



## Dr. Mathys Vosloo

### Professional Registrations:

- (SACNASP) South African Council for Natural Scientific Professions
- (IAIAsa) International Association for Impact Assessment – South Africa

### Occupation:

- Senior Environmental Scientist

### Specialisation:

- Environmental and Social Impact Assessments
- Strategic Environmental Assessments
- Estuarine Ecological Assessments
- Project Management and GIS

### Education:

- Ph.D., Zoology, 2012  
Nelson Mandela Metropolitan University
- M.Sc., Zoology, 2003  
University of Port Elizabeth
- B.Sc. Hons, Zoology, 2001  
University of Port Elizabeth
- B.Sc., Zoology and Botany, 2000  
University of PE

### KEY EXPERIENCE

Dr. Mathys Vosloo is a well-qualified and technically proficient environmental and natural scientist with more than 12 years environmental management experience. His experience include Environmental Impact Assessments (EIAs) and the development of Environmental Management Programmes during environmental assessments of construction projects, environmental compliance monitoring and reporting, and Environmental Control Officer (ECO) services for construction projects. Recent experience includes project management and execution of large waste related projects, such as the application for development of Ash Disposal Facilities, and large linear projects such as the management EIA process for the implementation of extensive power lines for renewable projects. Mathys also has substantial experience in Geographical Information Systems (GIS), creating and analysing digital terrain models, runoff and stream flow analysis, stormwater design and map-making for projects in Africa. Further experience include the development and completion of State Of the Environment Reporting (SOER), Strategic Environmental Assessments (SEA) and feasibility studies. Mathys' experience in natural science include aquatic ecological assessments, project management and sample collection in several west, south and east coast estuaries, including ecosystem analysis of estuaries in the Eastern Cape and former Transkei area.

### PROJECT EXPERIENCE

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|--------------------|---|----------------------|
| <b>2017</b>        | <b>PPP and WOP for Kusile PS 60year ADF</b>   | <b>R 2.8m</b>        |
|                    | Public participation process for Wetland Offset Strategy and implementation of Wetland Offset Plan for the Kusile Power Station 60year Ash Disposal Facility.             |                      |
| <b>2017</b>        | <b>BA for KEMJV slimes pipeline</b>   | <b>R 230 000</b>     |
|                    | Basic Assessment for construction of slimes pipeline for Kimberley Ekapa Mine Joint Venture, Northern Cape.   |                      |
| <b>2016 - 2017</b> | <b>Asbestos Mine Rehabilitation Programme</b>   | <b>R 1.3 million</b> |
|                    | Undertaking environmental site investigations and project scoping for the rehabilitation of 10 derelict and abandoned asbestos mines in Limpopo and Mpumalanga Provinces. |                      |

## PROJECT EXPERIENCE (continued)

<b>2016</b>	<b>Walkdown &amp; WULA for Kuruman Powerline upgrade</b>	<b>R 355 000</b>
	Specialist walkdown of approved 132 kV powerline servitude between Kuruman and Kathu, Northern Cape.	
<b>2016 - 2017</b>	<b>EA Amendment for Kuruman Powerline Upgrade</b>	<b>R 60 000</b>
	EA Amendment application i.t.o. EIA 2014 regulations for amendment to the approved 132 kV powerline corridor between Hotazel, Kuruman and Kathu, Northern Cape.	
<b>2016</b>	<b>Breede-Gourits CMS: Estuarine component</b>	<b>R 81 000</b>
	Estuary Situation Assessment to inform the Breede-Gourits Catchment Management Strategy for Breede-Gourits Water Management Area.	
<b>2016 - 2017</b>	<b>BA for Tshepisoong Extension 4 development</b>	<b>R 198 000</b>
	Basic Assessment for Mixed Business and Residential Development within Portion 64 of Farm Vlaktefontein 238 IQ, Tshepisoong Extension 4, Johannesburg West, Gauteng Province.	
<b>2016 - 2017</b>	<b>BA for Patensie Housing Development</b>	<b>R 283 000</b>
	Basic Assessment for the Patensie Housing Development, Eastern Cape.	
<b>2016</b>	<b>Specialist Walkdown for Kuruman Powerline upgrade</b>	<b>R 355 000</b>
	Specialist walkdown of approved 132 kV powerline servitude between Hotazel and Kuruman, Northern Cape.	
<b>2016</b>	<b>Solar Park EA Amendment</b>	<b>R 248 000</b>
	Environmental Authorisation (EA) Amendment application i.t.o. EIA 2014 regulations for amendments to the Solar Park to Nieuwehoop 400 kV power line corridor near Uppington, Northern Cape.	
<b>2015 - 2016</b>	<b>Solar Park WULA</b>	<b>R 547 000</b>
	WULA for Solar Park to Nieuwehoop 400 kV powerline development near Uppington, Northern Cape.	
<b>2015 - 2016</b>	<b>BA Clanwilliam Weirs</b>	<b>R 409 000</b>
	Proposed Re-alignment of the Bulshoek Dam and Doring River Weirs near Clanwilliam, Western Cape.	
<b>2015 - 2016</b>	<b>BA Klipspruit Valley</b>	<b>R 244 000</b>
	BA and WULA for the Klipspruit Valley Road Upgrade.	
<b>2014 - 2016</b>	<b>EIA Koffiefontein Slimes Dam</b>	<b>R1 million</b>
	EIA for the new Koffiefontein Slimes Dam Development, Kimberley.	
<b>2014 - 2015</b>	<b>BA and WULA Kuruman Upgrade</b>	<b>R1.3 million</b>
	BA and WULA for 132kV power line upgrade from Hotazel to Kuruman and Kathu, Northern Cape.	
<b>2013 - 2016</b>	<b>EIA Kendal 30 year Ash Disposal Facility</b>	<b>R6 million</b>
	EIA, WMLA and WULA for a new Ash Disposal Facility for Kendal Power Station near Ogies in Mpumalanga.	
<b>2013 - 2014</b>	<b>Design of 3 canals</b>	<b>R 700 000</b>
	3 x BAs for the proposed prevention of water ingress into previously mined out areas in the Witwatersrand Mining Basin (canalisation of 3 streams), Gauteng.	
<b>2013 - 2014</b>	<b>BA for Vaalbank Switching Station</b>	<b>R 380 000</b>
	Basic Assessment for Vaalbank Switching Station and 2 x 88 kV Powerlines, Free State.	

## PROJECT EXPERIENCE (continued)

<b>2012 - 2015</b>	<b>EIA Solar Park</b>	<b>R5 million</b>
EIA, EMP & WULA for the Solar Park 132/400 kV Sub Station and Associated lines, Northern Cape.		
<b>2012 - 2015</b>	<b>Kusile 60 year Ash Disposal Facility</b>	<b>R11 million</b>
EIA, WML and WULA for the 60 year Ash Disposal Project near Balmoral in Mpumalanga.		
<b>2012 - 2015</b>	<b>WULA Wilge Pipeline</b>	<b>R 900 000</b>
WULA for the sewage and water pipeline from Wilge Township to Phola, Mpumalanga.		
<b>2012</b>	<b>BA Kouga Dam Wall</b>	<b>R 250 000</b>
The rehabilitation of the Kouga Dam wall and associated mining activities.		
<b>2012</b>	<b>EMP City of Cape Town Stormwater</b>	<b>R1.5 million</b>
Maintenance and management interventions undertaken by the City of Cape Town in its surface stormwater systems.		
<b>2012</b>	<b>BA Melkhout Powerlines</b>	<b>R 100 000</b>
The installation of 132kV transmission lines from Melkhout to Dieprivier, including the construction of a new substation at Dieprivier, Cacadu District.		
<b>2012</b>	<b>BA Diepriver Powerlines</b>	<b>R 100 000</b>
The installation of 132kV transmission lines from Dieprivier to Kareedouw, including the extension of the existing substation at Kareedouw, Cacadu District.		
<b>2012</b>	<b>BA Patensie Powerlines</b>	<b>R 100 000</b>
The installation of 132kV transmission lines from Melkhout to Patensie, including the construction of a new substation at Patensie, Cacadu District.		
<b>2012</b>	<b>Mmnthatha River System</b>	
Catchment delineation and stream calculation for the Mnthatha River System, GIBB Durban.		
<b>2011 - 2012</b>	<b>PRASA Passenger rail and shunting yard proposed sites</b>	
Environmental Screening for the PRASA passenger rail and shunting yard proposed sites in Cape Town, Gauteng and Durban.		
<b>2010 - 2012</b>	<b>ATTP Flow Limiters installation</b>	
NMBM Assistance to the poor (ATTP) and schools leakages repairs and flow limiters installation.		
<b>2010 - 2012</b>	<b>ATTP Database Management Flow Limiters installation</b>	<b>R4 million</b>
NMBM Assistance to the poor (ATTP) and schools leakages repairs and flow limiters installation database management.		
<b>2010 - 2011</b>	<b>Nelson Mandela Bay Provincial Department of Housing</b>	
Nelson Mandela Bay and Cradock low cost housing rectification audits. Management of incoming and outgoing GIS data and GIS mapping, Provincial Department of Housing.		
<b>2010 - 2011</b>	<b>ECO Bulk Stormwater Infrastructure Motherwell</b>	
Installation of bulk storm water infrastructure in Motherwell NU29 and 30 and Implementation of an artificial wetland at the Motherwell stormwater canal outlet structure.		

## PROJECT EXPERIENCE (continued)

<b>2010</b>	<b>BA McAdam Street Upgrade</b>	<b>R 60 000</b>
	The extension of McAdam Street from Worraker to Mangold Street, NMBM.	
<b>2009 - 2011</b>	<b>EIA Motherwell Housing Development</b>	<b>R 270 000</b>
	Motherwell NU 31 housing development, NMBM.	
<b>2009 - 2011</b>	<b>Coega Integrated Stormwater Management Plan</b>	
	Coega IDZ Eastern Sector Integrated Stormwater Management Plan, Coega Development Corporation.	
<b>2009 - 2011</b>	<b>EIA KougaWind Farm</b>	<b>R 350 000</b>
	Kouga 300 MW wind farm, Kouga Local Municipality.	
<b>2009 - 2010</b>	<b>ECO Swartkops River Artificial Wetland</b>	
	Swartkops River, NMBM.	
<b>2009 - 2010</b>	<b>ECO Humewood Road Upgrade</b>	
	Realignment of the S-bend section of Humewood Road in Humewood.	
<b>2009 - 2010</b>	<b>ECO Paapenkuils Sewer Augmentation</b>	
	Paapenkuils Main Sewer Augmentation in Port Elizabeth NMBM.	
<b>2009 - 2010</b>	<b>SOER State of the Environment Report</b>	<b>R 350 000</b>
	NMBM State of the Environment Report.	
<b>2009 - 2010</b>	<b>ISWMP Coega IDZ</b>	<b>R 350 000</b>
	Coega IDZ Eastern Sector Integrated Stormwater Management Plan, CDC.	
<b>2009 - 2010</b>	<b>SOER Flood Plain and Spatial Analysis</b>	
	Nelson Mandela Metropolitan Municipality SOER flood plain and spatial analysis, NMBM.	
<b>2009 - 2010</b>	<b>EIA – Red Cap Developments</b>	
	Kouga Local Municipality wind farm development EIA, RedCap Developments.	
<b>2008 - 2009</b>	<b>Port Harcourt City Open Space System Plan</b>	
	Port Harcourt City Open Space System Plan, Government of Nigeria.	
<b>2008 - 2009</b>	<b>ECO Kwazakhele stormwater infrastructure</b>	
	Construction of stormwater detention ponds and upgrading of stormwater infrastructure in Kwazakhele, Phase 3.	
<b>2008</b>	<b>ECO Sherwood Road Upgrade</b>	
	Upgrading of Devon and Fairley Roads in Port Elizabeth, NMBM.	
<b>2008</b>	<b>OR Tambo District Municipality water conservation and demand management</b>	
	OR Tambo District Municipality water conservation and demand management.	
<b>2008</b>	<b>SOER Eden District Municipality</b>	
	Eden District Municipality SOER, Eden District Municipality.	
<b>2008</b>	<b>Kouga Local Municipality catchment and flood attenuation analysis</b>	
	Jeffreys Bay Marina Martinique catchment and flood attenuation analysis, Kouga Local Municipality.	
<b>2008</b>	<b>EIA Bethelsdorp Housing Development</b>	<b>R 230 000</b>
	Bethelsdorp Phase 3 social housing development, NMBM.	

**PROJECT EXPERIENCE (continued)**

<b>2008</b>	<b>BA Beacon Maritime Navigational Structure Upgrade</b>	<b>R 60 000</b>
	Beacon maritime navigational structure upgrading, NMBM.	
<b>2008</b>	<b>BA Moffet Dam Rehabilitation</b>	<b>R 60 000</b>
	Moffet Dam breach remedial works, Kouga Local Municipality.	
<b>2008</b>	<b>BA Pollok Beach light mast installation</b>	<b>R 50 000</b>
	Pollok Beach light mast installation, NMBM.	
<b>2008</b>	<b>BA Humewood Road Re-alignment</b>	<b>R 60 000</b>
	Humewood Road re-alignment along the S-bend section, NMBM.	
<b>2008</b>	<b>SOER Hessequa Local Municipality</b>	<b>R 200 000</b>
	Hessequa Local Municipality State of the Environment Summary Report.	
<b>2008</b>	<b>SEA Coastline redevelopment</b>	<b>R 250 000</b>
	North End Coastline redevelopment SEA, NMBM.	
<b>2008</b>	<b>Mzimkhulu River catchment and flood attenuation analysis</b>	
	Mzimkhulu River catchment and flood attenuation analysis, Umzimkhulu Municipality.	
<b>2008</b>	<b>PE Paapenkuils River catchment and flood attenuation analysis</b>	
	Port Elizabeth Paapenkuils River catchment and flood attenuation analysis, NMBM.	
<b>2007 - 2008</b>	<b>ECO Mavuso Road Upgrade</b>	
	Construction of Mavuso Road in Kwazakhele, NMBM.	
<b>2007</b>	<b>BA Jagersfontein Chicken Farm</b>	<b>R 40 000</b>
	Jagersfontein farm 432 commercial production of chicken and operation of an abattoir, Kouga Local Municipality.	
<b>2007</b>	<b>BA Zwide Roads Upgrade</b>	<b>R 55 000</b>
	Tarring of roads in Zwide, NMBM.	
<b>2007</b>	<b>BA McAdam Street Construction</b>	<b>R 40 000</b>
	Construction and extension of McAdam Street, NMBM.	
<b>2007</b>	<b>BA Tygerbay Reconstruction</b>	<b>R 60 000</b>
	Repair and reconstruction of water retaining structures at Tyger Bay EIA NMBM.	
<b>2007</b>	<b>BA Lorraine Infill development</b>	<b>R 40 000</b>
	Erf 306 Lorraine Infill development, NMBM.	
<b>2007</b>	<b>BA Sherwood Roads Upgrade</b>	<b>R 40 000</b>
	Tarring of roads in Sherwood, NMBM.	
<b>2007</b>	<b>BA Zwide Roads Upgrade</b>	<b>R 40 000</b>
	Tarring of Ntsele, Mkutuka, Nanto and Vabaza Streets in Zwide, NMBM.	
<b>2007</b>	<b>BA Pollok Beach Parking Lot</b>	<b>R 50 000</b>
	Pollok Beach, Summerstrand, parking lot relocation, NMBM.	
<b>2007</b>	<b>BA Uitenhage Roads Upgrade</b>	<b>R 40 000</b>
	Tarring of Dube, Grootboom and Luzipho Streets in Uitenhage, NMBM.	

