV Eskom Transmission Power Line between Eskom's existing Westrand and Hera Substations, Gauteng Province.

### **EIA: Mookodi Integration Project**

**North-West Province, South Africa**

Proposed improvement of Eskom's electricity supply network around the Vryburg and Stella, and to supply the proposed Kalplats Mine with electricity, North-West Province.

### **EIA: Transnet Coallink**

**KwaZulu Natal & Mpumalanga, South Africa**

Transnet's coallink upgrade project from Ermelo to Richard's Bay - Class Application for a number of Basic Assessments and Environmental Impact Assessments (5 Applications), Mpumalanga and KwaZulu-Natal Provinces

### **EIA: Thyspunt Transmission lines Integration Project**

**Eastern Cape Province, South Africa**

Proposed construction of 5 x 400kV Eskom Transmission power lines between Thyspunt (near Oyster Bay) to Port Elizabeth – 180km in length (Eskom's existing Grassridge & Dedisa Transmission Substations), Port Elizabeth, Eastern Cape Province

### **EIA: Delarey-Kopela-Phahameng**

**South Africa**

Proposed construction of an Eskom Distribution power line from Delareyville past Kopela to Madibogo.

### **Basic Environmental Assessment: Malelane Substation**

**Mpumalanga Province, South Africa**

Proposed Construction of a New Malelane Substation and the Proposed Construction of a New Komatipoort-Marathon 275kV Eskom Transmission Power Line Turn-In of approximately 1.5km, Malelane, Mpumalanga Province

### **Other**

#### **Miwani Sugar Mill**

#### **Kenya**

Consultation process undertaken, under the National Environment Management Authority (NEMA) of Kenya, with the assistance of local specialists (Kenya Marine and Fisheries Research Institute) for the proposed construction of a sugar mill in Miwani, Nyanza Province in terms of Kenya's.

#### **EIA: Middelburg Water Treatment Plant**

#### **Mpumalanga Province, South Africa**

Water reclamation scheme for BHP Billiton Energy Coal South Africa (BECSA) in the Witbank / Middelburg area, Mpumalanga Province

Strategic Management and Review of Stakeholder Engagement Process were also conducted for a number of EIAs / BAs and the completion of Stakeholder Engagement Process between 1997 to September 2007 is available on request

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#### ***Facilitation responsibility only:***

- Environmental Management Plan for Prospecting Right Application Process (Client: Oresund Environmental Solutions): August 2010 and September 2010
- Ariadne-Eros 400kV/132kV Multi-Circuit Transmission Power Line: July 2009 and March 2010 (Client: Acer Africa)
- Middelburg SmancorCR Chemical Plant (Client: Environmental Science Associates) – Public Meeting: October 2007
- Majuba-Venus 765kV Transmission Power Lines (Client: Acer Africa) – Public Meetings: July 2008 and March 2010

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#### **Papers, publications and presentations**

None

# Keagan Allan

## Senior Scientist



<b>Profession</b>	Senior Scientist & GIS Specialist
<b>Education</b>	BSc Geographical Science – 2003 BSc (Hons) Geographical Science and Environmental Management – 2004 MSc Geographical Science (Cum Laude) – 2007
<b>Registrations/ Affiliations</b>	Registered Professional Natural Scientist (Pr.Sci.Nat), South African Council for Natural Scientific Professions (SACNASP), 400185/13 IAIA South Africa
<b>Awards</b>	Won Best Poster at the 2010 IAIAAsa Conference – Poster Applications of GIS in EMF.

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**Specialisation** Geographical Information Systems and Remote Sensing

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**Expertise** Keagan Allan has been involved in the field of Geographical Information Systems (GIS) for the past 8 years. His expertise includes:

- Geographical Information Systems (GIS), more specifically data collection and manipulation; modelling of various spatial data for Visual Impact Assessments and Ground Water management and database management.
- Visual Impact Assessment Specialist – using GIS and modelling to conduct Visual Impact Assessments (VIAs) for large scale mining and industrial developments.
- GIS Development – using Visual Basic scripting to develop tools for use within the ESRI ArcMap environment.
- GIS in Environmental Management Frameworks – using Visual Basic in conjunction with GIS techniques to generate information for use in the GIS reporting in an EMF study.
- Remote Sensing (RS) more specifically the use of remotely sensed images in the classification of various land use types.

