

Scoping and Environmental Impact Assessment for the Proposed Development of the  
204.6 MW Wind Energy Facility and associated Infrastructure (i.e. Kwagga WEF 3),  
near Beaufort West, Western Cape

# PART B

APPENDICES A to H



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# APPENDIX A

## Curriculum Vitae of the Environmental Assessment Practitioners and Specialists





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## A.1. CURRICULUM VITAE OF THE ENVIRONMENTAL ASSESSEMENT PRACTITIONER

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### A.1.1 CV OF PAUL LOCHNER

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**Name of firm:** CSIR  
**Name of staff:** Paul Lochner  
**Profession:** Environmental Assessment and Management  
**Position in firm:** Manager: CSIR Environmental Management Services  
**Years' experience:** 28 years  
**Nationality:** South African

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#### BIO-SKETCH:

Paul Lochner is an environmental assessment practitioner (EAP) at the CSIR in Stellenbosch, with more than 28 years of experience in a wide range of environmental assessment and management studies. Paul commenced work at CSIR in 1992, after completing a B.Sc. degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at focused on wetlands and estuarine management; environmental engineering in the coastal zone; and coastal zone management plans. Since 2008, Paul has been the leader and manager of the Environmental Management Services (EMS) group within CSIR that has been at the forefront of advancing environmental assessment in South Africa. This group currently consists of approximately 10 to 20 environmental scientists, planners and engineers, with offices in Stellenbosch, Cape Town and Durban. Paul's particular experience is in environmental planning and assessment for renewable energy, electricity grid infrastructure, desalination, oil & gas, wetlands & coastal zone management, and industrial & port development. He has been closely involvement in the research and application of Strategic Environmental Assessment (SEA) in South Africa, and also has wide experience in Environmental & Social Impact Assessment, Environmental Management Programmes (EMPRs) and Environmental Screening Studies. He has been the project leader for over 40 SEAs and EIAs over the past 28 years. He also served as project leader for a suite of SEAs commissioned by the DFFE from 2014 to 2020. Paul is a Registered EAP (2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

#### EMPLOYMENT TRACK RECORD

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The following table presents a sample of the projects that Paul Lochner has been involved in to this date:

| Duration    | Project description                                                                                                                           | Role           | Client                                                |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------|
| 2019 - 2020 | Basic Assessments for proposed PV and EGI Developments near Ceres                                                                             | Project leader | Veroniva (PTY) Ltd                                    |
| 2019 - 2020 | Environmental scoping for a Desalination Plant and Water Carriage System for water supply to Windhoek and the central coastal area of Namibia | Project author | NamWater (Namibia) and KfW Development Bank (Germany) |