**PROJECT EXPERIENCE (continued)**

<b>2007</b>	<b>BA PE ICC Site Assessment</b>	<b>R 150 000</b>
	Port Elizabeth International Convention Centre Rapid site assessment, NMBM.	
<b>2007</b>	<b>EIA Exemptions Applications Motherwell</b>	
	Motherwell/Coega outfall canal upgrade.	
<b>2007</b>	<b>EIA Exemptions Applications Lorraine Infill Development</b>	
	Erf 17, Lorraine, infill development.	
<b>2007</b>	<b>EIA Exemptions Applications Korsten Upgrade</b>	
	Korsten Modal Interchange Upgrade.	
<b>2007</b>	<b>GIS SANRAL outdoor advertising opportunities</b>	
	SANRAL outdoor advertising opportunities in the Eastern Cape, SANRAL.	
<b>2007</b>	<b>Coega Integrated Stormwater Plan</b>	
	Coega Integrated Stormwater Plan, Coega Development Corporation.	
<b>2007</b>	<b>Uitenhage Stormwater Master Plan</b>	
	Uitenhage Stormwater Master Plan, NMBM.	
<b>2006</b>	<b>Nelson Mandela Metropolitan University exchange programme</b>	
	Analyses and identification of nematode collected samples from the Mngazi Estuary in the Eastern Cape (former Transkei), South Africa, University of Ghent, Belgium – Nelson Mandela Metropolitan University exchange programme.	
<b>2005 - 2006</b>	<b>Berg River Reserve Determination Study</b>	<b>R 150 000</b>
	Hyperbenthos and zooplankton field assessment in Berg River estuary.	
<b>2005</b>	<b>Olifants River Reserve Determination Study, Western Cape</b>	<b>R 300 000</b>
	Specialised field ecologist - Field assessment: subtidal macrozoobenthos, hyperbenthos and zooplankton in Olifants River estuary for the Olifants River Reserve Determination study, Western Cape., Contracted sampling for CSIR Stellenbosch (Environmentek).	
<b>2004- 2005</b>	<b>DWAF - Kromme and Seekoei Estuary Reserve Determination Study</b>	<b>R 200 000</b>
	Specialised field ecologist - Kromme and Seekoei Estuary Catchment Reserve Study. Contracted sampling for Department of Water Affairs and Forestry (DWAF).	
<b>2003 - 2004</b>	<b>Berg River Baseline Monitoring Program (UCT)</b>	<b>R 350 000</b>
	Berg River Baseline Monitoring Program (UCT). Collecting subtidal macrozoobenthos.	
<b>2002 - 2006</b>	<b>University of Port Elizabeth Ecological analysis</b>	<b>R4 million</b>
	Specialised field ecologist - Field assessment: subtidal macrozoobenthic and hyperbenthic invertebrates, zooplankton, microzooplankton, meiofauna at Mngazi and Mngazana River estuaries.	
<b>2002 - 2003</b>	<b>University of Port Elizabeth Ecological analysis</b>	
	Ecological analysis of the functioning Sundays, Swartkops, Kromme, and Gamtoos estuaries using Ecopath with Ecosim, and assessment of the impact of recreational fishing on these ecosystems. MSc dissertation, University of Port Elizabeth.	

## PROJECT EXPERIENCE (continued)

- 2002 Sylt Ecosystem, Germany R 250 000**  
Assistant ecosystem modeller - Assisting in preparation and balancing of ecosystem carbon flow models of the Sylt Ecosystem, Germany.
- 2002 Field assessment: subtidal macrozoobenthos, hyperbenthos and zooplankton in Rooiels R 400 000**  
Specialised field ecologist - Field assessment: subtidal macrozoobenthos, hyperbenthos and zooplankton in Rooiels, Palmiet, Heuningnes, Breede, Klein Brak and Kaaimans River estuaries, Western Cape.
- 2002 Field Assessment - intertidal invertebrates Eastern Cape R 150 000**  
Specialised field ecologist - Field assessment: intertidal invertebrates in Kabeljous, Gamtoos, Swartkops, Sundays and Kariga River estuaries, Eastern Cape.

## PAPERS, PUBLICATIONS, PRESENTATIONS AND PROFESSIONAL SOCIETIES

### PAPERS, PUBLICATIONS

1. Vosloo, M C and Hendricks, M G J. 2017. Marine and estuarine nematodes in South Africa, Book Chapter. In *Nematology in South Africa: A view from the 21<sup>st</sup> Century*. Fourie, Spaul, Jones, Daneel, De Waele (Eds).
2. Vosloo, M.C. 2012. Network analysis of trophic linkages in two sub-tropical estuaries along the south-east coast of South Africa. PhD thesis, Nelson Mandela Metropolitan University.
3. Vosloo, M.C. 2009. Marine and estuarine meiofauna: Contribution to the National Marine Ecosystem Diagnostic Analysis. Agulhas and Somali Current Large Marine Ecosystems.
4. Vosloo, M.C. 2004. A comparative assessment of the impact of recreational and subsistence fishing on selected Eastern Cape estuarine ecosystems using the Ecopath modelling approach. MSc Dissertation, University of Port Elizabeth, Port Elizabeth.

### PROFESSIONAL SOCIETIES

1. Member of International Association for Impact Assessment – South Africa (IAIASa)
2. Registered member of South African Council for Natural Scientific Professions, (SACNASP)

### EMPLOYMENT RECORD

2013 - Present	Zitholele Consulting	Manager: Licencing and Permitting, Senior Environmental Consultant
2012	GIBB Engineering and Science	Senior Environmental Scientist
2007 – 2011	GIBB Engineering and Science	Environmental Scientist



2008 – 2011	Nelson Mandela Metropolitan University	Postgraduate (part-time) Student
2005 – 2007	Nelson Mandela Metropolitan University	Full time Postgraduate (PhD) Student
2001 - 2003	University of Port Elizabeth	Full time postgraduate (MSc) Student
2006	University of Ghent, Belgium	Exchange Ecologist

## ***FULL CURRICULUM VITAE***

<b>Name of Firm</b>	Airshed Planning Professionals (Pty) Ltd
<b>Name of Staff</b>	René von Gruenewaldt ( <i>nee</i> Thomas)
<b>Profession</b>	Air Quality Scientist
<b>Date of Birth</b>	13 May 1978
<b>Years with Firm</b>	More than 15 years
<b>Nationalities</b>	South African

### **MEMBERSHIP OF PROFESSIONAL SOCIETIES**

- Registered Professional Natural Scientist (Registration Number 400304/07) with the South African Council for Natural Scientific Professions (SACNASP)
- Member of the National Association for Clean Air (NACA)

### **KEY QUALIFICATIONS**

René von Gruenewaldt (Air Quality Scientist): René joined Airshed Planning Professionals (Pty) Ltd (previously known as Environmental Management Services cc) in 2002. She has, as a Specialist, attained over fifteen (15) years of experience in the Earth and Natural Sciences sector in the field of Air Quality and three (3) years of experience in the field of noise assessments. As an environmental practitioner, she has provided solutions to both large-scale and smaller projects within the mining, minerals, and process industries.

She has developed technical and specialist skills in various modelling packages including the AMS/EPA Regulatory Models (AERMOD and AERMET), UK Gaussian plume model (ADMS), EPA Regulatory puff based model (CALPUFF and CALMET), puff based HAWK model and line based models. Her experience with emission models includes Tanks 4.0 (for the quantification of tank emissions), WATER9 (for the quantification of waste water treatment works) and GasSim (for the quantification of landfill emissions). Noise propagation modelling proficiency includes CONCAWE, South African National Standards (SANS 10210) for calculating and predicting road traffic noise.

Having worked on projects throughout Africa (i.e. South Africa, Mozambique, Malawi, Kenya, Angola, Democratic Republic of Congo, Namibia, Madagascar and Egypt) René has developed a broad experience base. She has a good understanding of the laws and regulations associated with ambient air quality and emission limits in South Africa and various other African countries, as well as the World Bank Guidelines, European Community Limits and World Health Organisation.

## RELEVANT EXPERIENCE

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### Mining and Ore Handling

René has undertaken numerous air quality impact assessments and management plans for coal, platinum, uranium, copper, cobalt, chromium, fluorspar, bauxite, manganese and mineral sands mines. These include: compilation of emissions databases for Landau and New Vaal coal collieries (SA), impact assessments and management plans for numerous mines over Mpumalanga (viz. Schoonoord, Belfast, Goedgevonden, Mbila, Evander South, Driefontein, Hartogshoop, Belfast, New Largo, Geluk, etc.), Mmamabula Coal Colliery (Botswana), Moatize Coal Colliery (Mozambique), Revuboe Coal Colliery (Mozambique), Toliera Sands Heavy Minerals Mine and Processing (Madagascar), Corridor Sands Heavy Minerals Mine monitoring assessment, El Burullus Heavy Minerals Mine and processing (Egypt), Namakwa Sands Heavy Minerals Mine (SA), Tenke Copper Mine and Processing Plant (DRC), Rössing Uranium (Namibia), Lonmin platinum mines including operations at Marikana, Baobab, Dwaalkop and Doornvlei (SA), Impala Platinum (SA), Pilannesburg Platinum (SA), Aquarius Platinum, Hoogland Platinum Mine (SA), Tamboti PGM Mine (SA), Sari Gunay Gold Mine (Iran), chrome mines in the Steelpoort Valley (SA), Mecklenburg Chrome Mine (SA), Naboom Chrome Mine (SA), Kinsenda Copper Mine (DRC), Kassinga Mine (Angola) and Nokeng Fluorspar Mine (SA), etc.

Mining monitoring reviews have also been undertaken for Optimum Colliery's operations near Hendrina Power Station and Impunzi Coal Colliery with a detailed management plan undertaken for Morupule (Botswana) and Glencor (previously known as Xstrata Coal South Africa).

Air quality assessments have also been undertaken for mechanical appliances including the Durban Coal Terminal and Nacala Port (Mozambique) as well as rail transport assessments including BHP-Billiton Bauxite transport (Suriname), Nacala Rail Corridor (Mozambique and Malawi), Kusile Rail (SA) and WCL Rail (Liberia).

### Metal Recovery

Air quality impact assessments have been carried out for Highveld Steel, Scaw Metals, Lonmin's Marikana Smelter operations, Saldanha Steel, Tata Steel, Afro Asia Steel and Exxaro's Manganese Pilot Plant Smelter (Pretoria).

### Chemical Industry

Comprehensive air quality impact assessments have been completed for NCP (including Chloorkop Expansion Project, Contaminated soils recovery, C3 Project and the 200T Receiver Project), Revertex Chemicals (Durban), Stoppani Chromium Chemicals, Foskor (Richards Bay), Straits Chemicals (Coega), Tenke Acid Plant (DRC), and Omnia (Sasolburg).

### Petrochemical Industry

Numerous air quality impact assessments have been completed for Sasol (including the postponement/exemption application for Synfuels, Infrachem, Natref, MIBK2 Project, Wax Project, GTL Project, re-commissioning of boilers at Sasol Sasolburg and Ekandustria), Engen Emission Inventory Functional Specification (Durban), Sapref refinery (Durban), Sasol (at Elrode) and Island View (in Durban) tanks quantification, Petro SA and Chevron (including the postponement/exemption application).

## **Pulp and Paper Industry**

Air quality studies have been undertaken on the expansion of Mondi Richards Bay, Multi-Boiler Project for Mondi Merebank (Durban), impact assessments for Sappi Stanger, Sappi Enstra (Springs), Sappi Ngodwana (Nelspruit) and Pulp United (Richards Bay).

## **Power Generation**

Air quality impact assessments have been completed for numerous Eskom coal fired power station studies including the ash expansion projects at Kusile, Kendal, Hendrina, Kriel and Arnot; Fabric Filter Plants at Komati, Grootvlei, Tutuka, Lethabo and Kriel Power Stations; the proposed Kusile, Medupi (including the impact assessment for the Flue Gas Desulphurization) and Vaal South Power Stations. René was also involved in the cumulative assessment of the existing and return to service Eskom power stations assessment and the optimization of Eskom's ambient air quality monitoring network over the Highveld.

In addition to Eskom's coal fired power stations, various Eskom nuclear power supply projects have been completed including the air quality assessment of Pebble Bed Modular Reactor and nuclear plants at Duynefontein, Bantamsklip and Thyspunt.

Apart from Eskom projects, power station assessments have also been completed in Kenya (Rabai Power Station) and Namibia (Paratus Power Plant).

## **Waste Disposal**

Air quality impact assessments, including odour and carcinogenic and non-carcinogenic pollutants were undertaken for the Waste Water Treatment Works in Magaliesburg, proposed Waterval Landfill (near Rustenburg), Tutuka Landfill, Mogale General Waste Landfill (adjacent to the Leipardsvlei Landfill), Cape Winelands District Municipality Landfill and the Tsoeneng Landfill (Lesotho). Air quality impact assessments have also been completed for the BCL incinerator (Cape Town), the Ergo Rubber Incinerator and the Ecovert Pyrolysis Plant.

## **Cement Manufacturing**

Impact assessments for ambient air quality have been completed for the Holcim Alternative Fuels Project (which included the assessment of the cement manufacturing plants at Ulco and Dudfield as well as a proposed blending platform in Roodepoort).

## **Management Plans**

René undertook the quantification of the baseline air quality for the first declared Vaal Triangle Airshed Priority Area. This included the establishment of a comprehensive air pollution emissions inventory, atmospheric dispersion modelling, focusing on impact area "hotspots" and quantifying emission reduction strategies. The management plan was published in 2009 (Government Gazette 32263).

René has also been involved in the Provincial Air Quality Management Plan for the Limpopo Province.

## Other Experience (2001)

Research for B.Sc Honours degree was part of the “Highveld Boundary Layer Wind” research group and was based on the identification of faulty data from the Majuba Sodar. The project was THRIP funded and was a joint venture with the University of Pretoria, Eskom and Sasol (2001).

## EDUCATION

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<b>M.Sc Earth Sciences</b>	University of Pretoria, RSA, Cum Laude (2009) Title: <i>An Air Quality Baseline Assessment for the Vaal Airshed in South Africa</i>
<b>B.Sc Hons. Earth Sciences</b>	University of Pretoria, RSA, Cum Laude (2001) Environmental Management and Impact Assessments
<b>B.Sc Earth Sciences</b>	University of Pretoria, RSA, (2000) Atmospheric Sciences: Meteorology

## ADDITIONAL COURSES

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<b>CALMET/CALPUFF</b>	Presented by the University of Johannesburg, RSA (March 2008)
<b>Air Quality Management</b>	Presented by the University of Johannesburg, RSA (March 2006)
<b>ARCINFO</b>	GIMS, Course: Introduction to ARCINFO 7 (2001)

## COUNTRIES OF WORK EXPERIENCE

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South Africa, Mozambique, Malawi, Liberia, Kenya, Angola, Democratic Republic of Congo, Lesotho, Namibia, Madagascar, Egypt, Suriname and Iran.

## EMPLOYMENT RECORD

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### January 2002 - Present

**Airshed Planning Professionals (Pty) Ltd**, (previously known as Environmental Management Services cc until March 2003), Principal Air Quality Scientist, Midrand, South Africa.

### 2001

**University of Pretoria**, Demi for the Geography and Geoinformatics department and a research assistant for the Atmospheric Science department, Pretoria, South Africa.

**Department of Environmental Affairs and Tourism**, assisted in the editing of the Agenda 21 document for the world summit (July 2001), Pretoria, South Africa.

### 1999 - 2000

**The South African Weather Services**, vacation work in the research department, Pretoria, South Africa.

## CONFERENCE AND WORKSHOP PRESENTATIONS AND PAPERS

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- Understanding the Synoptic Systems that lead to Strong Easterly Wind Conditions and High Particulate Matter Concentrations on The West Coast of Namibia, H Liebenberg-Enslin, R von Gruenewaldt, H Rauntenbach and L Burger. National Association for Clean Air (NACA) conference, October 2017.
- Topographical Effects on Predicted Ground Level Concentrations using AERMOD, R.G. von Gruenewaldt. National Association for Clean Air (NACA) conference, October 2011.
- Emission Factor Performance Assessment for Blasting Operations, R.G. von Gruenewaldt. National Association for Clean Air (NACA) conference, October 2009.
- Vaal Triangle Priority Area Air Quality Management Plan – Baseline Characterisation, R.G. Thomas, H Liebenberg-Enslin, N Walton and M van Nierop. National Association for Clean Air (NACA) conference, October 2007.
- A High-Resolution Diagnostic Wind Field Model for Mesoscale Air Pollution Forecasting, R.G. Thomas, L.W. Burger, and H Rautenbach. National Association for Clean Air (NACA) conference, September 2005.
- Emissions Based Management Tool for Mining Operations, R.G. Thomas and L.W. Burger. National Association for Clean Air (NACA) conference, October 2004.
- An Investigation into the Accuracy of the Majuba Sodar Mixing Layer Heights, R.G. Thomas. Highveld Boundary Layer Wind Conference, November 2002.

## LANGUAGES

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	<b>Speak</b>	<b>Read</b>	<b>Write</b>
<b>English</b>	Excellent	Excellent	Excellent
<b>Afrikaans</b>	Fair	Good	Good

## CERTIFICATION

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



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Signature of staff member

22/11/2017

Date (Day / Month / Year)

Full name of staff member:

René Georgeinna von Gruenewaldt



**Education**

*MSc Hydrogeology,  
University of Free State -  
IGS, 2011*

*2 Year Certificate in  
Business Administration,  
University of South Africa,  
2002*

*BSc (Hons) Geography,  
University of South Africa,  
1991*

*BSc Geography, University  
of South Africa, 1991*

*National Diploma-Geology ,  
Technicon Pretoria , South  
Africa, 1988*

**Languages**

*Afrikaans – Fluent*

*English – Fluent*

**Golder Associates Africa (Pty) Ltd. – Pretoria**

**Senior Hydrogeologist**

Responsible for various groundwater pollution studies at mining environments. Geophysical surveys for placement of monitoring networks. Groundwater resources investigation; comprising of project management, management of geophysical surveys, boreholes sitting, supervision of drilling and test pumping programmes and management of field contractors on site. Aquifer assessment to estimate the hydraulic parameters, hydrogeological characterization & mapping, water quality assessment, client liaison, data processing and report writing. Groundwater sampling programmes, data interpretations and slug testing.