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## Employment

<b>Jul 2008 – Present</b>	SRK Consulting, Environmental Scientist, Westville
<b>Feb 2008 – Jun 2008</b>	Haley Sharpe, Assistant Tourism Planner, Southern Africa
<b>Feb 2007 – Aug 2007</b>	UKZN, Cartographic Technician, Pietermaritzburg

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**Languages** English – read, write, speak  
Afrikaans – read, write, speak

## Publications

1. ALLAN, K., EMANUAL, P., and MORRIS, J. (2010) Poster Presentation: Applications of GIS in EMF, IAIAAsa Conference, Pretoria, August, 2010.
2. ALLAN, K. (2015) Paper Presentation: Environmental Management in the 21st Century: Combining Environmental Processes and GIS Technologies, IAIAAsa Conference, KwaZulu-Natal, August 2015.



# Curriculum Vitae: **Michiel Jonker**

<b>Name:</b>	Michiel Jonker	<b>Marital status:</b>	Single
<b>Date of birth:</b>	25/05/1984	<b>Driver's license:</b>	Code 8
<b>ID No.:</b>	840525 5110 085	<b>Contact No:</b>	084 585 7479
<b>Place of birth:</b>	Johannesburg, South Africa	<b>Email:</b>	michiel@ecotone-sa.co.za
<b>Postal address:</b>	PO Box 84 Florida, Johannesburg, South Africa, 1710		
<b>Experience:</b>	10 Years		

## Education

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### University of Johannesburg

#### 2011 **M. Sc (Environmental Management)**

This is a lectured Masters degree focussing on the concepts and principles of environmental management. The MSc. includes three modules: (1) Environmental management, biosphere and the environment. (2) Environmental management skills and (3) A mini dissertation in related field works.

#### 2009 **M.Sc (Aquatic Health) *cum laude***

This Masters study has an ecotoxicological basis. It deals with the effects of androgenic and estrogenic growth-promoting hormones, used in cattle feeding lots, on aquatic freshwater ecosystems. It aims to incorporate biomarkers in fish (metabolomics and cellular energy allocation) as well as studies of general water quality, sediment composition and invertebrate community structures

#### 2006 **B.Sc Honours (Zoology) *cum laude***

**Related course work:** Laboratory and field skills, Philosophy and research methodology, population genetics, project management, mammal diversity, eco-physiology, parasite ecology, ichthyology, research project, biological systems integrity, terrestrial ecology, nature conservation.

#### 2005 **B.Sc (Natural and Environmental Sciences)**

Majors: Geography and Zoology

Minors: Environmental management, botany, chemistry, environmental chemistry, biogeochemistry, statistics, information science

**Related course work:** Cartography, biogeography, soil science, climatology and geomorphology, economic and urban geography, GIS, Geography of Africa and South Africa, invertebrate and vertebrate diversity, parasitology, ecotoxicology, terrestrial ecology and limnology, animal physiology, economic and ethno-botany, plant diversity, plant-water relations, organic and physical chemistry.

## Employment and Work Experience

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Feb '08 – Pres      **Ecotone Freshwater Consultants CC**  
**Member and Freshwater Ecologist**

Recent projects:

- **Joule Africa**, Augmentation of the Ecological Flow Assessment associated with the Selli/Rokel hydroelectrical scheme, Yiben Sierra Leone (May-September 2017).
- **Enel**, Wetland assessment and Water Use Licensing for a proposed 40MW photo voltaic power plant. Southdeep, Westonia (May 2017 – Present).
- **JG Africa / Eskom**, wetland and sediment monitoring associated with ongoing construction at Kusile Power Station. Ogies Mpumalanga (January 2017 to Present).
- **Maseve Platinum Mine**, aquatic biomonitoring of mining operations on the Elands River and tributaries. Ledig North West (February – July 2017).
- **ERM / IFC**, Alternative hydropower assessment for the Kouilou Niari Catchment in Congo Brazzaville (baseline data collection for instream aquatic communities on a national scale) February 2017).
- **ESKOM / EIMS – Arnot Power Station**, Wetland Specialist report - Integrated Environmental Impact Assessment Process (Waste Management License Application, Environmental Authorisation Application And Associated Environmental Management Programme) and Water Use License Application For The New Ash Disposal Facility at Arnot Power Station In Mpumalanga (August 2016-Present).
- **Imperata / AHTech** Aquatic assessment of the Moreletaspruit associated with the Menlyn diesel spill (October 2016).
- **ERM** Environmental Flow assessment, Yiben Dam Project, Sierra Leone (July 2016).
- **SMD / EIMS** aquatic ecology and impact assessment - Scoping and EIA/EMP Report for the proposed expansion of the Kao Diamond Mine, Lesotho (May 2016).
- **Vaalbult Colliery** aquatic specialist assessment, proposed road crossing, Carolina, Mpumalanga (February 2016 – Present).
- **Ekolinfo** aquatic biomonitoring plan and implementation for the Elands River associated with the Maseve mining operations near Sun City, in the North West Province, (January 2016- present).
- **Exxaro**, Zonderwater Coal Proposal, Wetland Specialist Assessment (November 2013 – April 2016).
- **Dyambyini / ESKOM – Hendrina Power Station**, wetland and aquatic ecology assessment, management and biomonitoring plan for Water Use Licence Authorisation for the Proposed expansion of the Hendrina Ash Disposal Facility and related Power Line infrastructure (March 2016).
- **Delta Mining** wetland assessment and watercourse management plan for mining operations associated with the Proposed Rietkuil operations. Rietkuil, Delmas, Mpumalanga (February 2016).
- **SLR Consulting-** Biodiversity assessment, management and biomonitoring plan for the proposed expansion of the Holfontein Toxic Waste Disposal Facility, Gauteng (January 2016).
- **Enviroolutions (Eskom)** Pre-, during- and post construction biomonitoring for pylon constructions crossing smaller tributaries of the Vaal River, Vereeniging, Gauteng (January 2015- present).
- **WPC** Ngonye Falls- 52 MW Hydroelectric Power Plant. Baseline biodiversity study and Environmental Flow Assessment, Zambia (October 2015 to present).
- **Ara-sul** Aquatic baseline assessment of the Sabie River, up- and downstream of Corumana Dam, Kruger National Park and Mozambique (November 2015 to January 2016).