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| <b>Duration</b>    | <b>Project description</b>                                                                                                                                    | <b>Role</b>                        | <b>Client</b>                                                      |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------|
| 2019 (in progress) | <b>Environmental Performance Compliance Study</b> for Foundries in South Africa                                                                               | Project reviewer                   | National Foundries Technology Network                              |
| 2019               | <b>Independent Expert review</b> of the ecology study as part of the EIA and EMPR for diamond prospecting at Bloemhof Dam Nature Reserve, North West province | Independent reviewer               | DEA Appeals Office                                                 |
| 2018-2019          | <b>Greater Saldanha Bay Strategic Environmental Assessment (SEA):</b> Phase 1 Monitoring and Decision Support System                                          | Project leader                     | Western Cape provincial government                                 |
| 2018-2019          | <b>Environmental Screening Study</b> for a proposed 100 to 150 megalitre/day desalination facility for City of Cape Town, Phase 1: Pre-feasibility study      | Project co-leader                  | City of Cape Town and iX Engineers                                 |
| 2018-2019          | <b>EIA for 150 MW wind power project in Ghana</b>                                                                                                             | Proposal and EIA Quality Assurance | Volta River Authority and Seljen Consult Ltd                       |
| 2019               | <b>Environmental Assessment</b> for the Kenhardt solar PV facility and electrical infrastructure (100 MW x 3), Northern Cape                                  | Project leader                     | Scatec Solar Africa (Pty) Ltd                                      |
| 2017-2019          | <b>SEA for Wind &amp; Solar Photovoltaic Energy</b> development in South Africa (Phase 2)                                                                     | Project reviewer                   | DEA & national Dept of Energy (DOE)                                |
| 2017-2019          | <b>SEA for the Expansion of EGI Corridors</b> in South Africa                                                                                                 | Project reviewer                   | DEA, DOE, iGas, Eskom (national electricity utility)               |
| 2017-2019          | <b>SEA for Energy Corridors</b> and development of a gas pipeline network for South Africa                                                                    | Project reviewer                   | DEA, DOE, iGas, Eskom (national electricity utility)               |
| 2017-2019          | <b>SEA for Aquaculture</b> Development in South Africa (marine and freshwater)                                                                                | Project leader                     | DEA and national Dept of Agriculture Forestry and Fisheries (DAFF) |
| 2018               | <b>Environmental Assessments</b> for the Vryburg Solar project (115 MW x 3) in the Vryburg Renewable Energy Development Zone (REDZ)                           | Co-project manager and co-author   | Veroniva & Scatec                                                  |
| 2018               | <b>EIA for West Bank Waste Water Treatment works marine outfall pipeline</b> , East London                                                                    | Independent reviewer               | WSP and Buffalo City Municipality                                  |
| 2017-2018          | <b>Site selection and environmental screening</b> for a proposed 120 – 150 ML/day desalination plant for the City of Cape Town                                | Project leader                     | City of Cape Town and iX Engineers                                 |
| 2017-2018          | <b>EIA and EMP for Icyari Coltan Mine</b> , Rwanda                                                                                                            | Project reviewer                   | Mawarid Mining Rwanda Ltd (MMRL), UAE                              |
| 2016-2017          | <b>SEA for the Square Kilometre Array</b> radio-telescope in the Karoo, South Africa                                                                          | Project leader                     | DEA and DST                                                        |
| 2016-2017          | <b>SEA for Shale Gas Development</b> in the Karoo region of South Africa                                                                                      | Project co-leader                  | DEA and other government departments                               |
| 2015-2016          | <b>SEA for the development of Electrical Grid Infrastructure</b> for South Africa                                                                             | Project leader                     | DEA and Eskom (national electricity utility)                       |
| 2017               | EIA for the 75 MW x 12 <b>solar photovoltaic</b> energy projects near Dealesville, Free State                                                                 | Project leader                     | Mainstream Renewable Power SA                                      |
| 2014-2015          | EIA for Ishwati Emoyeni 140 MW <b>wind energy project</b> and supporting electrical infrastructure at Murraysburg, Western Cape                               | Project leader                     | Windlab South Africa                                               |
| 2012-2015          | <b>SEA for identification of renewable energy zones</b> for wind and solar photovoltaic projects in South Africa                                              | Project leader                     | DEA and other national government departments                      |
| 2012-2013          | <b>Environmental Screening Study (ESS) for a desalination plant</b> for the City of Cape Town                                                                 | Project leader                     | City of Cape Town & WorleyParsons                                  |
| 2012-2013          | EIA for the <b>desalination plant</b> for the Saldanha area                                                                                                   | Project leader                     | West Coast District Municipality & WorleyParsons                   |