**Employment History**

**Golder Associates Africa (Pty) Ltd – Pretoria**

*Hydrogeologist (2007 to Present)*

Responsible for various groundwater pollution studies at mining environments. Geophysical surveys for placement of monitoring networks. Groundwater resources investigation; comprising of management of geophysical surveys, boreholes sitting, supervision of drilling and test pumping programmes and management of field contractors on site. Aquifer assessment to estimate the hydraulic parameters, hydrogeological characterization & mapping, water quality assessment, client liaison, data processing and report writing. Groundwater sampling programmes, data interpretations and slug testing.

**VSA Geo Consultants (Pty) Ltd – Pretoria, South Africa**

*Senior Hydrogeologist (2002 to 2007)*

Responsible for various groundwater supply projects, which include desk studies, geophysical surveys, drilling site selection, supervision of drilling and construction of production and exploration boreholes. Test pumping of successful production boreholes. Chemical and bacteriological sampling of production boreholes for fitness of groundwater for human consumption. Progress and project reports. Detailed Hydrocensus surveys of boreholes and springs for updating of groundwater databases and hydro geological investigations.

**Groundwater Project Management (Pty) Ltd – Pretoria, South Africa**

*Project manager (1998 to 2002)*

Part of specialist team responsible for data management and compilation of strategic groundwater planning maps for the South African Department of Water Affairs and Forestry by means of Aquabase (database) and Arcview (GIS).

**Department of Water Affairs (DWAf), Directorate Geohydrology – Pretoria, South Africa**

*Student to First Geohydrological Technician (1985 to 1998)*

Geophysical Exploration – 13 years' experience in the application of various geophysical methods for groundwater exploration projects on a National level in South Africa in primary, secondary and karst aquifers. Scientific borehole siting and supervision of exploration drilling and test pumping. Regional dolomite borehole hydro censuses for updating of DWAf database.



## PROJECT EXPERIENCE – HYDROGEOLOGY

**Geophysical survey  
and supply projects**  
Various, South Africa

As Learner Geohydrological Technician was involved in various Geohydrological Projects. Ad hock borehole siting for various government departments in South Africa. Hydrocensus and groundwater sampling along the Nile river groundwater control area. Hydrocensus on the Dolomites of the Transvaal Sequence over the Grootfontein dolomitic Compartment. Discharge and recharge volumes were measured from irrigation dams as well borehole water level monitoring. Experience was gained in geological logging and pump testing of boreholes in the dolomites

**Geophysical survey**  
Walvisbay, Namibia

Member of the investigation team to determine the volume of saturated sediments South of Walvisbay, along the Kuiseb River in Namibia which was estimated by modelling gravity and time-domain electromagnetic data, and calibrated by means of exploratory drilling, The position of the saline wedge due to seawater intrusion was mapped using the EM-34 electromagnetic method.

**Geophysical survey  
and supply projects**  
Various, South Africa

Member of the investigation team to conduct a gravity survey for possible groundwater supply to Zeerust from fault zones extending into the underlying dolomites (North West Province).

Member of gravity and electromagnetic survey team at Polfontein to identified potential groundwater resources.

Member of investigation team to determine the thickness of alluvium in the Limpopo River at Greefswald. EM-34 electromagnetic soundings were conducted and modelled to compile alluvial aquifer thickness contour maps. This investigation was for water supply to the Venicia diamond mine in the Northern Province.

**Geophysical survey  
and supply projects**  
Various, South Africa

Part of geophysical team comprising out of gravitation and electromagnetic geophysical methods survey at Pomfret (North Western Cape) to identified potential groundwater resources for area and regional water supply.

Member of an investigation team who conducted a geophysical study at St Lucia and Richards bay (KwaZulu Natal Province), to map salt-water intrusions into the fresh water lakes.

Cape Fold Belt (Southern Cape) research project for faulting and joint zones. Survey comprises out of Very Low Frequency (VLF) electromagnetic, EM-34 and magnetic survey.

Project leader of groundwater pollution study at Clayville - gravity survey (Gauteng) in the East Rand.

Member of the investigation team for Municipal groundwater supply projects for the following towns; Stella, Mareetsane, Amsterdam, Botriver, Francshoek, Ceres, Jefferysbay, Van Wyks Vlei, Williston and Groblersdal. Responsibilities included managing a drilling and test pumping programme that included drilling and test pumping supervision, borehole construction and groundwater sampling.

Part of investigation team conducting a combined gravity and seismic reflection survey at Bray (Northern Cape) to locate a graben structure beneath the Kalahari sediments.

Member of the investigation team to conduct an aquifer study at Witsand (Northern Cape). Geophysical survey comprises out of gravity, electromagnetic soundings and magnetic method. Borehole drilling was conducted to confirm aquifer yield.

Part of the drought relief program in Kwazulu Natal for community water supply projects. Involvement included borehole siting, drilling and testing supervision and geological borehole logging. Geophysical training of learner and junior technicians was also conducted as part of the programme.



**Geophysical survey and supply projects**  
Various, South Africa

Member of the investigation team to conduct a groundwater pollution study at Dundee (KwaZulu Natal) for proposed sludge irrigation site.

Member of the investigation team to conduct a groundwater pollution study at Paul Pietersburg (KwaZulu Natal) to determine groundwater contamination from coal mining activities.

Project leader of geophysical team conducting a characterisation study on the Transvaal Sequence Dolomite in the Nelspruit (Mpumalanga Province) area.

Municipal groundwater supply projects at Mara, Bandelierskop (Limpopo Province), Rietfontein, Mareetsane and Danielskuil (Northern Cape Province). Responsibilities included managing a drilling and test pumping programme that included drilling and test pumping supervision, borehole construction and groundwater sampling.

Member of the geophysical investigation team for kimberlite intrusions at Rietfontein (Northern Cape Province).

Part of Ghaapplato LANDSAT research project - gravity, electromagnetic and magnetic survey.

Project leader of drought relief program for community water supply in Seshego, Mokerong 2 and Zebediela (Limpopo Province). Responsibilities included geophysical borehole siting, managing a drilling and test pumping programme, drilling and test pumping supervision, borehole construction and groundwater sampling.

Project leader of IFR (In Stream Flow Requirements) studies in the Mogalakwena Sabie and Sand rivers (Mpumalanga Province). Determination of sand thickness through selected river profiles using gravity, resistivity and electromagnetic soundings methods.

Team member of geophysical LANDSAT research project at Adelaide (Eastern Cape).

Part of research and characterisation project in the Wolkberg (Limpopo Province) area to determine the extent of the karstification in these dolomites. Responsibilities included gravity survey, borehole siting, managing of drilling and test pumping programme, drilling and test pumping supervision, borehole construction and groundwater sampling.

Member of the investigation team of a research project at Calitzdorp (Southern Cape) to investigate the Cape Fold Belt underneath cretaceous sediments (Karoo sediments) - Gravity survey.

Member of the investigation team of a research project across the Matlala and Moletsi Batholiths in the Limpopo Province for the possibility of groundwater occurrence on batholith contact zones at depth. Responsibilities included electromagnetic survey managing of drilling and test pumping programme, drilling and test pumping supervision, borehole construction and groundwater sampling.



**Geophysical survey and supply projects**

Various, South Africa

KwaZulu Natal Groundwater perspective - Compilation maps on Arc view.

El Nino mitigation program- study report for DWAF.  
Part of geophysical mineral exploration team for gold deposits near Barberton (Mpumalanga Province) - Electromagnetic survey.

Electromagnetic survey for mineral exploration for ISCOR, Iron deposits - Limpopo Province.

Part of the DWAF Refurbishment programme for community groundwater supply in Mokerong 1(Limpopo Province) - Involvement includes hydrocensus, crisis identification, geophysical surveys, borehole siting, geological logging, pump test and drilling supervision.

Part of pollution control study's at Koorfontein and Douglas collieries near Witbank (Mpumalanga Province) - borehole logging and drilling supervision, slug testing, EC measuring and water sampling of pollution inflows into boreholes.

**Groundwater Strategic Planning and groundwater data management**

Various, South Africa

KwaZulu Natal Groundwater perspective - Compilation maps on Arc view.

El Nino mitigation program- study report for DWAF.

The possible utilization of governmental drilling rigs of the Northern Province under the water services program - study report

Borehole data management of Northern Province Refurbishment programme - Aquabase groundwater database.

Borehole data management of the Limpopo Province - Aquabase. Compilation of user maps - ArcView.

Assisting with groundwater statistics and First Order Strategy maps of Limpopo, North West Eastern Cape, Free State, Mpumalanga, Northern Cape and KwaZulu Natal Provinces.

Compiling of Limpopo, Eastern Cape and KwaZulu Natal provinces Groundwater Development Strategic planning maps - ArcView.



**Hydrocensus,  
Groundwater Supply  
and Geophysical  
surveys projects**  
Gauteng, South Africa

Bothithong (Northern Cape), responsible for hydrocensus and borehole verification.  
Conduct Stratagem survey at Manthatayaneng (groundwater supply project), and processing of data.

Project team leader for Kgalagadi community water supply project. Responsibilities included borehole verification, geophysical borehole sitting, managing of drilling and test pumping programmes, drilling and test pumping supervision, borehole construction and groundwater sampling. Pump test analyses and management recommendations of boreholes for KGALAGADI water supply program and Lily Farms (Zambia project) with FC interpretation software.

Groundwater supply project for irrigation farmers at Kookfotein and Jagersfontein in North West Province. Responsibilities included geophysical survey, drilling and test pumping supervision, borehole construction and groundwater sampling.

Member of investigation team at Coligny verification project for the possible groundwater resource potential of granite aquifer for water supply augmentation. Responsible for detailed hydrocensus survey and resource assessment.

Responsible for drilling and testing supervision at Bapong community water supply project. Responsible for data processing and management recommendations with FC interpretation software.

Part of Moshaweng village sanitation project, which include borehole verification, water quality sampling, identification of aquifer and source protection zones and potential pollution sources.

School sanitation project (Gill and Ass.), which include borehole verification, village baseline water quality, identification of aquifer and source protection zones and potential pollution sources. Assist in report compiling.

Pump testing of existing boreholes at Lanseria Polo Estates development, Water quality analyse and management recommendation - Report.

Geophysical groundwater investigation at Pollack Park Golf Course in Springs - Gauteng Province. Data analysis and report writing.

**Geophysical survey**  
Orapa, Botswana

Conduct a Stratagem survey to outline kimberlite intrusions at Orapa and Lethlakane kimberlite diamond mines in Botswana.



**Hydrocensus,  
Groundwater Supply  
and Geophysical  
surveys projects**

Various, South Africa

Grootpan Dolomite Survey. Detailed Hydrocensus surveys of boreholes and springs for updating of groundwater databases and hydrogeological investigations.

Willodene (Free State Province), groundwater supply project. Responsible for electromagnetic (EM) and magnetic geophysical investigation for groundwater and report writing.

Part of Source development programme for drought relief villages in the Limpopo Province. Responsible for geophysical survey comprising out of electromagnetic and magnetic methods for groundwater and report writing.

Crocodile Creek Polo Estate. Prepare relevant documentation for borehole licensing procedures and Water service provider contract.

Vryburg South, groundwater supply project for low cost residential development. Responsible for geophysical survey.

Hyde Park High School. Geophysical survey comprising out of electromagnetic and magnetic methods.

Mabeskraal sanitation survey. Responsibilities include borehole verification, water quality sampling, identification of aquifer and source protection zones and potential pollution sources.

Laxey Gravity groundwater supply Project. Responsible for geophysical survey comprising out of gravity and magnetic methods.

Project team leader of Uitvalgrond (North West Province) groundwater supply project. Management of extensive gravity survey and data manipulation.

Fullgro gravity survey in North West Province for manganese deposits. Responsible for drilling and test pumping supervision, groundwater sampling of exploration boreholes.

Camden and Wyksfontein ward 8, community groundwater supply projects. Responsible for geophysical survey.

Burnstone groundwater project at Balfour in Mpumalanga Province. Responsible for test pumping supervision. Data analyses of test results with FC interpretation software and report writing.

Mabula Lodge groundwater supply project (Limpopo Province). Responsibilities included managing of drilling and test pumping programme including drilling and test pumping supervision, borehole construction and groundwater sampling. Interpretation and management recommendations of test pumping results with FC interpretation software.



**Groundwater Supply and Geophysical surveys projects**  
Various, South Africa

Magalies Water Round 7, community supply programme (Ruigtesloot, Transactie and Tweelaagte; 36 Boreholes drilled). Responsibilities included managing of drilling and test pumping programme which include drilling and test pumping supervision, borehole construction and groundwater sampling. Pump test data interpretation and management recommendations (FC software).

Drought Relief project at Derby in North West Province (13 Boreholes drilled). Responsibilities included managing of drilling and test pumping programme which include drilling and test pumping supervision, borehole construction and groundwater sampling. Pump test data interpretation and management recommendations (FC interpretation software).

Magalies Water round 7, on-going community supply programmes. Managing drilling and testing programme, drilling and pump testing supervision at 9 villages as part of a drought relief program. 11 Boreholes were drilled and 10 boreholes pump tested. Pump test analyses of test results with FC interpretation software.

Mabula Lodge groundwater supply project, Mokai Kai area (Limpopo Province). Extension of previous survey to Mokai Kai area. Responsibilities included managing of drilling and test pumping programme, drilling and test pumping supervision, borehole construction and groundwater sampling. Interpretation and management recommendations of test pumping results with FC interpretation software.

Well field development for Magalies Water at Shakung/Jericho, community groundwater supply project. Responsible for management of drilling programme of advance borehole drilling techniques in loose Karoo sediments with Johnson screen constructions (4 boreholes) and double casing constructions with perforated steel outside and PVC inside (2 boreholes).

**Groundwater Supply and Geophysical surveys projects**  
Various, South Africa

Drought Relief programme at Koster in North West Province (South Africa). Responsibilities included hydrocensus, managing of drilling and test pumping programme including drilling and test pumping supervision, borehole construction and groundwater sampling. Interpretation and management recommendations of test pumping results with FC interpretation software.

Swartruggens Drought relief programme (North West Province), Magalies Water Round 7. Responsibilities included managing of drilling and test pumping programme including drilling and test pumping supervision, borehole construction and groundwater sampling. Interpretation and management recommendations of test pumping results with FC interpretation software.

**Groundwater supply project**  
Nacala, Mozambique

Drilling supervision and borehole construction at Nacala in Mozambique for Murray and Roberts for water supply to new planned coal terminal.



**Groundwater Baseline study, Hydrocensus, Groundwater Supply and Geophysical surveys projects**  
Various, South Africa

Responsible for drilling supervision of monitoring boreholes at Bravo Eskom project near Ogies.

Member of geophysical team conducting a geophysical investigation for monitor boreholes at Cullinan Diamond Mine (CDM) in Cullinan, Gauteng Province. Managing geophysical survey, data interpretation and borehole siting.

Conduct a hydrocensus at Dawn Park for new residential development. Responsible for pump testing programme and supervision of groundwater monitoring boreholes at Heidelberg as part of planned underground Coal mining project.

Manganese Metal Company, characterisation and baseline assessment. Responsible for drilling supervision, groundwater sampling and slug testing of monitoring boreholes. Slug test data interpretation.

Part of groundwater sampling team of monitoring boreholes at Shisen Iron Mine (South Africa).

Eskom Underground Coal Gasification project - Amersfoort. Responsible for magnetic survey, borehole siting, drilling supervision, groundwater sampling and slug testing of boreholes. Slug test data interpretation.

Kloof Gold mine (South Africa), Groundwater contamination study. Responsible for geophysical survey, managing of drilling and test pumping programme including drilling and test pumping supervision.

Proposed tailings facility at Geluksdal site - Rand Uranium. Responsible for managing of drilling and test pumping programme including drilling and test pumping supervision and report writing.

**Groundwater Baseline study**  
Bakouma, Central African Republic

Bakouma Groundwater Assessment. A Geohydrological investigation that formed part of an environmental feasibility study with the aim of developing pit dewatering strategies as well as groundwater impacts. Responsibilities included managing of test pumping programme, data interpretation and installation of water level loggers.