- **EcoGain** Wetland and Impact assessment associated with the proposed Opencast Mining Operation, Delmas (October 2015 to present).
- **Enviroolutions** Water quality Assessment, Broadacres Retirement Village, Broadacres Gauteng Province (November 2015).
- **ERM, Ncondezi Coal Mine**, Freshwater Ecology baseline study and Desktop Environmental Flow Assessment, Tete, Mozambique (November 2014 – May 2015).
- Hydrological Alteration-Aquatic Ecology Assessment-**New Largo** (July 2010 - Present).
- **Goliath Gold** Aquatic and impact assessment associated with the proposed de-water of a mine shaft, Heidelberg, Gauteng (January – May 2015).
- **Zambezi River Authority**, Kariba Dam wall upgrade, Freshwater Ecology baseline, impact assessment and Environmental Flow Assessment, Zambia/Zimbabwe (October 2014 - March 2015)
- **Dyambyini / ESKOM - Majuba Power Station**, Wetland Specialist Assessment (December - January 2015).
- **Doogvallei Rail Siding Company (Pty) Ltd**, Aquatic Biomonitoring Assessment of associated drainage lines, Carolina Mpumalanga (September 2012 – January 2015).
- **Pembani Coal**: Aquatic Biomonitoring Assessment, Carolina (March 2012 –January 2015).
- **Kumba Iron Ore**, Wetland and River study for WULa, Thabazimbi, Limpopo (December 2014).
- **FFMES, Cominco Phosphate Mine**, Hinda Project Freshwater Baseline Study and critical habitat assessment, Republic of Congo (March to August 2014).
- **Lidwala**, Majuba Wetland Rehabilitation Proposal, Wetland Specialist Assessment (March-July 2014).
- **Imperata**, NKP Terminal 2, Wetland Monitoring Assessment (June – July 2014).
- **Jeffars and Green**, Thabong Interchange, Wetland Rehabilitation Plan (June 2014).
- **Envirobility**, Sand Quarry, Diepsloot, Wetland Specialist Assessment (March 2014 – May 2014).
- **Lidwala / ESKOM - Majuba Power Station**, Wetland Assessment Augmentation, Wetland Specialist Assessment (April 2014).
- **WSP, Kathu CSP Project**, Northern Cape, Wetland Specialist Assessment (January 2014 – April 2014).
- **ERM, Mulungushi Hydropower Project**, Aquatic Specialist (February, 2013).
- **ERM, Muchinga Hydropower Stations**, Aquatic Specialist, Zambia (April, 2013).
- **FFMES, Exxaro DMC Iron Congo Project**, Aquatic specialist study, Mayoko, Republic of Congo (September 2012).
- **ERM, Sasol Twistdraai Export Plant**, Wetland Specialist Assessment (November 2013 – May 2014).
- **GladAfrica, Centurion Lake Sediment Trap**, Aquatic Specialist Study, Gauteng, South Africa (November, 2012).
- **MSA, Meyerton Waste Water Treatment Works Upgrade**, Aquatic Specialist Study, Gauteng, South Africa (November 2012).
- **ESKOM, Majuba Ash Disposal Facility**, Wetland Specialist Study for the Scoping/EIA, Mpumalanga, South Africa (September, 2012).
- **ESKOM, Tutuka Ash Disposal Facility**, Wetland Specialist Study for the EIA, Mpumalanga, South Africa (September, 2012).
- **FFMES, Sintoukola Project**, Aquatic specialist study, Republic of Congo (May 2012; July 2012).
- **Coffey Environments, Tete Iron Project**, Aquatic specialist study of the Revuboe River, Chiúta and Moatize districts, Tete, Mozambique (March 2012).
- **Shanduka Coal**, wetland and impact assessment for a proposed 400kV line relocation, Middleburg, Mpumalanga (April, 2012).