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| <b>Duration</b> | <b>Project description</b>                                                                                                                                                              | <b>Role</b>                             | <b>Client</b>                                                                        |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------------------------------------------------|
| 2012-2013       | EIA for the <b>manganese export terminal</b> at the Port of Ngqura and Coega Industrial Development Zone (IDZ)                                                                          | Project leader                          | Transnet                                                                             |
| 2011 - 2012     | EIA (x2) for <b>100 MW solar photovoltaic</b> project at Blocuso and 100 MW solar PV project at Roode Kop in the Northern Cape                                                          | Project leader                          | Mainstream Renewable Power                                                           |
| 2011 – 2012     | EIA (x2) for 75 MW <b>solar photovoltaic project</b> at GlenThorne and 75 MW project at Valleydora, in the Free State                                                                   | Project leader                          | Solaire Direct                                                                       |
| 2010-2011       | More than 10 Basic Environmental Assessments (BAs) for <b>solar photovoltaic projects</b> in the Western Cape, Northern Cape, Eastern Cape and Free State                               | Project leader                          | Conducted for Dutch, German, French and South African companies                      |
| 2010/2011       | <b>EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands</b> in the Eastern Cape                                                                                | Project leader                          | WindCurrent SA (German-based company)                                                |
| 2010-2011       | <b>EIAs (x4) for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW)</b> , Western Cape, South Africa           | Project leader                          | InnoWind South Africa (Pty) Ltd                                                      |
| 2009-2010       | <b>EIA for the proposed Electrawinds wind energy facility</b> of 45-75 MW capacity in the Coega IDZ, Eastern Cape                                                                       | Project leader                          | Electrawinds N.V. (Belgium)                                                          |
| 2009-2010       | <b>EIA for proposed 180 MW Jeffreys Bay wind energy project</b> , Eastern Cape                                                                                                          | Project Leader and co-author            | Mainstream Renewable Power South Africa                                              |
| 2009-2010       | <b>EIA for the proposed 70 megalitre/day desalination plant</b> at Mile 6 near Swakopmund, Namibia                                                                                      | Project leader                          | NamWater, Namibia                                                                    |
| 2009            | <b>ESS for a proposed Deepwater Port</b> , Container Hub and Industrial Development Zone, Ghana                                                                                         | Project Manager                         | Project Management International Pty Ltd                                             |
| 2009            | <b>EMP for the Operational Phase of the Berg River Dam</b> , Franschhoek, South Africa                                                                                                  | Project leader and report co-author     | TCTA (national water supply utility), South Africa                                   |
| 2006            | <b>Environmental Impact Assessment (EIA)</b> for extension of Port of Ngqura, Eastern Cape                                                                                              | Project Leader and co-author            | Transnet National Port Authority                                                     |
| 2004-2005       | <b>Environmental and Social Impact Assessment (ESIA) report</b> for the proposed alumina refinery near Sosnogorsk, Komi Republic, Russia                                                | Project manager and co-author           | Komi Aluminium Russia, IFC, European Bank for Reconstruction & Development (EBRD)    |
| 2005            | <b>Guideline for Environmental Management Plans (EMPs)</b> for the Western Cape province                                                                                                | Author                                  | Dept of Environmental Affairs & Development Planning, Western Cape                   |
| 2003            | <b>Environmental Management Plan</b> for the Operational Phase of the wetlands and canals at Century City, Cape Town                                                                    | Project leader and lead author          | Century City Property Owners' Association                                            |
| 2002            | <b>Environmental Impact Assessment</b> for the proposed Pechiney aluminium smelter at Coega, South Africa                                                                               | Project Manager and lead author         | Pechiney, France                                                                     |
| 1999-2000       | <b>Cape Action Plan for the Environment:</b> a biodiversity Strategy and Action Plan for the Cape Floral Kingdom - legal, institutional, policy, financial and socio-economic component | Project manager and contributing writer | World Wide Fund for Nature (WWF): South Africa and Global Environment Facility (GEF) |
| 1999            | <b>Management Plan</b> for the coastal zone between the Eerste and Lourens River, False Bay, South Africa                                                                               | Project manager and lead author         | Heartland Properties and Somchem (a Division of Denel)                               |