**Groundwater Impact Assessment (contamination) and groundwater baseline studies**  
Various, South Africa

Conduct a groundwater impact assessment for Foskor (PTY) LTD near Phalaborwa, as part of their EIA for their proposed pyroxenite expansion project (PEP). Involvement includes managing geophysical survey, drilling and test pumping programme including drilling and test pumping supervision, borehole construction and groundwater sampling. Data interpretation, groundwater conceptual model and report writing.

Conduct a hydrogeological investigation at the Norcros, Olifantsfontein site, near Irene. The study involved hydrogeological site assessment, groundwater quality and vulnerability, identify possible pollution sources and access impact on groundwater system and nearby wetland. Responsible for field survey, data interpretation and groundwater report writing.

Involved in the on-going hydrogeological consultancy services to Eskom's Underground Coal Gasification (UCG) project team at the Majuba trial site in south-eastern Mpumalanga Province. Responsible for geophysical survey, borehole siting for relocated community, installation of level loggers and monitoring of water level of shallow aquifer and six monthly groundwater hydrochemistry monitoring report and technical memos.

Conduct a phase I hydrogeological investigation for Foskor (PTY) LTD at their North Pyroxenite Mine (NPM). Foskor (Pty) Ltd is currently operating two open pit mines in Phalaborwa. The study comprises out of a hydrocensus, groundwater sampling, quality analyses, GAP analyses and inception report.

Responsible for drilling supervision for monitor boreholes for Unitrans Fuel and Chemicals (Pty) Ltd (Unitrans), at the Tulisa Park Truck Depot. Write technical memo on drilling results.

Conduct a groundwater study at Xstrata Atcom for two adjacent projects. Responsible for geophysical survey, the drilling supervision, slug testing and groundwater sampling. Data interpretation and report writing.

Conduct a phase II hydrogeological investigation for Foskor (PTY) LTD at their North Pyroxenite Mine (NPM). Foskor (Pty) Ltd is currently operating two open pit mines in Phalaborwa. Responsible for managing of geophysical survey, drilling and test pumping programme including drilling and test pumping supervision, borehole construction, slug testing and groundwater sampling. Data interpretation, groundwater conceptual model and report writing.

**Groundwater Impact Assessment (contamination) and groundwater baseline studies**  
Various, South Africa

Ruighoek Chrome Mine in the North West province, Groundwater and geochemical investigation as part of basic assessment. Responsible for drilling supervision of two new monitoring boreholes adjacent to TSF, hydrocensus, groundwater and geochemical sampling and report.

Integrated Water and Waste management Plan for Koornfontein Mines (Pty) Ltd. The mine forms part of the Optimum Coal Holdings Group and operates underground and planned open pit mining operations, as well as a coal beneficiation plant near Komati Power Station in Mpumalanga Province Responsible for groundwater specialist reporting.



**Groundwater Impact Assessment (contamination) and groundwater baseline studies**  
Various, South Africa

Conduct a hydrogeological assessment at the AngloGold Ashanti Iduapriem (AAIL) mine which is located in the south west of Ghana close to the town of Tarkwa. The assessment of the hydrogeology of the mining and surrounding area was undertaken to identify sources of groundwater contamination (arsenic was reported), the extent of any associated groundwater pollution plumes and the construction of a preliminary conceptual hydrogeological model. Responsible for site assessment, hydrogeology data evaluation, drilling supervision of monitoring boreholes, water sampling, hydrocensus, GAP analyses and assessment report.

**Groundwater Impact Assessment (contamination) and groundwater baseline studies**  
Various, South Africa

Responsible for baseline groundwater assessment report for Lonmin Platinum mines in North West Province.

Responsible for groundwater sampling and characterising at Sappi Usutu - Swaziland. Data interpretation and technical reporting.

Conducted a groundwater baseline assessment at Enviroil's site at Wadeville, Germiston. The groundwater assessment form part of the specialist studies of the Environmental Impact Assessment (EIA) at the new Enviroil site. Responsible for drilling supervision, slug testing, groundwater sampling, data interpretation and reporting.

Groundwater specialist report to inform the EIA in support of the application for an Integrated Waste Management Licence Application for Evraz Highveld Limited (Mpumalanga Province).

Part of investigating team at Platreef mine in Mokopane. Responsible for geophysical survey, drilling supervision and test pumping at proposed decline portal.

Drilling of additional groundwater monitoring boreholes at Evraz Highveld steel and Vanadium steel works to characterise the groundwater quality outside the site boundary and map pollution plume. Responsible for drilling supervision and groundwater report writing.

Drilling of additional groundwater monitoring boreholes at Evraz Highveld steel Mapoch's mine to characterise and monitor groundwater quality down gradient of paddocks. Responsible for drilling supervision and groundwater report writing.

Conduct groundwater study at Sasol Secunda Halve pan site. Responsible for geophysical survey, data interpretation and drilling site selection, drilling and test supervision, sampling and reporting.

Involved in the Vaal Gamagara Groundwater water scheme. Responsible for hydrocensus in two Source development areas Danielskuil and Postmasburg. Supervision of geophysical survey.

**Groundwater baseline study**  
Nyanzaga, Tanzania

Involved in to assessment of the potential impacts that the proposed Nyanzaga mine in Tanzania will have on the receiving surface and groundwater regimes.



**Groundwater Impact Assessment (contamination), baseline and supply studies**  
Various, South Africa

Responsible for groundwater baseline report for Exxaro Resources (Pty) Ltd at their Zincor facility located in the Springs district of Gauteng.

Part of groundwater specialist study at Impala Platinum Refinery as part of the Environmental Impact Assessment (EIA) and for a Water Use Licence application (WULA).

Conduct a hydrogeological assessment at the proposed passive water treatment plant at Anglo Coal Vryheid Coronation Colliery (VCC) in KwaZulu Natal Province. The hydrogeological assessment is part of the Environmental Impact Assessment (EIA) and Water Use Licence application (WUL) for the proposed passive water treatment plant. Responsible fieldwork and reporting.

Conduct a groundwater baseline report for Zitholele Consulting (Pty) Ltd to provide a specialist groundwater input in support of the Waste License process at Kendal Power Station. This process involves an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) - as part of the Integrated Water Use License (IWUL) for the extension of the existing dry ashing facility and a Waste Management Licence (WML) for the existing ash dump to continue disposal of ash for the next 7 years whereupon a new ash dump will be commissioned. Project manager, responsible for task management and reporting.

Part of the team who conducted groundwater assessment at the Dimbaza Foundry site located close to King Williams Town (Buffalo City Municipality) in Eastern Cape. Responsible for reporting on the groundwater status following the site visit and to inform the DEA of the proposed monitoring boreholes which will support the groundwater specialist study for the closure of the Dimbaza Foundry site.

Involved in the Vaal Gamagara Groundwater Resource Assessments and possible augmentation of the Vaal-Gamagara pipeline water scheme. Responsible for supervision of drilling of large diameter boreholes in the Dolomite Karst formation at Danielskuil area. Test pumping supervision and interpretation of high yielding boreholes. Responsible for groundwater reports of two source development areas (SD1 and SD2).

Conduct a groundwater baseline report for Zitholele Consulting (Pty) Ltd to provide a specialist groundwater input in support of the Waste License process at Kendal Power Station and for the waste management licencing for the 30 year extension of ash disposal upon a new ash dump. Project manager, responsible for task management and reporting.

Project manager of geophysical survey at Samancor Lannex operations near Steelpoort. Objective was to map the pollution plume, Identify zones of deeper weathering and fracturing of the bedrock which could act as preferential groundwater flow paths. Responsible for task management and reporting.

Conduct geophysical survey at Sasol Secunda Halvepan site to optimize installation of scavenger borehole positions. Responsible for data interpretation, drilling site selection and reporting.

Project manager of a geophysical survey and drilling programme at Sasol Secunda Halvepan, to optimize installation of scavenger boreholes. Responsibility includes data interpretation, drilling site selection and groundwater report writing.



Responsible for compiling of three groundwater source development reports namely, Ga Magatle, Thamoyanche and Klein Eiffel in Northern Cape Province.

Project manager of a geophysical survey at Impala Platinum operations near Rustenburg – North West Province. Objective was to map the sub surface to identify zones of deep weathering and fracturing of the bedrock which could act as preferential groundwater flow paths. The geophysical survey was part of an assessment to locate suitable geological targets to install exploration/scavenger boreholes for remediation purposes as part of the rehabilitation programme. Responsibility includes task management and groundwater report writing.

Tubatse Chrome ground and surface water monitoring programme – 2015.

Groundwater task manager of specialist study at Exxaro's Grootegeluk Coal mine in Limpopo Province. Grootegeluk Coal Mine (Grootegeluk) is an existing open-pit mine situated 25 km from Lephalale (Ellisras). The groundwater specialist study is part of the revising of their Integrated Water Use License Application (IWULA) and their Integrated Water and Waste Management Plan (IWWMP) for the Grootegeluk Coal Mine and Reductants Plant.

Project manager of a groundwater feasibility study to assess the viability and sustainability of potable groundwater as a source to supply the villages around the Mathanjana Magisterial District in the Dr JS Moroka Local Municipality.

Task manager of ongoing hydrogeological consultancy services to Eskom's Underground Coal Gasification (UCG team at the Majuba trial site in south-eastern Mpumalanga Province. As part of the ongoing Hydrogeological services a geophysical survey was conducted during March 2015 to assist with the selection of drill sites for the installation of shallow monitoring boreholes in the compliance zone around Gasifier 1 and 2 (existing production boreholes).

Project manager of groundwater investigation to undertake the Environmental Impact Assessment (EIA) and Waste Management Licence (WML) application, including a water use licence application (WULA) for Eskom at their proposed Flue Gas Desulphurisation (FGD) retrofit to Medupi Power Station.

Project manager of groundwater specialist study for Khongoni Coal as part of their Mining Right Applications (MRA). Writing of the scoping report, conduct groundwater Impact assessment to determine the impact of the proposed opencast coal mine on the groundwater.

Part of investigation team for Midal Cables International LDA to do a hydrogeological and geophysical Investigation at their water treatment plant (WTP). The water quality of groundwater abstracted do not confirm to the specifications for which the plant was originally for.

Project manager of source verification and development projects for Oppel Consulting & Construction Management (OCCM) who appointed Golder Associates (Pty) Ltd to verify and assess the existing groundwater potential at Disake, Mokgalwaneng and Pella, Silwerkrans in the North West Province.

Conduct groundwater specialist investigation for Anglo American Inyosi Coal (Pty) Ltd (AAIC) for their Heidelberg South Rand Underground Mining Project, Gauteng Province. It comprises an area of 75 square kilometres, and is located ~ 35 km to the northwest of Eskom's Grootvlei Power Station. Compile Scoping report and conduct groundwater impact assessment.



Conduct aquifer testing of existing boreholes and an Earth Resistivity Image (ERI) profile for Exarro at Pegasus South at their Inyanda Colliery – Mpumalanga Province.

Project manager of a a geophysical survey for Delta H at Commissiekraal to determine optimal drilling sites for the groundwater impact investigation for the proposed underground coal mine in the Kwazulu Natal Province.

Project manager of groundwater specialist study for Zitholele Consulting (Pty) Ltd to undertake the Environmental Impact Assessment (EIA) and Waste Management Licence (WML) application, including a water use licence application (WULA) for the proposed Flue Gas Desulphurisation (FGD) retrofit to Medupi Power Station. Responsible for Groundwater task management and reporting.

Project manager of Aquifer testing programme for Exxaro at Inyanda Colliery – Mpumalanga Province. Responsible for Groundwater task management and reporting.

Project manager of drilling project of scavenger boreholes for Sasol Synfuels at Secunda - Mpumalanga Province and the update the groundwater numerical model of Sasol Synfuels Halvepan.

Project manager of a groundwater specialist study for Glencore's IMPunzi Office and Phoenix pit, Mpumalanga Province. The groundwater specialist study is part of an EIA and WULA application for Impunzi for the proposed extension of their opencast operations at the Office and Phoenix area. Responsible for Groundwater task management and reporting.

Project manager of Aquifer testing programme for at Anglo American's Umlalazi Minipit, and Kromdraai Colliery near Witbank– Mpumalanga Province. Responsible for Groundwater task management and reporting.

Project manager of an Earth Resistivity Image (ERI) survey for Kimopax (PTY) Ltd at Tshandama – Limpopo Province. Involvement, task management and reporting.

Part of investigation team for Khumani Iron Ore Mine (KIOM) to develop groundwater resources on the farms Bruce and King to augment the total shortfall in water supply. Accountable for drilling and aquifer testing programmes and reporting.

Project manager of a geophysical survey for Delta H at Standerton in the Mpumalanga Province. The geophysical survey is to locate suitable geological targets and deep weathering zones to optimize drilling targets. Responsible for Groundwater task management and reporting.

Part of investigation team to conduct a groundwater specialist study for Ukwazi's copper project near Musina, Limpopo Province. The groundwater specialist study is part of a scoping level of confidence mining study to compile a Mining Works Programme (MWP) as part of the Mining Right Application (MRA). Responsible for Groundwater task management and reporting.

Project manager of Aquifer testing programme for KMSD Consulting Engineers, to test two existing boreholes, one each at Madibeng and Perth Primary Schools. Responsible for Groundwater task management and reporting.



Project manager of a groundwater investigation for Onno Fortuin Consulting, to install additional groundwater supply and monitoring boreholes at Vryburg's new Waste Water Treatment Works (WWTW). Responsible for Groundwater task management and reporting. Task involved geophysical survey, drilling and aquifer testing.

Project manager of a hydrogeological investigation for Sedibeng Water and the Department of Water and Sanitation to verify the status and use of existing production boreholes and to augment shortfalls in water demand at three villages (Atamelang, Khunwana and Vrischgewaagd) within the Tswaing Local Municipality as part of emergency supply services. ADI Engineering (ADI) was appointed by Sedibeng Water as Professional Service Provider for the above stated Project and Poloko Trading 634 CC the appointed contractor. Responsible for Groundwater task management and reporting. Task involved geophysical survey, drilling and aquifer testing.

Project manager of a hydrogeological investigation for Sedibeng Water and the Department of Water and Sanitation is upgrading water sources of villages within the Tswaing Local Municipality as part of emergency water supply services. B2B Consultants (PTY) Ltd (B2B) appointed Golder Associates to conduct a hydrogeological investigation at Mofufutse 1 as part of the emergency water supply service. Responsible for Groundwater task management and reporting. Task involved geophysical survey, drilling and aquifer testing.

Project manager of groundwater verification and source development projects for Opiel Consulting & Construction Management (OCCM) who appointed Golder Associates (Pty) Ltd to verify and assess the existing groundwater potential at Magong, Kameelboom and Madikwe in the North West Province. Responsible for Groundwater task management and reporting. Task involved geophysical survey, drilling, aquifer testing, borehole registration and reporting.

Project manager of a groundwater feasibility study for McCain Springs Plant site. Study include desk study, hydrocensus groundwater quality analyses and reporting.

Conduct a groundwater baseline study for a proposed new open cast copper mine close to Musina. The hydrogeological investigation was based on available information as input into a scoping report that includes a gap analysis and scope of work required to support IRL environmental permitting process.

Project manager for a geophysical survey at Sasol Synfuels at their Sasol Nitro Fertilizer (Nitro) plant, to investigate the sub-surface for geological structures namely; dolerite dyke intrusions, deep weathering and fracture zones which could act as preferential groundwater pathways. Responsible for Groundwater task management and reporting. Task involved geophysical survey (ERI and magnetic methods) and reporting.

Conduct hydrogeological support services as part of the Dr Ruth S Mompoti Rural Water Supply Programme (2016-2019) at Broedersput, Schweizer Reneke, Reivilo and Lykso. Responsible for groundwater project management and reporting. Tasks involved geophysical survey, drilling and aquifer testing.

Conduct a hydrogeological phase I investigation at Phola Coal Processing Plant (PTY) Ltd near Ogies, Mpumalanga Province. The objective of the groundwater investigation is to establish a comprehensive and site wide groundwater



monitoring programme. Responsible for Groundwater project management and reporting.

Conduct a groundwater baseline investigation and Environmental Impact Assessment (EIA) for Exxaro at Turfvlakte adjacent to Grootegeluk Mine, Limpopo Province. Responsible for groundwater task management and reporting. Tasks involved geophysical survey, drilling support, aquifer testing and impact scenarios and mitigation measures.

Conduct a groundwater source verification and development investigation at Campbell in the Northern Cape Province. The objective of the hydrogeological investigation is the verification of the status of existing boreholes, fountains, groundwater quality and long term safe yields of production boreholes. Responsible for groundwater project management and reporting. Tasks involved geophysical survey, drilling, aquifer testing and borehole management recommendations.