- **Worldwide Coal Carolina**, aquatic biomonitoring assessment, Carolina, Mpumalanga (March, 2012).
- **Homeland Mining and Energy SA**, proposed Eloff Opencast Mine, specialist wetland assessment ( $\pm$  1400 ha) just outside the town of Delmas, Mpumalanga (February, 2012).
- **Exxaro MagVanTi Project** -Aquatic Ecology Baseline Study, Limpopo (January, 2012).
- **Shanduka Coal**, wetland and impact assessment of a pan located in the Graspan Colliery, Middleburg, Mpumalanga (January, 2012).
- **African Barrick Gold North Mata Mine** - Aquatic Consultant: Ecotoxicological risk assessment for discharge of treated waste water into the Mara River, North Mara, Tanzania (August, 2011).
- **Moamba Dam Project, Moamba, Mozambique**, Aquatic Consultant- Impacto: Aquatic ecology assessment for proposed (July, 2011).
- Fresh water Ecology **scoping study-Hendrina-Mpumalanga**( May 2011)
- Aquatic Biomonitoring Assessment-Blesbokspruit- **Hydro Testing** (May 2011)
- Aquatic Consultant- Lidwala environmental and engineering consultants: Sanral N14 river/stream crossing aquatic assessment (May 2011).
- Aquatic Consultant- Randwater: Proposed water and treated water residue pipeline near **Lethabo power station** in Vereeniging (May 2011).
- Aquatic Consultant- Anglo Coal: Assessment on non-perennial drainage lines associated with proposed coal mining development near All days in Limpopo (May, 2011).
- Hydro Testing Biomonitoring(KP290+100) **KwaZulu-Natal- Aquatic Ecology Assessment** (February 2011)
- Aquatic Consultant- Riversdale: Aquatic specialists on the **Benga Coal Project**, Tete, Mozambique (January, 2011).
- Aquatic Consultant- Transnet: Aquatic biomonitoring - **Ladysmith pump station oil spill**, Ladysmith, Natal (January, 2011).
- Aquatic Consultant – Imperata – Aquatic assessment for a proposed **Rand Water pipeline** crossing over the Pienaars River near Pretoria (May, 2010).
- Aquatic Consultant – Ekoinfo – Aquatic assessment for a **NuCoal mine** (Vuna colliery) near Middelburg Mpumalanga (March 2010- Current)
- Aquatic Consultant – EcoAgent – A MSA project – Detailed Aquatic assessment for the proposed **Veremo Magnetite mine** in the Eastern Bushveld near Stofberg Mpumalanga (May 2010)
- Aquatic Consultant – New Multi Purpose Pipeline (NMPP) a combined Transnet, **Group Five and Spiecapag project** –Aquatic assessment and monitoring of associated river crossings in the Upper Vaal, Thukela and Mvoti Water Management Areas (October 2009- Current).
- Aquatic Consultant – **Intergraded Landscape Architects** – Raslouw Riparian delineation and aquatic assessment, Johannesburg (November 2009).
- Aquatic Consultant – Ekoinfo – **Klipriviersberg** Full Aquatic assessment (January. 2009)
- Aquatic Consultant – Ekoinfo – **Lonmin** Aquatic biodiversity assessment (January 2009).
- Aquatic Consultant – NSS– Optimum **Coal Fish** diversity assessment (March 2009)
- Aquatic Consultant –NSS – **Rio Tinto Chapudi** proposed coal mine diversity assessment (March 2009).
- Aquatic Consultant – **Lonmin platinum-** aquatic biodiversity assessment and action plan (January, 2009).
- Aquatic Consultant – **SASOL** – aquatic ecosystem impact assessment for proposed pipeline development (January 2009).
- Aquatic Consultant – Arcus Gibb - Aquatic biodiversity assessment for proposed coal **Eskom Mulilo coal mining development** (December 2008).
- Aquatic Consultant – **ESKOM** - Biomonitoring for proposed **Majuba railroad construction** for Eskom (October 2008- current).

Feb 07 – Jan 08

**EnviRoss Environmental Scientific Consultants Cc  
Consultant**

- Junior Scientist – Enviross cc - Aquatic macro-invertebrate biodiversity study for proposed feedlot **Mpumalanga** 2007. (November 2007)
- Junior Scientist – Enviross cc - **Tshwane** sewerage works bio-monitoring. (September 2007).
- Junior Scientist – Econ@uj - Ecological state of five estuaries in the **Wild coast** for proposed heavy mineral mining (October 2007).
- Aquatic Consultant – Ekoinfo - Aquatic ecological assessment for proposed golf course development in **North West province for Sun City** (August 2007).
- Junior Scientist – Enviross cc - Firgrove industrial development in **Somerset West** 2007 (July 2007) 2007.
- Junior Scientist – Enviross cc - Aquatic health determination and eco-classification for **ANGLO coal** (Mpumalanga) in 2007 (2007).
- Junior Scientist – Econ@uj - Aquatic health determination and eco-classification for **TOTAL coal** in 2006 (May 2006).
- Junior Scientist – Econ@uj - Aquatic health and fish diversity assessment at **Klipplaat nature reserve**, 2006 (September 2006).
- Technical Assistant - **University of Johannesburg Zoology department** - Aquatic health and biodiversity of the **Crocodile West Marico and Magaliesburg system**, 2007 (February 2007).
- Technical Assistant – Enviross cc - **Owl surveys** (March 2007).
- Project Manager - University of Johannesburg Zoology department - Aquatic health and biodiversity of **lake Chrissie in Mpumalanga**, 2007 (April 2007)
- Technical Assistant - University of Johannesburg Zoology department - PhD study regarding effects of pesticides on the freshwater aquatic health in the **Levubu River in Venda (Limpopo Province)** (February 2008)
- Researcher - University of Johannesburg Zoology department - Presented poster at Zoological society South Africa (ZSSA) in July 2007: Abiotic factors influencing invertebrate community structures in pan and dams in the **Mpumalanga highveld area** (June 2007)