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| <b>Duration</b> | <b>Project description</b>                                                                                                                      | <b>Role</b>                                        | <b>Client</b>                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| 1998            | <b>Environmental Assessment</b> of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique                    | Project manager and author                         | SNC-Lavalin-EMS                                 |
| 1996-1997       | <b>Strategic Environmental Assessment (SEA)</b> for the proposed Industrial Development Zone and Harbour at Coega, Port Elizabeth, South Africa | SEA project manager and report writer              | Coega IDZ Initiative Section 21 Company         |
| 1995-1996       | <b>Environmental Impact Assessment and EMP</b> for Development Scenarios for Thesen Island, Knysna, South Africa                                | Project manager and report writer                  | Thesen and Co.                                  |
| 1996            | <b>Environmental Impact Assessment</b> for the Blouvllei wetlands at Century City, Cape Town                                                    | Project manager and report writer                  | Ilco Homes Ltd (now Monex Ltd)                  |
| 1995            | <b>Environmental Impact Assessment</b> for the Saldanha Steel Project, South Africa                                                             | Report author and project manager                  | Saldanha Steel Project                          |
| 1994            | <b>Environmental Impact Assessment</b> for the upgrading of resort facilities on Frégate Island, Seychelles                                     | Project management, co-author, process facilitator | Schneid Israelite and Partners                  |
| 1994            | <b>Environmental Impact Assessment</b> for exploration drilling in offshore Area 2815, Namibia                                                  | Project manager and lead author                    | Chevron Overseas (Namibia) Limited              |
| 1994            | <b>Management Plan</b> for the Rietvllei Wetland Reserve, Cape Town                                                                             | Project manager and lead author                    | Southern African Nature Foundation (now WWF-SA) |

#### **EMPLOYMENT RECORD**

- **1992 to present** Involved in coastal engineering studies; and various forms of environmental assessment and management studies. Council for Scientific and Industrial Research – Environmental Management Services (EMS) - Stellenbosch

#### **QUALIFICATIONS/EDUCATION**

- M. Phil. Environmental Science (University of Cape Town)
- B.Sc. Civil Engineering (awarded with Honours) (University of Cape Town)

#### **LANGUAGE CAPABILITY**

| <b>LANGUAGES</b> | <b>Speaking</b> | <b>Reading</b> | <b>Writing</b> |
|------------------|-----------------|----------------|----------------|
| English          | Excellent       | Excellent      | Excellent      |
| Afrikaans        | Moderate        | Moderate       | Moderate       |

#### **RECENT JOURNAL PUBLICATIONS AND PEER REVIEWED PAPERS**

- A comprehensive list of publications is available on request, with a summary provided below of recent journal publications, book chapters and peer reviewed conference papers:
- Fischer D, Lochner P and Annergarn H, 2019. Evaluating the effectiveness of Strategic Environmental Assessment to facilitate renewable energy planning and improved decision-making: a South African case study, Impact Assessment and Project Appraisal - article ID: IAPA 1619389.
- Cape L., Retief F., Lochner P., Fischer T., and Bond A., 2018. Exploring pluralism: Different stakeholder views of the expected and realised value of strategic environmental assessment (SEA). Environmental Impact Assessment Review, Volume 69, March 2018, Pages 32-41.
- Cape L., Lochner P. and Fischer D., 2017. SEAs for major infrastructure programmes in SA. IAIA17 Conference Proceedings - 37th Annual Conference of the International Association for Impact Assessment, 4-7 April 2017 | Le Centre Sheraton Montreal | Montreal | Canada | [www.iaia.org](http://www.iaia.org)



- Schreiner, G.O., Scholes, R.J., Snyman-Van der Walt, L., De Jager, M., S, Esterhuyse., Dlodla, A., Lochner, P.A., Wright, J., Atkinson, D., Hardcastle, P., Kotze, H. 2017. Advancing a participatory and science-based approach to policy formulation for shale gas development in South Africa. In: Eds Whitton, J., Cotton, M., Brasier, K. 2017. Citizen and other stakeholder participation in unconventional fossil fuel land use decision-making, policy formation, regulatory practice or other governance mechanisms. London: Routledge.
- Lochner P, Mabin M & Cape L, 2015, Recent Strategic Environmental Assessment experience in South Africa and national principles, in IAIA16 (Japan) Conference Proceedings.