Installation of new background monitoring boreholes at Tubatse Chrome at Steelpoort. Responsible for groundwater project management and reporting.



## PROFESSIONAL AFFILIATIONS

SACNSP (South African Council for Natural Scientific Professions, Pr. Sci. Nat)  
Reg. no. 400027/11

## COURSES

***Mine Water Course, University of the Free State, 2008***

*Acid Mine Drainage Introduction, sampling and monitoring activities in waste disposal sites with emphasis to Mining environment, introduction to WISH programme and introduction to groundwater in the Mining industry.*

***Technical Writing Course, GAA In-house,***

*November 2008*

***Project Management Course, GAA In-house (PM24),***

*July 2008*

***Report Writing Course, wordsmiths-Barbara English,***

*July 2010*

***Exploration Drill Rig Safety Training Course, DICASA,***

*June 2011*

***Project Management Fundamentals Course, GAA In-house,***

*October 2012*

***Microsoft Excel – Advanced, Front Foot Strategic Consulting,***

*May 2014*

## CURRICULUM VITAE



- 1. Name and Surname:** Nkosinathi Tomose
- 2. Proposed Role in the Team:** Principal Heritage Consultant
- 3. Biop:** Nkosinathi (affectionately known as Nathi by his peers) is an experienced consultant with 11 years' experience in the predevelopment and development sector. He specialises in environmental and sustainability matters and is an accredited archaeologist and heritage resources management resources management specialist. In his 11 years' involvement in the predevelopment and development sector, he has managed environmental and sustainability projects relating to turnkey linear development such as water augmentation, Eskom power transmission and distribution, as well as urban development and sustainability projects.

Nathi holds a Masters in Science (MSc) from the Wits University and is currently enrolled for **Master of Architecture in Sustainable Cities (Wits) (2018 to 2019)**.

Nathi began his career in the predevelopment and development sector facilitating stakeholder relations for mine development programme in KwaNongoma, KwaZulu-Natal for **Synergistics Environmental Services** (2004). He was later appointed by Sumo Coal (a Turkish mining company in SA) and its Turkish associates as the lead **Public Participation and Community Liaison Officer** in the **Environmental Impact Assessment** for the construction of Nizamiye Turkish Masjid in Midrand (2005). Among other private companies that he has worked for are: Nzumbululo Holdings (Pty) Ltd (**Division Manager: Environment and Sustainability Department**); PGS Heritage (Lead Heritage Consultant and Community Liaison); Kanya College (**Associated Researcher**). He has worked on projects such as Environmental and Heritage Impact Assessments, Namoya SALR – Gold Mine, Maniema Province in the eastern Democratic Republic of Congo.

Within the public sector Nathi has worked for the South African Heritage Resources Agency (SAHRA) in various capacities and as a lead project manager for the Cradle of Humankind World Heritage Site (COWHS), and for the University of the Witwatersrand in the School of Geography, Archaeology & Environmental Studies.

#### 4. Major Projects Involved in 2015 – 2017

**A) Basic Assessment Report (BAR), Environmental Management Programme, Environmental Audit for the Proposed Bela-Bela 132kV Substation, Bela-Bela, Waterberg District, Limpopo Province. Status: Approved – Environmental Authorisation (EA) Issued in April 2017 (Annexure A) (Power and Energy)**

**Role:** Lead Consultant and Author:

**Client:** GKB Design and Associates (Pty) Ltd on Behalf of Bela-Bela Local Municipality

**Referee:** Mr Gaylord Mupona ([gmupona@gkbgroup.co.za](mailto:gmupona@gkbgroup.co.za)/ 0825276969)

**Project Proponent:** Bela-Bela Local Municipality

**B) Integrated Heritage Resources Management report for the Proposed Elim District Hospital Redevelopment, Limpopo Province Inclusive of Baseline Social Impact Assessment and Biodiversity Study (Built Environment)**

**Role:** Lead Consultant and Author:

**Client:** Ngonyama Okpanum and Associates (Pty) Ltd

**Referee:** Mr Hammond Dendere, Project Architect & Development Planner

**Project Proponent:** Limpopo Department of Health

**Role:** Lead Consultant and Co-Author:

**Client:** Moditi Consulting (Pty) Ltd and Ngonyama Okpanum and Associates (Pty) Ltd

**Referee:** Mr Hammond Dendere ([hammond@noact.co.za](mailto:hammond@noact.co.za) / [tshepom@moditi.co.za](mailto:tshepom@moditi.co.za) )

**Project Proponent:** National Department of Health

**C) Integrated Heritage Resources Management Report and Social Impact Assessment Study for the Proposed Medupi Power Station Flue Gas Desulpherisation (FGD) Project, Limpopo Province, South Africa (Power and Energy).**

**Role:** Lead Consultant and Author:

**Client:** Zithole Consulting (Pty) Ltd

**Referee:** Mrs. Sharon Meyer-Douglas ([sharonm@zitholele.co.za](mailto:sharonm@zitholele.co.za) / +27 11 207 2073)

**Project Proponent:** Eskom Holdings

**Referee:** Mrs. Sharon Meyer-Douglas, Head of Environmental service

**Project Proponent:** Eskom Holdings

**D) Heritage and Social Impact Assessment and Social Impact Assessment Study for Study for the Proposed Ariadne-Eros 400kv/132kV Multi-Circuit Power Transmission Line, KwaZulu-Natal Province, South Africa (Power and Energy).**

**Role:** Lead Consultant and Author:

**Client:** Mokgope Consulting CC, Director

**Referee:** Dr Mpho Nenweli ([mphonenweli@gmail.com](mailto:mphonenweli@gmail.com) /082 256 73099)

**Project Proponent:** Eskom Holdings and African Development Bank

**E) Heritage and Socio-Economic Studies for the Proposed Passenger Rail Agency South Africa (PRASA) for the following Stations (Built Environment):**

- HIA and SIA for Wonderboom PRASA Station, Pretoria Gauteng Province, South Africa
- HIA and SIA for and SIA for Lellara PRASA Station, Tembisa, Gauteng Province, South Africa
- HIA and SIA for Limindlela PRASA, Tembisa, Gauteng Province, South Africa
- HIA and SIA for Kempton Park PRASA Station, Kempton Park, Gauteng Province, South Africa
- HIA and SIA for for Germiston Junction PRASA Station, Germiston, Gauteng Province, South Africa
- HIA and SIA for Roodepoort PRASA Station, Roodepoort, Gauteng Province, South Africa
- HIA and SIA for Vereeniging PRASA Station, Vereeniging, Gauteng Province, South Africa
- HIA and SIA for Duffs Road PRASA Station, KwaMashu, KwaZulu-Natal Province, South Africa
- HIA and SIA for Merebank PRASA Station, Durban South, KwaZulu-Natal Province, South Africa
- HIA and SIA for Rossburgh PRASA Station, Durban South, KwaZulu-Natal Province, South Africa

**Role:** Lead Consultant and Author:

**Client:** Ecosolve Environmental Consulting (Pty) Ltd

**Referee:** Mr Tsepo Lepono, Managing Director ([tsepo@ecosolve.co.za](mailto:tsepo@ecosolve.co.za) / 083 339 9103)

**Project Proponent:** Passenger Rail Agency South Africa

**F. Scoping, Environmental Impact Assessment, Environmental Management Programme for Mathanjane Bulk Water Augmentation, Limpopo and Mpumalanga Province (Water Infrastructure)**

**Role:** Lead Consultant and Author:

**Client:** GKB Design and Associates (Pty) Ltd

**Referee:** Mr Gaylord Mupona ([gmupona@gkbgroup.co.za](mailto:gmupona@gkbgroup.co.za) / 0825276969)

**Project Proponent:** Rand Water on behalf of National Department of Water Affairs.

- |                         |               |
|-------------------------|---------------|
| <b>5. Demographic</b>   | Black Youth   |
| <b>6. Gender</b>        | Male          |
| <b>7. Nationality</b>   | South African |
| <b>8. Date of Birth</b> | 05 May 1983   |

## 9. Education

Name of Institution	Degree Obtained	Dates Attended
University of Witwatersrand	M.Sc. Degree	2007 – 2008
University of Witwatersrand	B.S.C Honours (Landscape and GIS)	2006
University of Witwatersrand	BA Geography & Archaeology	2003 – 2005

## 10. Other Qualifications (Further Education and Skills Improvement)

Name of Institution	Training Details	Dates Obtained
University of Witwatersrand	Master of Architecture in Sustainable Cities	Current - 2019

## 11. Professional Registration/Licensure *(do not include memberships of industry associations)*

Registration/Licensing Body	Type of Registration	Date Obtained
ASAPA	Cultural Resources Management: Industrial Archaeology, Built Environment, Iron Age, Rock Art and Burial Grounds and Graves	2006 to date
Amafa KwaZulu-Natal	General Heritage Consultant (Archaeology, Rock Art, Built Environment and Landscape, Burial Grounds and Graves)	2010 to date
Eastern Cape PHRA	General Heritage Consultant (Archaeology, Rock Art, Built Environment and Landscape, Burial Grounds and Graves)	2010 to date
SACNASP	Currently Applied for Environmental Management	2018

## 12. Countries of Work Experience

Country	Start and End Date
South Africa	2008- to present ( BAR, EMPrs, Environmental Audits, Social Impact Assessment Studies, Community Participation, Relocation Action Plan and ICRMs, Public Participation and Social Consultation)
Democratic Republic of Congo	2012 -2012 (HIA, Namoya SALR – Gold Mine, Maniema Province)
Peoples Republic of China	2010-2010 (Cultural Resources Management)
United States (Smithsonian Institute)	2007-2007 (Operational Models, Funding and Marketing of Cultural Heritage Institutions in South Africa)
France ( <i>Centre National de la Recherche Scientifique</i> )	2004-2004 (Recording, documentation and dating of rock art)

## 13. Languages (Scale of 1 – 5: Poor; 5 and above: Excellent)

Language	Speaking	Reading	Writing
IsiXhosa	5	4	4
English	5	5	5
Afrikaans	3	3	3
SeSotho	4	4	4
SeTswana	3	3	3
IsiZulu	5	5	5

**14. Employment Record** *Starting with current position, list in reverse order every employment held by the candidate since graduation, giving dates of employment, name of employing organisation, positions and responsibilities held.*

<b>Employer</b>	<b>Date:</b>
<b>A) NGT Holdings (Pty) Ltd:</b>	<b>September 2012 to date</b>
<b>Position Held:</b>	Founder and Director
<b>Location:</b>	Victory Park, Johannesburg
<b>Responsibilities:</b>	<ul style="list-style-type: none"> <li>• Strategic Leadership</li> <li>• Governance</li> <li>• Financial Accounting</li> <li>• Risk Management</li> </ul>
	<b>Professional Technical Work</b>
	<ul style="list-style-type: none"> <li>• Basic Assessment Reports, EMPs, Environmental Scoping and EIRs</li> <li>• Water Use License Applications (WULA);</li> <li>• Waster License Application (WLA);</li> <li>• Social and Socio-Economic Impacts Consulting</li> <li>• Integrated Cultural Resources Management</li> <li>• Development of Community Participation Strategies in Developmental Projects</li> <li>• Project Management and Administration</li> </ul>
<b>B) Freelancer</b>	<b>May to September 2012</b>
<b>Responsibilities:</b>	BAR, Consulting Project Manager, Heritage and Social Impact Specialist
<b>C) Nzumbululo Holdings (Pty) Ltd</b>	<b>April to May 2012</b>
<b>Position Held:</b>	Division Manager: Environment and Sustainability Department
<b>Location:</b>	Midrand, Johannesburg, South Africa
<b>Responsibilities:</b>	<ul style="list-style-type: none"> <li>• Business development (marketing, tendering and responding to RFQs)</li> <li>• Managing department budget and team specialist</li> <li>• Coordination and management of Basic Assessments and EMPs for road development for Limpopo Road Agency</li> <li>• Coordination and management of heritage projects - including grave relocation projects</li> <li>• Coordination and management of social impact projects</li> </ul>

issues the management of heritage and social issues in environment and engineering projects - processes and legislation

- Management of document pathway with authorities.

<b>Employer</b>	<b>Dates:</b>
<b>D) PGS Heritage (Pty) Ltd</b>	<b>October 2010 to February 2012</b>
<b>Position Held:</b>	Heritage Consultant and Community Liaison Officer
<b>Location:</b>	Waverley, Pretoria, South Africa
<b>Responsibilities:</b>	<ul style="list-style-type: none"><li>• Management of heritage and grave relocation projects</li><li>• Community Liaison – consulting and facilitating multi-stakeholder relations in projects that involve community and grave relocation in Mpumalanga Province i.e. clients included <b>Eskom Kusile Power Station (clearing ground for Kusile Power Station), Xstrata, Glencoe, Anglo, BHP Billiton and Anglo Coal.</b></li><li>• Management of document pathway with authorities.</li></ul>

<b>E) Khanya College (NPO)</b>	<b>April to October 2010</b>
Position Held	Associate Researcher and History Programs Facilitator
Location	Johannesburg, South Africa
Responsibilities	<ul style="list-style-type: none"><li>• This job formed part of Khanya College and Workers Museum History Programme; it involved researching socio-cultural and socio-economic issues affecting previously disadvantage communities in South Africa with a particular focus on Migrant Labour (ML) issues; their forms of social organization, resistance, their socio-cultural and economic dynamics e.g. disruption of their pattern of life and livelihoods as the result of migration and political system in South Africa.</li><li>• Assisting Khanya College with capacity building in community empowerment workshops.</li><li>• Assisted Khanya College with the development and administration of a Monitoring and Evaluation Programme (MEP) for its Annual Winter School (NGO conference &amp; workshops).</li></ul>

Assisting with field research/interviews in socio-cultural and economic programmes as part of Khanya College and the Workers Museum History Programme aimed at conserving and promoting histories and heritage of migrant labour in South Africa.

**F) South Africa Heritage      March 2009 to March 2010**

**Resources Agency  
(SAHRA)**

Position Held                      Cultural Heritage Officer (**Built Environment**)

Location                              Johannesburg (80%) and Cape Town (20%)

- Responsibilities
- Adjudication of heritage Impact assessment (HIAs), archaeological impact assessments (AIAs), palaeontological impact assessments (PIAs) and environmental impact assessments (EIAs) studies submitted to the SAHRA.
  - Adjudication of heritage permits and grave relocation permits.
  - Fostering relations between SAHRA, developers and Civic organisations on the management of cultural resources in South Africa.
  - Advising developers to strategically incorporate heritage resources into their projects as a form of conservation measure e.g. development of integrated heritage management plans and/or conservation management plans.
  - Managing the Cradle of Humankind World Heritage Site (COHWHS) in association with the Management Authority, the Gauteng Department of Economic Development and the Gauteng Department Agriculture and Rural Development.

<b>Employer</b>	<b>Date:</b>
<b>G) School of Geography, Archaeology &amp; Environmental Studies</b>	<b>April 2008 to February 2009</b>

Position Held Collections Manager

Location Johannesburg, South Africa

- Responsibilities
- Development and management of archaeology collections database/repository using Vernon Collection Management System.
  - Development of Archaeology Department collections management policies
  - Establishment and implementation of safety and security measures for the protection and conservation of Wits archaeology collections by liaising with different stakeholders.
  - Preparation of collection for education and research purposes.

<b>H) Synergistics Environmental Services (Pty) Ltd</b>	<b>2004 to 2006 (Part-time basis)</b>
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Position Held Community Liaison Officer

Location Johannesburg, South Africa

- Responsibilities
- Management of multi-stakeholder relations in application of mining rights, environmental impact assessments and public participation in kwaNongoma, South Africa.

<b>I) Sumo Coal (Pty) Ltd</b>	<b>2006 to 2006 (Part-time basis)</b>
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Position Held Public Participation and Community Liaison Officer

Location Johannesburg, South Africa

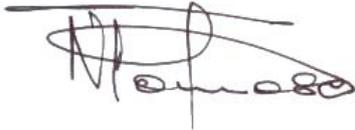
- Responsibilities
- Management of multi-stakeholder relations in the environmental management process for the development of application of mining rights, environmental impact assessments and public participation in Midrand, South Africa.

### **15. Conference Papers Presented And Manuscripts Published:**

Nkosinathi, G. Tomose, 2010. Challenges and Opportunities in Managing Multi-Stakeholder Interests in World Heritage Site: *A Case of the Cradle of Humankind World Heritage, South Africa*. Conference Presentation in Beijing, Peoples Republic of China.

### **15. Certification**

- I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes my qualifications and my experience. Furthermore, I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged on projects with the client.
- Finally, I hereby confirm my availability to commence work on any of your projects, from **08/January/2018**

A handwritten signature in black ink, appearing to read 'G. Tomose', with a horizontal line above it.