## Workshops and Courses

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- 2011**      **Tools for Wetland Assessment Short Course**  
Department of Environmental Science Rhodes University;  
Grahamstown Port Elizabeth
- 2009**      **Environmental Management Systems –WTH Management and Training**  
ISO 14001, OHSAS 18001 and development of Environmental Management Systems, University of  
Johannesburg, Auckland Park, Johannesburg
- 2008**      **Wetland and Riparian Delineation Course**  
Accredited wetland delineator  
Wetland Consulting Services and Department of Water Affairs and Forestry (DWAF)  
Pretoria, South Africa.
- 2008**      **Skippers Course**  
License Holder of a Category “R” skippers license
- 2007**      **SASS5 Accredited Practitioner**  
Auditors: Christa Thirion (DWAF, RQS), Colleen Todd (DWAF, RQS) and Hermien Roux  
(North West Nature Conservation).
- 2007**      **Multivariate Statistics Training**  
Collaboration between Wageningen University (Holland) and University of Johannesburg, UJ  
Eiland, Vaal Dam
- 2006**      **Advanced 4x4 driving course**

## Societies and Accreditations

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- 2009**      **The South African Council for Natural Scientific Professions (SACNASP)**  
Professional Natural Scientist  
*Pr. Sci. Nat.* (Aquatic Health, Zoological & Ecological Sciences)  
Registration number: 400275/12
- 2009**      **Member of the International Association of Impact Assessment-SA (IAIA SA).**
- 2006**      **Member of the Zoological Society of Southern Africa (ZSSA)**
- 2006**      **Member of the Southern African Society of Aquatic Scientists (SASAqS)**

## Presentations

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- Jun 2010**      **South African Society of Aquatic Scientists (SASAqS) Congress**  
MN Jonker, G. Walsh & JHJ van Vuren  
*Creating Management Thresholds for Fish Communities Exposed to the Effects of Coal Mining in  
the Mpumalanga Highveld.*
- Oct 2009**      **Department of Geography and Energy studies, University of Johannesburg**  
MN Jonker, M Sherwood and R Rowles. 2009.

*Historical overview of water quality associated with the Blesbokspruit RAMSAR site. Syndicate project completed in partial fulfillment of M.Sc (Environmental Management).*

Jul 2007

**Zoological Society of Southern Africa Conference, Potchefstroom.**

MN Jonker

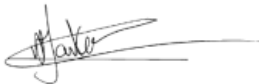
*Differences in invertebrate community structures associated with pans and dams in the Mpumalanga Highveld, South Africa.*

## Publications

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1. Van der Zee, J., Walsh, G., Sonnenberg, R., Alexandre, M. & Jonker, M.N. (*in press*). A description of three new co-occurring *Aphyosemion* species (Cyprinodontiformes: Nothobranchiidae) from Lower Guinea, with notes on habitat partitioning and allopatric speciation. *Zootaxa*.
2. Walsh, G., Jonker, M. & Mamonekene, V. (2014). A collection of fishes from tributaries of the lower Kouilou, Noubi and smaller coastal basin systems, Republic of the Congo, Lower Guinea, west-central Africa.  
*Checklist Journal* **10 (4)**: 900 - 912.
3. Jonker, M.N., Van Vuren, J.H.J & Wepener, V. (2009). The impact of feedlot effluent on water quality and aquatic macroinvertebrate community structure in streams of the upper Vaal River catchment, South Africa. *African Journal of Aquatic Science* **34 (3)**.
4. De Jager, C., Swemmer, A., Aneck-Hahn, N.H., van Zijl, C., van Wyk, S., Bornman, M.S., Barnhoorn, I.E.J., Jonker M., van Vuren, J.H.J. & Burger, A.E.C. (2010). Endocrine Disrupting Chemical (EDC) Activity and Health Affects of Identified Veterinary Growth Stimulants in Surface and Ground Water. WRC report no. K5-1686. Pretoria, South Africa.

I, Michiel Jonker, do hereby declare that all the information furnished above is true to the best of my knowledge.