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### A.1.2 CV OF LIZANDE KELLERMAN

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**Position in Firm:** Principal Environmental Assessment Practitioner  
**Full Name:** Millicent Johanna Susanna Kellerman  
**Specialisation:** Strategic Environmental Assessment & Integrated Environmental Management  
**Date of Birth:** 11 October 1978  
**Nationality:** South African  
**Drivers licence:** Code EB and Advanced Driver Qualification (4x4)

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#### BIO-SKETCH:

Lizande Kellerman is a Principal EAP and scientist at the CSIR in Stellenbosch, with more than 10 years of experience in environmental impact studies, primarily in the planning, preparation and management of BAs, EIAs, and SEAs, as well as EMPs, Screening/Fatal Flaw Studies, Biodiversity Risk Assessments, Biodiversity Resource Assessments and license applications for agriculture, atmospheric emissions, water use, waste management, mining, bioprospecting and biodiversity permitting, for numerous projects in the agricultural (including aquaculture), construction, conservation, mining and renewable energy sectors.

Lizande holds a BSc degree in Zoology and Entomology, with an Honours and Masters in Botany both at the University of Pretoria. She is currently working towards completing her PhD in Conservation Ecology. She commenced work at the CSIR in 2012 after spending three years working as an environmental scientist in the private sector. She has published several articles, both peer reviewed scientific and popular, and presented at five international conferences. She has also lectured on biodiversity, ecological and EIA at various universities in South Africa. Her training and experience as a qualified terrestrial ecologist has enabled her to provide expert input into ecological impact assessments and to perform specialist reviews of various terrestrial biodiversity and ecology impact assessments as part of BAs, EIAs and SEA.

Lizande is a registered Professional Natural Scientist (400046/10) with the South African Council for Natural Scientific Professions (SACNASP).

#### PROJECT EXPERIENCE RECORD

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The following table presents a sample of key projects that Lizande Kellerman has undertaken to date:

| Completion Date | Project description                                                                                                                                                             | Role                             | Client                                |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------|
| 2020 - 2021     | Basic Assessments for the proposed development of the 810 MW Rinkhals Solar PV energy facilities 1-7 and associated infrastructure near Kimberley, Northern Cape and Free State | Project Leader and Environmental | ABO Wind renewable energies (Pty) Ltd |