**Signature**



**Education**

*BSc. Eng (Civil) , University of Cape Town, Cape Town , 1996*

**Languages**

*English – Fluent*

*Afrikaans – Fluent*

**Golder Associates Africa (Pty.) Ltd. – Johannesburg**

**Surface Water Group - Civil Engineer**

Conduct storm water planning and modelling, provide civil engineering input to storm water designs, provide technical support to junior staff, mentoring and supervision, provide review capacity, project management and administration, provide linkage between engineering team and water resources group.

**Water Engineering Division - Civil Design Engineer**

Civil Engineer in the Water Engineering Division. Tasks and responsibilities include civil engineering design and review, feasibility studies, project management, construction supervision, tender preparation, mentoring and administration.

**Mining Infrastructure and Waste Division – Civil Design Engineer**

Civil Engineer in the Mining Infrastructure and Waste Division. Tasks and responsibilities include civil engineering design, feasibility studies, project management, construction supervision, tender preparation, mentoring and administration.

**Surface Water and Closure Division - Civil Design Engineer**

Civil Engineer in the Surface Water and Closure Division. Tasks and responsibilities included mine closure cost estimates and mine rehabilitation planning and project management.

**Water Engineering Division - Civil Design Engineer**

Civil Engineer in the Water Engineering Division. Tasks and responsibilities included civil and hydraulic design (pipe and pump), project management, involvement in tender and construction, project cost estimation, feasibility studies, development and administration.

**Employment History**

**Golder Associates Africa (Pty) Ltd – Midrand and Pretoria, Gauteng, South Africa**

*Civil Design Engineer (September 2002 to Present)*

Civil Engineer in the Water Engineering Division. Tasks and Responsibilities include Civil Engineering Design, Project Management, Involvement in Tender and Construction, Project Cost Estimation, Business Development, Marketing, Site Supervision, and Administration.

**Wates, Meiring and Barnard Consulting Engineers (Pty) Ltd – Midrand, Gauteng, South Africa**

*Civil Design Engineer (September 2001 to August 2002)*

Civil Engineer in the Water Engineering Division. Tasks and Responsibilities included Civil and Hydraulic Design (pump and pipe), Project Management, Involvement in Tender and Construction, Site Supervision, Project Cost Estimation, Development and Administration

**National Department of Water Affairs and Forestry – Pretoria, Gauteng, South Africa**

*Engineer (2000 to August 2001)*



Civil Engineer in the Sub-Directorate: Structural Studies. Tasks and Responsibilities included Structural Analysis of bulk water facilities using the Finite Element Method, compilation of Design and Analysis Reports, Development and Administration.

***National Department of Water Affairs and Forestry – Gauteng, South Africa***

*Assistant Engineer (April 1998 to 1999)*

Civil Engineer in the Sub-Directorate: Structural Studies. Tasks and Responsibilities included Structural Analysis of bulk water facilities using the Finite Element Method, compilation of Design and Analysis Reports, Development and Administration

***National Department of Transport – Gauteng, South Africa***

*Assistant Engineer (January 1997 to March 1998)*

Civil Engineer in the Sub-Directorate: Pavement Management Systems and member of the Department of Transport Engineer in Training Design Team. Responsibilities included Civil Design, Feasibility Studies, Review, Compilation of Reports, Development and Administration.



## PROJECT EXPERIENCE – INFRASTRUCTURE

- McCain Foods - Storm water management plan**  
Mpumalanga, South Africa  
Prepare tender designs for conveyance of water discharged from plant areas. Includes runoff modelling, hydraulic calculations and civil engineering design.
- Yanfolila TSF - conceptual design**  
Yanfolila, Mali  
Conduct runoff calculations and sizing of storm water interception / diversion works and flood peak for Phase 1 and Phase 2 TSF spillway.
- Vanchem Vanadium Products - Detail Design of Calcine Disposal Facility Extension**  
Mpumalanga, South Africa  
Detail civil engineering design of extensions to lined calcine disposal facilities and storm water pond. Included role of project manager and design lead. also presentation to Department of Water and Sanitation. Tender process and technical tender evaluation.
- McCain Foods Delmas - Conceptual Storm Water Management**  
Mpumalanga, South Africa  
Upgrades and improvements to Oil Offloading Area to keep oil spills out of storm water, and general surfacewater management interventions
- Steyn City Estate Development**  
Gauteng, South Africa  
Develop concepts for the construction of a weir across the Jukskei River, for water use licence and environmental approval.

## PROJECT EXPERIENCE – MINING

- Acacia Bulyanhulu Mine - Conceptual Design and Costing: - dam lining**  
Bulyanhulu, Tanzania  
Conceptual engineering for dam liners, including technical memo and costing.
- Vale Moatize Coal**  
Tete, Mozambique  
Conduct design of in-pit disposal of coarse rejects and waste rock mine waste streams.
- Vanchem Vanadium Products - Options Analysis for Next Phase Development**  
Ferrobank, Mpumalanga, South Africa  
Conduct an options analysis for determining the optimal extension of the calcine dump, based on the conceptual design. Project elements included PCD sizing for 3 options, capacity analysis and cost estimate for development (capital).
- Vanchem Vanadium Products - Remaining Capacity Analysis**  
Ferrobank, Mpumalanga, South Africa  
Determination of remaining airspace volume and life of facility, using aerial survey and by estimating average deposition rates.



**Vale Moatize Coal -  
Product Stockpile, Run  
of Mine Stockpile and  
Waste Dump**  
Tete, Mozambique

Provide professional review capacity for engineering development of dumps.

**Msobo Coal - pollution  
control dam -  
Integrated Water Use  
Licence Application**  
Mpumalanga, South  
Africa

Prepare conceptual details of pollution control dam for support of IWULA.  
Present to Inkomati Catchment Management Agency.

**Anglogold Ashanti  
West Wits Mponeng  
Shaft PCD Upgrade**  
Gauteng, South Africa

Design of new PCD including upgrade of surface water collection system, earthworks, liners, ancillary works etc. To tender level. Includes engineering drawings, specifications, schedule of quantities and cost estimate.

**Vale Moatize Coal -  
Conceptual and Detail  
Design Phases**  
Tete, Mozambique

Detail design of all aspects relating directly to the waste and product stockpiles including platform design, drainage design, consideration of spontaneous combustion, modelling, leachate management.

**Vanchem**  
Mpumalanga, South  
Africa

Design of infrastructure for a new calcine disposal and slimes disposal facility for Vanchem, various infrastructure including earthworks, liners and PCD works.

**Waterval Domestic  
Waste Facility**  
Rustenburg/Limpopo,  
South Africa

Design of all aspects of waste domestic waste disposal facility for Rustenburg Local Municipality including services, earthworks, liners and water management.

**Anglo American  
Thermal Coal**  
Waterberg Degassing  
Project, South Africa

Conceptual Engineering Design of infrastructure related to the energy from gas project including earthworks, storm water and separation, services and ancillary works.

**SAPPI Ngodwana**  
Design of Macrodump  
Extension, South Africa

Prepare detail design of the macrodump extension at SAPPI Kraft Mill in Ngodwana, Mpumalanga, South Africa. Included earthworks, storm water, cell liners, access, separation systems and ancillary works. Lead in design team.

**BHP Billiton Energy  
Coal SA Limited**  
Middelburg Mines - Mine  
Water Reclamation  
Facility, South Africa

Conceptual Engineering Design for the Waste Disposal Facilities (sludge and brine) and ancillary works.

**BHP Billiton Energy  
Coal SA Limited**  
Rietspruit Mine  
Rehabilitation

Member of design team responsible for ongoing design, site assessments, designer input to quality assurance and ongoing construction team support. An EPC type project.

**Amoma Mine**  
Ghana, Ghana

Detail design of storm water management and ancillary works, remote site support and ongoing design and testing input during the construction phase, assistance in materials procurement and manufacturing. Member of design team.



<b>Amoma Mine</b> Ghana, Ghana	Conceptual design and costing assistance for storm water management, and environmental protection measures for proposed Amoma mine in Ghana.
<b>Goldfields Kloof Mine</b> Carletonville, South Africa	Design, tender and site assistance for construction of upgrades to Kloof Plant 1 and Plant 2 return water dams.
<b>Exxaro Coal (Matla)</b> Ogies, South Africa	Remediation design in terms of drainage, involvement also in tender and site assistance aspects.
<b>ASA Metals</b> South Africa	Design, tender and site assistance relating to the construction of infrastructure for ASA Metals mine and smelter including storm water, sewer and water supply.
<b>Africon</b> Tete, Mozambique	Design and tender aspects relating to infrastructure for new coal mining development in Tete, Mozambique, Golder as sub-consultant to Africon.
<b>Exxaro Coal (Matla)</b> Ogies, South Africa	Design, tender and site supervision for construction of river diversion of the Rietspruit River.
<b>Anglo Coal</b> Mpumalanga, South Africa	Design and tender involvement for new return water dams and associated infrastructure at Greenside Colliery.
<b>BHP Billiton Energy Coal SA Limited</b> Middelburg, South Africa	Tender Design Stage: - analysis and design for raw water abstraction works, gravity pipeline to water reclamation plant and intake tower. Construction Design Stage: - design and tender involvement for sludge and brine disposal facility and associated works, as well as part-time site supervision.
<b>BHP Billiton Energy Coal SA Limited</b> Middelburg, South Africa	Conduct system analysis and design for a small floating pump station to transfer raw mine water from an evaporation dam to a passive treatment plant steel reservoir. Prepare drawings, pipe schedules and assist with measurement of tender quantities.
<b>AngloGold Ashanti Limited</b> West Wits and Orkney, South Africa	Conduct rehabilitation planning for eleven sites on the AngloGold Ashanti Limited West Wits and Vaal River operations. This involved extensive site reconnaissance, project management and reporting. The deliverables were eleven rehabilitation planning reports which incorporated situational descriptions of the sites and rehabilitation plan. Detailed cost estimates for implementation were also provided.
<b>Highveld Steel and Vanadium Corporation</b> <b>Mapochs Mine</b> Roosenekal, South Africa	The closure and rehabilitation cost estimate and report were prepared for the plant and opencast mining areas of the mine. This included on-site assessment of closure components and preparation of closure cost in line with regulatory guidelines and requirements.



- Goldfields Beatrix Mine**  
Virginia, South Africa
- The closure and rehabilitation cost estimate and report were prepared for four shafts and two gold plants of the mine. This included on-site assessment of closure components and preparation of closure cost in line with regulatory guidelines and requirements.
- De Beers Finsch Mine**  
Lime Acres, South Africa
- The project involved the engineering design, specification and tender process of the mechanical and civil components of the return water system, including a barge pump system, a return water pump station and return water pipeline.
- Sappi Ngodwana Mill**  
Ngodwana, South Africa
- The project entailed collection of spring (“Eye”) water, transfer to treatment facilities, and distribution. Personal involvement included collection system, plant layout and distribution in the disciplines of pumping, piping and civil works. The project was done at the level of preliminary design and cost estimate.
- Olifantsvlei Water Treatment Plant**  
Johannesburg, South Africa
- Conducted a water hammer analysis for the new sludge pump station and pipeline system.
- Sappi Ngodwana Mill**  
Ngodwana, South Africa
- As a member of a multi-disciplinary team, conducted Civil and Piping design for the Effluent Reduction Project Phase 1: Distribution System. The work involved upgrading the mill treatment plant, recycling process water to a new reservoir and distributing the water back into the mill process. Personal involvement included industrial site investigation in brown field’s conditions, rising main analysis and design, pump selection, reticulation design and water hammer analysis.
- Sunderland Ridge Waste Water Works**  
Centurion, South Africa
- Initiated layout and design of civil work for the new anaerobic digester facility.
- Kimberley Diamond Mine**  
Kimberley, South Africa
- Conducted preliminary design of roads and potable water diversion for the new rock dump facility at Kimberley Diamond Mine.
- Extensions to Mothotlung WWTP**  
Northwest Province, South Africa
- Was appointed Resident Engineer for full time site supervision during the construction phase of the Waste Water Treatment Plant at Mothotlung Township.
- Kingston Vale Hazardous Waste Disposal Site**  
Nelspruit, South Africa
- Was member of a design team; design of main and secondary access roads, relocation of farm irrigation, dust suppression and water services for farm labourers.
- Sadiola Gold Mine Treatment Works**  
Western Mali
- Was involved in design review.
- King Dinizulu Effluent Treatment Plant**  
Eshowe, South Africa
- Was involved in aspects of detailing and design for the plant layout and biological reactor.



**Zheng Yong Garment  
Factory Effluent  
Treatment Works**  
Swaziland

Was tasked with drawing and design for the pumping, piping and civil structure for the Sand Filter Installation at the water treatment works for the garment factory.

**Ephes Mamkele  
Primary School**  
Wattville, South Africa

Was involved in detailing and design for various aspects of the school layout and facilities, including management of storm water.

**Kgolagano Primary  
School**  
Benoni, South Africa

Was involved in detailing and design for various aspects of the school layout and facilities, including management of storm water.

**Luvuvhu River G.W.S.**  
Luvuvhu WMA, , South  
Africa

Tasked with reinforcement and detailing for a concrete pipe junction box.

**Spring Grove Dam**  
Mooi River, South Africa

Conducted a 2D stability analysis for earthquake loads using a DOS based analysis package and confirmed results using a commercially available module. The work was conducted for an in-house client for whom a letter was drafted to report on the findings of the analysis.

**Finite Element  
Analysis**  
Various, South Africa

Conducted Finite Element Analysis and prepared Analysis Reports for the following dams and structures:

Welbedacht Dam  
Thabina Dam  
Dasbos Tunnel Plug  
Lindleyspoort Dam  
Pongolapoort Dam  
Der Brochen Dam Intake Tower  
Oukloof Dam

**National Route 1: Hex  
River Pass**  
Western Cape, South  
Africa

Was tasked with the preliminary design and cost estimate for geometric improvements to "Spookdraai" on National Route 1, known for accidents due to "hairpin bend", particularly amongst heavy vehicles.

**National Route 10  
Section 3**  
Cradock, South Africa

A portion of the N10 Section 3 passes by a stretch of rock face immediately adjacent to the roadway. A history of rock falls and increasingly unstable conditions in the rock face required planning and development of remedial measures, preliminary design and costing and selection of alternatives. Formed part of the Design Team involved in this project.



## PROFESSIONAL AFFILIATIONS

Professional Engineer (Pr Eng) Engineering Council of South Africa (ECSA)

Geosynthetic Interest Group of South Africa (GIGSA)

South African Institution of Civil Engineers (MSAICE)

Water Institute of South Africa (MWISA)

## PUBLICATIONS

### Conference Proceedings

JORDAAN, JOHAN and FRANCOIS MARAIS. 2014. *THE VANCHEM WASTE DISPOSAL FACILITY, A PHASED DEVELOPMENT APPROACH OF A VANADIUM HAZARDOUS WASTE SITE*. SAICE 5th INTERNATIONAL MINING AND INDUSTRIAL WASTE MANAGEMENT CONFERENCE, MARCH. RUSTENBURG, SOUTH AFRICA.



## **Golder Associates Africa (Pty.) Ltd. – Johannesburg**

### ***Water Resource Scientist, Water Division***

Lee Boyd is a Water Resource Scientist in the Surface Water Team, Water Division of Golder Associates Africa (Pty) Ltd. Lee gained her professional experience in the field of water quality management with particular emphasis on wastewater related issues and nutrient management. Lee has also been the project manager on several catchment management projects including the development of an Integrated Water Quality Management Plan for the Olifants Water Management Area and the development of a Catchment Management Strategy for the Breede-Gouritz Water Management Area. She has worked closely with stakeholders from various sectors in these catchment studies. She is a Water Institute of Southern Africa (WISA) fellow, was on the WISA Board and WISA Water Scientists Committee for several years.

### **Education**

*BSc. Biological Sciences,  
University of the  
Witwatersrand  
Johannesburg, 1987*

*BSc. Honours, University of  
the Witwatersrand  
Johannesburg, 1990*

*MSc. Water Utilisation,  
University of Pretoria, 1994*

### **Languages**

*Afrikaans – Fluent*

*English – Fluent*

## **Employment History**

### ***Department: Water Affairs and Forestry – Pretoria, South Africa***

*Deputy Director, Resource Protection and Waste: Local Government and Water Service Institutions (2005 to 2006)*

Overall planning, quality control, and oversight to ensure consistency with the issuing and review of Water Use Authorisations, including co-operative authorisations with DEAT and DME (marine outfall, waste disposal, EMPR), and the implementation of Interventions for non-compliance and the development and consistent implementation and review of Policy and Regulatory Instruments.