**Michiel Jonker**

MSc (Aquatic Health) UJ

MSc (Environmental Management) UJ

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# Zimkita Nkata

Date of Birth: 06 September 1993  
Profession: Development Economist  
Specialisation: Sustainable Development Specialist  
Nationality: South African  
Years of Experience: 1 year  
HDI Status: Black Female



## Education:

Rhodes University - 2015	BSc Hons (Environmental Science)
Rhodes University - 2014	BSc (Environmental Science, Economics)

## Professional Membership:

SAPOA Urban-Econ Development Economists (Pty) Ltd

Language Proficiency:	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Fair	Basic
isiXhosa	Excellent	Excellent	Excellent
isiZulu	Excellent	Excellent	Excellent

## Work Experience:

September 2016- Current	Urban-Econ Development Economists
April 2016 - August 2016	Council for Scientific & Industrial Research (CSIR)

## Key Qualification:

**Zimkita Nkata** completed her BSc degree, at Rhodes University in 2014 specialising in Environmental Science and Economics. She then went on to completing her BScHons in Environmental Science at the same institution. Courses completed during the Hons degree include Environmental Economics, Climate Change Adaptation, Environmental Impact Assessment (EIA) as well as Community-based Natural Resource Management (CBNRM). During her Hons year, the topic of her mini dissertation was *Coping with past and present extreme weather events: A case study of response strategies amongst residents of urban informal settlements in East London*. After completion of her Hons degree, she began working as a Waste Research, development & Innovation Intern at the Council for Scientific & Industrial Research (CSIR-Pta). At this job most of her work entailed a project management and overseeing role over waste management related grant projects. She has been part of various projects during her experience at CSIR such as:

- Africa Waste Management Outlook
- A decision support tool for implementing Municipal Waste Separation at source (S@S)
- An analysis of the South African recycling industry and its' importance

Currently, Zimkita is now working as a Junior Development Economist at Urban-Econ where she is improving her experience in the Economics environment.

Experience Record:	
Project:	940 MW Leeuweberg Wind Farm Scoping, Basic Assessment (BA) & Socio-Economic Impact Assessment (SEIA)
Year:	2016
Location:	Loeriesfontein, Northern Cape, South Africa
Client:	SIVEST, Environmental Division
Position held:	Junior Researcher
Project:	225 MW Kloofsig Solar PV Socio-Economic Impact Assessment (SEIA)



<b>Year:</b>	2016
<b>Location:</b>	Petrusville, Northern Cape, South Africa
<b>Client:</b>	SRK Consulting
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>600 MW H2 Energy Scoping and Socio-Economic Impact Assessment Study</b>
<b>Year:</b>	2016/17
<b>Location:</b>	KwaMhlanga, Mpumalanga, South Africa
<b>Client:</b>	Savannah Environmental
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>Feasibility Study on Biogas Feedstock Availability and Characterization</b>
<b>Year:</b>	2017
<b>Location:</b>	Pretoria, Gauteng, South Africa
<b>Client:</b>	Council for Scientific & Industrial Research
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>Mali Organic Fertilizer: Pre-Feasibility Study</b>
<b>Year:</b>	2016/17
<b>Location:</b>	Mali, West Africa
<b>Client:</b>	Growth Synergy
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>Evaluation and Benchmarking of NRCS Funding Structure used for Regulating the market for energy efficiency of electro-technical products</b>
<b>Year:</b>	2017
<b>Location:</b>	Pretoria, Gauteng, South Africa
<b>Client:</b>	South African Bureau of Standards (SABS)
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>Eastern Cape Renewable Energy Independent Power Producer Procurement Programme SMME Study</b>
<b>Year:</b>	2017
<b>Location:</b>	Blue Crane and Kouga Local Municipality, Eastern Cape, South Africa
<b>Client:</b>	Eastern Cape Department of Economic Development, Tourism and Environmental Affairs
<b>Position held:</b>	Junior Researcher
<b>Project:</b>	<b>Green skills opportunities in mining and minerals sector (MMS)</b>
<b>Year:</b>	2017
<b>Location:</b>	Johannesburg, Gauteng
<b>Client:</b>	Mining Qualification Authority (MQA)
<b>Position held:</b>	Researcher

#### Countries of Work Experience:

- South Africa

#### References:

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