### ***Department: Water Affairs and Forestry – Pretoria, South Africa***

*Assistant Director, Water Quality Management, Urban development and Agriculture (1998 to 2005)*

Development of policy, strategies, procedures and guidelines to ensure compliance to the relevant legislation as contained in the relevant sections of the National Water Act.

### ***Cydna Laboratories (Jhb City Council) – Johannesburg, South Africa***

*Registered Scientist (1996 to 1998)*

The post included water pollution control issues including research as required, eg disinfection studies, gas works remediation studies, odour studies.

### ***Northern Works STW (Jhb City Council) – Johannesburg, South Africa***

*Registered Scientist (1993 to 1996)*

The post included routine laboratory analysis, development of new analytical techniques, research activities with respect to plant optimisation for the biological nutrient removal process

### ***Cydna Laboratories (Jhb City Council) – Johannesburg, South Africa***



*Registered Scientist (1988 to 1992)*

This was the first position held after completing studies and involved research projects on viruses in sewage, anaerobic digestion, leachate studies, biological phosphate removal studies and routine lab work.



## PROJECT EXPERIENCE – WATER RESOURCES

- |  |   |
|--|---|
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | Update of the 1996 Water Quality Guidelines for Domestic Use  |
| <b>Golder Associates<br/>Africa</b><br>Mpumalanga/ Limpopo,<br>South Africa              | Development of an Integrated Water Quality Management Plan for the Olifants Water Management Area   |
| <b>Golder Associates<br/>Africa</b><br>Western Cape, South<br>Africa                     | Development of a Catchment Management Strategy for the Breede-Gouritz Water Management Area   |
| <b>Golder Associates<br/>Africa</b><br>Gauteng/North<br>West/Mpumalanga,<br>South Africa | Implementation of the Waste Discharge Charge System in the Upper Olifants and Upper Vaal catchments   |
| <b>Golder Associates<br/>Africa</b><br>Gauteng/NorthWest/Lim<br>popo, South Africa       | Classification of significant water resources in teh Crocodile (West)/Marico WMA and the Mokolo and Matlabas catchments of the Limpopo WMA. |
| <b>Golder Associates<br/>Africa</b><br>Gauteng and Free State,<br>South Africa           | Development of Resource Quality Objectives for the Middle Vaal  |
| <b>Golder Associates<br/>Africa</b><br>Mpumalanga, South<br>Africa                       | Update on the water resources requirements in the Highveld coalfields   |
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | A water resources, water supply and water requirements assessment of the Highveld Coalfields area of the Upper Olifants catchment           |
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | Development of an inspection guideline for wastewater treatment works   |
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | Technical review of the AngloGold Ashanti Vaal River and West Wits operations wastewater treatment works                                    |
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | Implementation of an integrated water quality management model  |
| <b>Golder Associates<br/>Africa</b><br>Gauteng, South Africa                             | Development of a framework for the integration of water resources and potable water quality   |



**Golder Associates  
Africa**  
Johannesburg, South  
Africa

Development of a guideline for package plants for Johannesburg Water

## PROJECT EXPERIENCE – VARIOUS

**Golder Associates  
Africa**  
Johannesburg, South  
Africa

Development of Integrated water and waste management plans and integrated water use licence applications for various mines and industries

**Golder Associates  
Africa**  
Johannesburg, South  
Africa

The Manual of Guidelines on the Management of EDCs in Water Resources  
Volume 4: Management Options for EDCs in Catchments

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Development of an intervention and support protocol for non-compliant Local Authorities in the wastewater sector

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Development of an emergency protocol for water related diseases.

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Development of Waterworks regulations in terms of the National Water Act, 1998 and associated qualifications

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Phase 1 of the development of a Nutrient management strategy for South Africa.

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

A Strategy to manage the water quality effects from densely populated settlements – the approach used as well as the implementation of the strategy in the informal settlement on the banks of the Klip River as it passes through the wetlands.

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Audit of the Northern Province Water Resources Management with particular reference to sewage works operations.

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Development of Unit Standards for the Wastewater industry

**Department of Water  
Affairs and Forestry**  
Pretoria, South Africa

Development of an Aide Mēmoire for Sewage Works

**Cydna Laboratories,  
Johannesburg City  
Council**  
Pretoria, South Africa

Rehabilitation studies at an old gas works site in Johannesburg.



**Cydna Laboratories,  
Johannesburg City  
Council**  
Pretoria, South Africa

Research into percentage readily biodegradable COD in various industrial effluents discharged to sewer.

## PROFESSIONAL AFFILIATIONS

Senior Fellow of the Water Institute of Southern Africa

## PUBLICATIONS

### Other

Boyd, L. and Tompkins, R.(2011) 'A New Mindset for Integrated Water Quality Management for South Africa', International Journal of Water Resources Development, 27: 1, 203 — 218

Boyd L and Tompkins R. A conceptual model for integrated water quality management in South Africa, Drinking Water Quality Conference, May 2009, South Africa

Mc Donald L.A. and Theron P.F. "Towards a Microbiological Indicator for Leachates" Presented at the International Conference on Waste management in the Nineties, Tenth Conference, 1990, South Africa.

Boyd L.A. and Lötter L.H. "The Effect of Chemical Addition on Biological Phosphate Removal" Presented at the WISA conference, May 1993, South Africa.

Pitman A.R. and Boyd L.A. "Transforming Local Government Wastewater Departments – from Adversary to Industrial Partner", Presented at the IAWQ Conference Chemical and Process Industries and Environmental Management, Cape Town, 8 to 10 September 1997, South Africa.

Boyd L.A. "Poster Relating to Filamentous Bacteria in Three Johannesburg Wastewater Treatment Works" presented at the first International Specialised Conference on Micro-organisms in Activated Sludge Processes, September 1993, Paris, France.

Boyd L.A. "Poster entitled: Managing the Water Quality Effects from Settlements" presented at the International Symposium Frontiers in Urban Water Management, Deadlock or hope? June 2001, Marseille, France.

Boyd L.A. "Waterworks Regulations" Afriwater 2003, South Africa.

Boyd L.A. "Waterworks Regulations in Terms of the National Water Act" WISA 2004, South Africa.



Boyd L.A. “Diffuse Pollution in an Urban Context and its Management under the National Water Act” IAWWISA Specialist Conference, August 2005, South Africa.

Kasselman G. and. Boyd L.A. The Integrated Authorisation of Effluent and Residues Emanating from the Treatment of Domestic Wastewater and Potable Water under the National Water Act”, IAWWISA Specialist Conference, August 2005, South Africa.



## Yonanda Martin Pri Sci Nat

Tel: 27 11 462 6967

Fax: 27 86 443 9170

[www.newla.co.za](http://www.newla.co.za)

yonanda@newla.co.za

*B.Sc Degree in Environmental Science from the University of North West, Potchefstroom Campus (2003). M.Sc Degree in Ecological Remediation and Sustainable Utilization from the University of North West, Potchefstroom Campus (2007). She is currently employed by Newtown Landscape Architects working on the following projects.*

### **EXPERIENCE: Associate / Senior Environmental Practitioner - NEWTOWN LANDSCAPE ARCHITECTS CC**

Responsible for the management and writing up of environmental projects, which includes Basic Assessments, Environmental Impact Assessments (Scoping & EIA), Environmental Management Programmes (EMPr), Environmental Monitoring, Water Use Licenses as well as Visual Impact Assessments.

#### **Current Projects:**

##### **Environmental Projects**

- **Diepsloot East Residential Development, Diepsloot.** Environmental Impact Assessment, Environmental Management Programme, Water Use License and management of specialist.
- **Lindley Waste Water Treatment Works, Mogale City Local Municipality** project located in Lindley / Lanseria. Environmental Screening, Environmental Impact Assessment, Environmental Management Programme and Water Use License Application and management of specialist.
- **African Leadership Academy, Laser Park, Johannesburg.** This project entails the rectification of activities undertaken by ALA as well as the compilation of an overall Environmental Management Programme (EMPr) that addresses current environmental concerns on campus but also future projects such as recycling, rain water harvesting, vegetable gardens and events.
- **Orchards Extension 50-53, Orchards.** The project includes the construction of a residential development. The project includes monitoring of the environmental conditions as well as the appointment of sub-consultants for rehabilitation purposes.
- **Kareekloof Oxidation Ponds, Suikerbosrand.** This project entails the environmental monitoring during construction and rehabilitation of the project.

##### **Visual Impact Assessments**

- **Holfontein Integrated Waste Management Facility Project (SLR Consulting (Pty) Ltd), Holfontein, Gauteng Province**

- **Eskom Arnot Ash Dump Project** (Environmental Impact Management Services), Rietkuil, Mpumalanga Province
- **Kalkheuwel Housing Development** (ECO Assessments), Kalkheuwel, North-West Province
- **Kyasand Light Industrial Project** (Terre Pacis Environmental), Kyasand, Gauteng Province

## **PROFESSIONAL**

### **AFFILIATIONS:**

Registered Professional Natural Scientist – 400204/09 (September 2009)  
 Member of IAIAAsa  
 IAIAAsa Gauteng Branch Chair 2016/17

### **EDUCATION:**

Environmental Law Training, Business Success Solutions (2016)  
 Invasive Species Training: Module 1 – Introduction to Legislation, South African Green Industries Council (SAGIC) (2016)  
 Invasive Species Training: Module 2 – Developing and Implementing Control Plans, South African Green Industries Council (SAGIC) (2016)  
 Invasive Species Identification Training Workshop, South African Green Industries Council (SAGIC) (2015)  
 Sharpening the Tool: New techniques and methods in Environmental Impact Assessment, SE Solutions (2014)  
 First Aid Level 1, Action Training Academy (2014)  
 Supervisory Management, ISIMBI (2011)  
 Public Participation Course, International Association for Public Participation, Golder Midrand (2009)  
 Wetland Training Course on Delineation, Legislation and Rehabilitation, University of Pretoria (2008)  
 Environmental Impact Assessment: NEMA Regulations – A practical approach, Centre for Environmental Management: University of North West (2008)  
 Effective Business Writing Skills, ISIMBI (2008)  
 Short course in Geographic Information Systems (GIS), Planet GIS (2007)  
 M.Sc Degree in Ecological Remediation and Sustainable Utilization, University of North West, Potchefstroom Campus (2007)  
 Thesis: Tree vitality along the urbanization gradient in Potchefstroom, South Africa.  
 B.Sc Degree in Environmental Science, University of Potchefstroom (2003)



# Jones & Wagener

Engineering & Environmental Consultants

59 Bevan Road PO Box 1434 Rivonia 2128 South Africa  
tel: 0027 11 519 0200 www.jaws.co.za email: post@jaws.co.za

## CURRICULUM VITAE

18 January 2017  
vanzyl\_generalcv\_jan2017

## MARIUS VAN ZYL

<b>Profession:</b>	Environmental Management
<b>Date of Birth:</b>	4 July 1955
<b>Position in firm:</b>	Technical Director
<b>Years with the firm:</b>	8
<b>Nationality:</b>	South African
<b>Education / Qualifications:</b>	B.Sc. Honours (Biochemistry & Environmental Management)
<b>Languages:</b>	English, Afrikaans
<b>Employers:</b>	
AECI (Pty) Ltd	1980
Rand Afrikaans University	1981 - 1984
Department of Water Affairs and Forestry	1984 - 1994
Jarrold Ball & Associates cc	1994 - 2005
Golder Associates Africa (Pty) Ltd	2005 - 2010
Jones & Wagener Consulting Civil Engineers (Pty) Ltd	2010 -



### Areas of Expertise:

Integrated environmental authorisation processes, Environmental Impact Assessments and Environmental Management Programmes (EMPr's), Water Use Licence applications; Integrated Water and Waste Management Plans (IWWMPs); licensing of waste management facilities, identification and evaluation of candidate waste disposal sites; waste and residue characterisation, classification and assessments; waste and water management facility monitoring, interpretation of results and auditing; integrated environmental management solutions, public participation.

### Professional Affiliations:

Registered Professional Natural Scientist (Pr.Sci.Nat.)

Member of the Institute of Waste Management of Southern Africa (IWMSA)

Member the International Association of Impact Assessors (South African Branch) (IAIAAs)

**JONES & WAGENER (PTY) LTD** REG NO. 1993/02655/07 VAT No. 4410136685

**DIRECTORS:** PW Day (Chairman) PrEng MSc(Eng) HonFSAICE D Brink (CEO) PrEng BEng(Hons) FSAICE PG Gage PrEng CEng BSc(Eng) GDE MSAICE AStructE JP van der Berg PrEng PhD MEng FSAICE TT Goba PrEng MEng FSAICE GR Wardle (Alternate) PrEng MSc(Eng) FSAICE

**TECHNICAL DIRECTORS:** JR Shamrock PrEng MSc(Eng) MSAICE MIWMSA JE Glendinning PrSciNat MSc(Env Geochem) NJ Vermeulen PrEng PhD MEng MSAICE A Oosthuizen PrEng BEng(Hons) MSAICE HR Aschenborn PrEng BEng(Hons) MSAICE M van Zyl PrSciNat BSc(Hons) MIWMSA MW Palmer PrEng MSc(Eng) AMSAICE TG le Roux PrEng MEng MSAICE

**ASSOCIATES:** BR Antrobus PrSciNat BSc(Hons) MSAIEG AJ Bain BEng AMSAICE PJJ Smit BEng(Hons) AMSAICE R Puchner PrSciNat MSc(Geol) IMSAIEG MAEG M van Bijlont MSc(Hydrogeology) JS Msiza PrEng BEng(Hons) MSAICE MIWMSA RA Nortjé PrEng MScEng MSAICE MIWMSA GB Simpson PrEng MEng MSAIAE

**CONSULTANT:** JA Kempe PrEng BSc(Eng) GDE MSAICE AStructE

**FINANCIAL MANAGER:** HC Neveling BCom MBL



**Relevant Experience:**Integrated Environmental Authorisation Processes, Impact Assessments, EMPr's, Water Use Licence Applications and IWWMPs:

**Kuyasa Mining: KiPower IPP Project, Delmas, South Africa:** Project director of the multi-disciplinary team responsible for the integrated environmental authorisation, waste management licence and atmospheric emissions licence processes for the development of an Independent Power Producer (IPP) power plant and associated ash disposal facility. The project also involved the compilation of the Integrated Water Use Licence Application (IWULA) and the required Integrated Water and Waste Management Plan (IWWMP). In addition, assistance is being given for the preparation of the BID to be submitted to the Department of Energy (2010 – current).

**BHP Billiton Energy Coal South Africa, Middelburg Mines:** Project manager for the integrated environmental authorisation process for the Middelburg Water Reclamation Project (2010 – 2012).

**BHP Billiton Energy Coal South Africa, Wolvekrans Colliery:** Project manager of the multi-disciplinary team responsible for the environmental authorisation process for the expansion of the Boschmanskrans Section of the colliery. The project also involved the drafting of an Integrate Water and Waste Management Plan (IWWMP), as well as the Integrated Water Use Licence Application (IWULA) (2011 – 2014).

**Lonmin Platinum, PMR Refinery, Brakpan, South Africa:** Project director of the team responsible for the environmental authorisation process for the development of a new waste incinerator for Lonmin's PMR Refinery. The project also involves the drafting of the required Waste Management Facility Licence Application Report and EMPr. (2012 – current).

**Kynoch Fertilizers, Potchefstroom, South Africa:** Project leader for the environmental scoping and feasibility study of a storm water containment dam for Kynoch's Potchefstroom Factory. The project was carried out in association with AEMS and Hobbs Consulting. Project leader for site remediation investigation projects at Kynoch Fertilizer's Potchefstroom Factory and fertilizer depots in various locations in South Africa.

Waste Disposal Facility Licensing, Remediation and Upgrading:

**Sappi Kraft Ltd – Enstra Mill, Springs, South Africa:** Project leader for the drafting of the motivation for the extension of the Sappi Enstra Landfill Site. The project involved the development of a revised landform by the Jones & Wagener's engineers, as well as input by Kobus Otto and Associates (2011).

**Manganese Metal Company (MMC), Nelspruit, South Africa:** Project manager for the remediation and closure of the informal Pappas Quarry hazardous waste disposal site. Tasks involved the upgrading of the groundwater model, interim capping of the site, Basic Assessment for the site and compilation of the licence application report for closure (2008 – 2009).

**Sappi Kraft Ltd - Ngodwana Mill, Nelspruit, South Africa:** Developed the final landform and closure design for the Macrodump waste disposal facility in 1994/5 (Jarrod Ball & Associates). A motivation for the permitting of the site was compiled as part of the final landform design. Whilst employed by Golder Associates, fulfilled the role as project manager for the multi-disciplinary team involved in the extension of the Macrodump (2009 – 2010).

**Vanchem Vanadium Products (Pty) Ltd (VVP), eMalahleni (Witbank), South Africa:** Project manager for the identification and evaluation of candidate landfill sites, environmental impact assessment, preliminary and detailed design, and authorisation of the new calcine hazardous waste disposal facility for VVP. In order to evaluate the long-term performance of the liner system, source-pathway-receptor (SPR) modelling was undertaken as part of the feasibility study phase of the project (2007 to 2009).

**Simunye Sugar Estate, Simunye, Swaziland:** Identified, conducted an EIA and permitted a new waste disposal facility for the Simunye Sugar Estate in Swaziland. It involved the initial evaluation of the existing sites with a view to upgrading them. Public consultation was also undertaken as part of this project.

**Sappi Novobord Ltd: White River Plant White River, South Africa:** Investigated and compiled the permit application report with a view to closure of the Roodewal landfill site in association with other team members of Jarrod Ball & Associates cc.

**Lekoa Vaal Metropolitan Council: Boipatong Vanderbijlpark, South Africa:** Investigated and developed a remedial design and operating plan for the Boipatong landfill site. The landfill was remediated to minimise the negative public and environmental impacts it had been causing. The landfill operation was upgraded with a view to closure in accordance with acceptable landfill operating practices, while at the same time accommodating the operations of a large number of informal waste salvagers on the site. The needs of the local communities, industries and authorities have been taken into account by means of a Public Consultation Programme. The landfill was also audited on a regular basis after remediation.

**Transvaal Sugar Limited: Komati Mill Komatipoort, South Africa:** The project entailed the investigation, permitting, development and commissioning of the new Komati Mill landfill site (1994). It included the formulation of an operational and end-use plan. The project involved other members of Jarrod Ball & Associates cc. More recently involved in the auditing of the landfill on a regular basis with other members of Golder Associates Africa and Jones & Wagener (2012).

**Kynoch Fertilizer (Pty) Limited Potchefstroom, South Africa:** Project manager of the multi-disciplinary team involved in the investigation, environmental impact assessment, public consultation and permitting of Kynoch Fertilizers' hazardous gypsum tailings storage facility in association with Africon, AEMS, Jones & Wagener and Mc Trev Consultancy.

**Kynoch Fertilizers (Pty) Ltd, South Africa:** Project leader for site remediation investigation projects at Kynoch Fertilizer's Potchefstroom Factory and fertilizer depots at various locations in South Africa.

**Impala Platinum Limited Rustenburg, South Africa:** Project leader for the investigation, environmental scoping, environmental management plan and permitting of a new landfill site to serve Impala Platinum's Rustenburg Mine complex and the Royal Bafokeng Nation. Work was conducted in association with Mc Trev Consultancy, Groundwater Consulting Services and others.

**Thohoyandou Transitional Local Council, Thohoyandou, South Africa:** Responsible for the environmental scoping and permitting of the informal Thohoyandou landfill site (in association with Africon and Mc Trev Consultancy).

**Delta EMD (Pty) Ltd Nelspruit, South Africa:** Responsible for the application for an exemption in terms of Section 20(1) of the Environment Conservation Act for Delta EMD's hazardous waste Residue Treatment Facility. Currently involved in the annual audit of the treatment facility and usage of the treated residue.

#### Waste Disposal Strategies, Systems and Procedures:

**Eskom Holdings SOC, Medupi Power Station, Lephalale:** Project leader for the development of an IWMP for the construction phase of the power station. The project is carried out in association with Kobus Otto and Associates (2010 – 2012).

**Lonmin Platinum Group, South Africa:** Project leader for the development of an IWMP for the mining company's Marikana and Brakpan operations. The project is carried out in association with Kobus Otto and Associates (2011 – 2013).

**Optimum Colliery, Hendrina, South Africa:** Task manager for the investigations and evaluations into alternative disposal options for mine water treatment plant sludges containing gypsum (2009).

**Lekoa Vaal Metropolitan Council Vanderbijlpark, South Africa:** Developed a Regional Waste Disposal Strategy for the Lekoa Vaal Region. This included a status quo analysis in which the current and future waste streams were determined and the existing landfill sites were evaluated with a view to determining future disposal needs. The status quo was followed by the identification of candidate landfill sites, the development of a waste disposal strategy and a Feasibility Study and Environmental Scoping of the best candidate landfill site.

**Impala Platinum Limited Rustenburg, South Africa:** Developed a waste management policy and waste management procedures for various waste types for Impala Platinum's Rustenburg Mine

Complex. This was followed by the drafting of a detailed landfill operating plan for Impala Platinum's new waste disposal facility.

**Gauteng Department of Agriculture, Conservation & Environment Johannesburg, South Africa:** guideline document was developed for the development of IWMPs for usage by local authorities in Gauteng in association with other members of Jarrod Ball & Associates cc and other sub-consultants.

**Bojanala Platinum District Municipality Rustenburg, South Africa:** Assisted with the development of a strategic Integrated Waste Management Plan (IWMP) for the district municipality in association with other members of Jarrod Ball & Associates cc.

**Rustenburg Local Municipality Rustenburg, South Africa:** Assisted with the development of an IWMP for the municipality in association with other members of Jarrod Ball & Associates cc.

**Mangaung Municipality, Bloemfontein, South Africa:** Service standards for the municipality's waste disposal facilities were developed. The standards are used for the evaluation of contractors operating the waste disposal sites. The project involved the upgrading of waste management and disposal practices for the municipality. The project was carried out in association with other consultants.

#### Identification and Evaluation of Waste Disposal Sites:

**COWI, Viet Tri, Vietnam:** Assisted with the evaluation of a candidate landfill site earmarked for the development of a hazardous waste disposal facility in Phu Tho Province, Vietnam in association with COWI (2004). Developed a scope of work for the field investigations and design of the proposed facility.

**Sappi Ngodwana Mill Nelspruit, South Africa:** Identified and evaluated candidate landfill sites to serve the paper mill, associated infrastructure and residential areas. The project was conducted in association with other members of Jarrod Ball & Associates.

**Southern District Council Klerksdorp, South Africa:** The project involved the identification and evaluation of candidate landfill sites to serve the greater Klerksdorp, Orkney, Stilfontein area.

**Rustenburg Local Municipality Rustenburg, South Africa:** The project commenced with a pre-feasibility study of a candidate site identified by other consultants. This was followed by the identification and evaluation of additional candidate landfill sites in order to identify the most favourable site. The most favourable site was subjected to a feasibility study and environmental scoping exercise. The project was conducted in association with other members of Jarrod Ball & Associates and VAPI Consulting. The favoured site was successfully licensed by Golder Associates Africa in 2012.

#### Auditing and status quo analysis:

**Sappi Southern Africa (Pty) Ltd, Enstra Mill:** Conducted a due diligence assessment of the solid waste disposal site of the Sappi Enstra Mill (2015).

**Lonmin Platinum: Marikana:** Compliance audit of hazardous waste storage facility and two sewage works (2013, 2015).

**Sasol Synfuels – Secunda:** Compliance audit of the Waste Ash Disposal facility with other members of Jones & Wagener (2010 to 2012).

**Tauw:** Conducted due diligence audits for various clients of Tauw with interests in South Africa (2010 - 2016).

**Mondi Kraft Ltd - Piet Retief Mill, Piet Retief, South Africa:** The operation of the Mills' new waste disposal facility has been evaluated for a number of years. It included the interpretation of the results obtained from the ground and surface water monitoring system. A groundwater evaluation was carried out in 2012 as part of the motivation for the envisaged expansion of the site.

**Northam Platinum Mine Thabazimbi, South Africa:** Audited the implementation of the Northam Platinum Mine's Environmental Management Programme (EMPR) on an annual basis with other members of the Golder Associates Africa. Audited the environmental compliance of Northam Platinum Mine's waste disposal facility.

**EnviroServ (Pty) Limited Springs & Johannesburg, South Africa:** Audited the Margolis and Holfontein hazardous waste disposal facilities for a number of years in association with other members of Jarrod Ball & Associates and Golder Associates Africa in order to verify compliance with legal requirements.

**MOZAL Maputo, Mozambique:** Conducted an environmental due diligence audit of Metlite, a company that processes dross waste obtained from MOZAL in order to produce material for, inter alia, the explosives industry.

**Johnson Matthey Germiston, South Africa:** Conducted environmental due diligence audits of the company's waste management contractors in order to establish compliance with legal requirements of these companies.

**Hillside Aluminium Smelter (BHP Billiton) Richards Bay, South Africa:** Conducted an audit of the smelter's waste management system in order to identify shortfalls in the system. The audit was followed with the development of a waste management training manual. The project was carried out in association with other members of Jarrod Ball & Associates cc.

**Chemical and Allied Industries Association (CAIA) Johannesburg, South Africa:** Assisted with the development of a uniform hazardous waste management audit protocols for the Chemical and Allied Industries Association (CAIA) in association with Wiechers Environmental.

**Municipal Infrastructure Investment Unit (MIIU), Thohoyandou, South Africa:** Conducted a status quo analysis of the Thohoyandou Transitional Local Council's sewage water treatment and waste disposal facilities in order to establish remediation requirements, such as upgrading of the works, and organisational and training requirements.

**Royal Swaziland Sugar Corporation Simunye, Swaziland:** Conducted a status quo analysis of the sugar estate and mills' sewage and effluent water treatment and waste disposal facilities in order to identify environmental impacts and the need for upgrading the facilities.

**ESKOM Kriel, South Africa:** Conducted an audit of the operating standard of the Kriel Power Station's sewage treatment works to, inter alia, establish compliance with the Water Act's legal requirements.

**Gauteng Department of Agriculture, Conservation & Environment Johannesburg South Africa:** Developed a landfill evaluation pro-forma for use by government officials when inspecting and evaluating waste disposal facilities.

Contaminated Land, Waste Assessments and Classifications, Geochemical Assessments and Hazard Ratings of Industrial Wastes, and Mine Residues and Deposits

**Assmang: Cato Ridge:** Project manager for waste classification and application for Basel Convention permission to export waste (2018).

**EXM Advisory Services:** Conducted waste assessments for Sishen Iron Ore Company's Sishen Mine proposed new beneficiation plant (2017).

**Omnia Group:** Project manager for assessing various industrial sites in terms of Part 8 of the National Environmental Management: Waste Act (2017).

**Eskom Holdings SOC: Majuba Power Station:** Conducted waste and geochemical assessments of coal and coal stockpile leachate (2015).

**Aquatico:** Conducted various waste assessments for Lonmin Platinum (2015).

**South32 South Africa Energy Coal Limited:** Conducted waste and geochemical assessments of various overburden, coal discard and fine coal stockpiles at the Vandyksdrift operations in Mpumalanga (2014).

**Sasol Synfuels, Secunda South Africa:** Assessment ash water, ash and seepage in terms of the National Environmental Management: Waste Act waste assessment regulations (2014).

**Iliso Consulting (Pty) Ltd, Centurion, South Africa:** Conducted a classification of the waste water sludge from Bloemwater's Rustfontein water treatment works in terms of the draft DEA and Minimum Requirements classification procedures, as well as the Water Research Commission's *Guidelines for the Utilisation and Disposal of Wastewater Sludge* (2012).

**Sasol Synfuels, Secunda South Africa:** Conducted waste classifications of fine and paste ash samples in terms of the draft DEA and Minimum Requirements classification procedures (2012).

**Zitholele Consulting (Pty) Ltd, Midrand, South Africa:** Conducted the classification of the new ash disposal facility for Eskom's Camden Power Station. The draft DEA and Minimum Requirements classification procedures were used in this project (2011).

**Sappi Kraft Ltd – Enstra Mill, Springs, South Africa:** Conduct a risk profile of the Sappi Enstra landfill site leachate with a view to reclassifying the landfill site (2011).

**Exxaro, Pretoria, South Africa:** Conduct a classification of a ferrous metal slag with the view to using the slag in cement based products. Both the Minimum Requirements and the draft Department of Environmental Affairs' waste classification processes were used (2011).

**Anglo Platinum: Polokwane Smelter:** Conducted a waste risk profile of slag with a view to reclassifying the waste disposal facility of the smelter (2010).

**EnviroServ (Pty) Ltd:** Commented on draft waste management regulations and waste classifications systems for client and presented comments to the Department of Environmental Affairs (2010).

**Sappi Fine Paper, Ngodwana Mill Ngodwana, South Africa:** Conducted a number of hazard ratings on various waste stream originating from the paper mill. It was possible to delist a number of these waste streams and obtain permission for down-stream uses thereof.

**Technic Services, Luanda, Angola:** Hazard rated a number of the waste types to be disposed of on Technic Services' new landfill site with a view to establishing the liner design requirements.

**Delta EMD (Pty) Ltd, Nelspruit, South Africa:** Investigated the alternative uses and environmental consequences of a treated metallurgical residue from Delta EMD. Project conducted in association with Environmental and Chemical Consultants and Golder Associates Africa. Responsible for the environmental evaluation of the use of a treated residue in road building applications, which led to the authorities granting permission for the use of the treated material in capped road applications

#### Waste Management Training

**Department of Environmental Affairs, South Africa:** Developed and presented a one day course on aspects of landfill performance evaluation, environmental monitoring and auditing. The training target group consisted of Control Environmental Officers of the National and Provincial Departments dealing with waste management matters (2011).

**Chemical and Allied Industries Association (CAIA) Johannesburg, South Africa:** Presented a short training course on the licensing procedure for waste management facilities in terms of the requirements of the National Environmental Management: Waste Act (NEM:WA) and the National Environmental Management Act (NEMA) (2010).

**Mondi Forests, Piet Retief, South Africa:** Developed and presented a short course in waste management for officials of Mondi Piet Retief's Forestry Division.

**Swaziland Environment Authority, Mandini, Swaziland:** Developed and presented an integrated waste management training course for the Swaziland Environment Authority. The course included practical excursions and exercises. The course was developed in association with other members of Jarrod Ball & Associates.

**North West University's:** Potchefstroom Campus, Potchefstroom, South Africa: Developed a five day course in Integrated Waste Management and Planning for the University's Centre for Environmental Management (1996 – 2007).

**Basel Convention, Nairobi, Kenya:** Lectured on aspects of hazardous waste management to Kenyan Government officials and the private sector in Nairobi. This formed part of the Basel Convention initiative

to develop a training centre in hazardous waste management for the English speaking countries in Africa.

**COWI, Viet Tri, Vietnam:** Lectured on aspects of hazardous waste management to industry employees and government officials in Viet Tri, Vietnam, in association with other members of COWI (2004).

Other:

**TSB Komati, Mpumalanga, South Africa:** Annual evaluation of the ground water status of the sugar mill's licensed waste disposal facility as part of the annual external audit (2010 – current).

**South32, South Africa:** Involved in the rehabilitation and closure cost assessment, and residual risk assessment project for the Khutala Colliry as required in terms of the Financial Provision Regulations (2017 – current).

**Sappi Fine Papers, Springs, South Africa:** Annual evaluation of the ground and surface water status of Sappi Enstra's permitted waste disposal facilities and drafting of the interpretation report (2011, 2012, 2015).

**Northam Platinum, Thabazimbi, South Africa:** Registered the mine's water uses in terms of the provisions of the National Water Act.

**Manganese Metal Company (MMC), Nelspruit, South Africa:** Peer reviewed the consulting work carried out for the identification, investigation and permitting of MMC's new hazardous landfill site at Kingston Vale, Nelspruit. Project was carried out in association with others of Jarrod Ball & Associates. As employee of Golder Associates Africa involved in aspects of liner performance monitoring and evaluation at the Kingston Vale landfill site.

**Gauteng Department of Agriculture, Conservation & Environment, Johannesburg, South Africa:** Developed and conducted performance monitoring of the multi-media bin system deployed at a number of the World Summit on Sustainable Development venues in association with Sue Posnik and Associates and others.

**Golder Associates SrL, Italy:** Project leader for desktop study on the market potential for landfill gas (LFG) clean development mechanism (CDM) projects in South Africa for Asja Ambiente Italia (Asja). Asja is an Italian based firm with extensive experience in the landfill gas to energy industry. The study was commissioned by Mr F. Belfiore of Golder Europe.

**Agresu, Maputo, Mozambique:** Co-ordinated the Phase 1 evaluation of landfill gas (LFG) generation at Maputo's Hulene landfill site. The project involved the siting of three gas monitoring wells, subsequent LFG monitoring and data collection. LFG modelling was undertaken by Golder's UK team using the Gassim2 model (2009).

Summary of other Experience / Publications

Author and co-author on a number of papers pertaining to integrated catchment management and landfill remediation

**Declaration**

I confirm that the above CV is an accurate description of my experience and qualifications.

\_\_\_\_\_  
Signature of Staff Member

23 February 2018

Date