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| <b>Completion Date</b> | <b>Project description</b>                                                                                                                                                                                                                                                                                                                                     | <b>Role</b>                                               | <b>Client</b>                                                                             |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                        |                                                                                                                                                                                                                                                                                                                                                                | Assessment Practitioner                                   |                                                                                           |
| 2020 - 2021            | Scoping and EIA for the proposed development of the 825 MW Kwagga Wind Energy Facilities 1-3 and associated infrastructure near Beaufort West in the Western Cape                                                                                                                                                                                              | Project Leader and Environmental Assessment Practitioner  | ABO Wind renewable energies (Pty) Ltd                                                     |
| 2021 - 2022            | Landscaping and development of educational walkways with teaching materials at the CSIR Science Centre in Cofimvaba, Eastern Cape Province                                                                                                                                                                                                                     | Project Manager and Environmental Assessment Practitioner | Department of Science and Innovation (previously DST)                                     |
| 2020                   | A Desktop Fatal Flaw Assessment of the property affected by the proposed development of a solar photovoltaic (PV) energy facility near Windmeul, Western Cape (i.e. Project Suikerbekkie)                                                                                                                                                                      | Project Manager and Principal Author                      | ABO Wind renewable energies (Pty) Ltd                                                     |
| 2020                   | A Desktop Fatal Flaw Assessment of the properties affected by the proposed development of two solar photovoltaic (PV) energy facilities near Kimberley, Northern Cape (i.e. Project Rinkhals) and Vryburg in the North West (i.e. Project Skilpad)                                                                                                             | Project Manager and Principal Author                      | ABO Wind renewable energies (Pty) Ltd                                                     |
| 2020                   | A Desktop Fatal Flaw Assessment of the properties affected by the proposed development of two solar photovoltaic (PV) energy facilities near Kimberley, Free State Province (i.e. Project Rinkhals 1 and Project Rinkhals 2)                                                                                                                                   | Project Manager and Principal Author                      | ABO Wind renewable energies (Pty) Ltd                                                     |
| 2019 – 2020            | Environmental compliance and performance improvement for the foundry industry of South Africa: Phase 1 – Status Quo Assessment                                                                                                                                                                                                                                 | Project Manager and Principal author                      | National Cleaner Production Centre of South Africa                                        |
| 2016 – 2019            | Strategic Environmental Assessment for Marine and Freshwater Aquaculture Development in South Africa                                                                                                                                                                                                                                                           | Project Manager, Principal Author and Report Editor       | Department of Environmental Affairs and Department of Agriculture, Forestry and Fisheries |
| 2019                   | Risk Assessment with Alien and Invasive Species Permit Application Process for the EA1TM Dust Suppressant                                                                                                                                                                                                                                                      | Environmental Assessment Practitioner                     | Earth Alive Clean Technologies Inc.                                                       |
| 2019                   | Environmental Screening Study for the proposed Wool Scouring Facility on Erf 3476 at Mount Fletcher in the Elundini Local Municipality, Eastern Cape Province                                                                                                                                                                                                  | Project Manager and Environmental Assessment Practitioner | CSIR Advanced Agriculture and Food Division                                               |
| 2019 - 2020            | Water Use License Application Process for the Vryburg Solar 1 (Pty) Ltd Photovoltaic Energy Facility and Supporting Electrical Grid Infrastructure near Vryburg, North West Province                                                                                                                                                                           | Project Manager and Environmental Assessment Practitioner | ABO Wind renewable energies (Pty) Ltd                                                     |
| 2019 - 2020            | Water Use License Application Processes for the Kuruman Phase 1 and Phase 2 Wind Energy Facilities and Supporting Electrical Grid Infrastructure near Kuruman, Northern Cape Province                                                                                                                                                                          | Project Manager and Environmental Assessment Practitioner | Mulilo Renewable Project Developments (Pty) Ltd                                           |
| 2019                   | National Coastal Climate Change Vulnerability Index Assessment                                                                                                                                                                                                                                                                                                 | Public Participation Practitioner                         | Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH                        |
| 2018 – 2019            | Strategic Environmental Assessment for the Identification of Energy Corridors, as well as Assessment and Management Measures for the Development of a Phased Gas Pipeline Network in South Africa: Biodiversity and Ecology Specialist Assessment including Terrestrial and Aquatic Ecosystems, and Species of the Desert, Nama Karoo & Succulent Karoo Biomes | Specialist Input and Principal Author                     | Department of Environmental Affairs, Eskom and iGas                                       |

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| <b>Completion Date</b> | <b>Project description</b>                                                                                                                                                                                                                      | <b>Role</b>                                               | <b>Client</b>                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|
| 2018                   | The Implementation of the Development of an Ecological Infrastructure Investment Framework (EIIF) and an Alien Invasive Species Strategy (AISS) for the Western Cape Province                                                                   | Public Participation Practitioner                         | Western Cape Department of Environmental Affairs and Development Planning |
| 2018                   | Basic Assessment for the proposed development of the 325 MW Kudusberg Wind Energy Facility and associated infrastructure between Matjiesfontein and Sutherland in the Western and Northern Cape Provinces: Terrestrial Ecology Specialist Study | Specialist Input and Contributing Author                  | G7 Renewable Energies (Pty) Ltd                                           |
| 2018                   | Development of a Biodiversity Economy Transformation Strategy for the North West Province, South Africa                                                                                                                                         | Specialist Input and Contributing Author                  | North West Rural, Environment and Agricultural Development                |
| 2018                   | Bioprospecting, biotrade and biodiversity permitting applications for <i>Boscia albitrunca</i> , as part of a Feasibility Study on Motlopi coffee, North West                                                                                   | Project Manager and Environmental Assessment Practitioner | North West Finance, Economy and Enterprise Development                    |
| 2017 – 2018            | Environmental Impact Assessment for Kuruman Wind Energy Facilities Phase 1 and Phase 2 near Kuruman, Northern Cape                                                                                                                              | Project Manager and Environmental Assessment Practitioner | Mulilo Renewable Project Developments (Pty) Ltd                           |
| 2017 – 2018            | Basic Assessment for supporting electrical infrastructure for the Kuruman Wind Energy Facilities Phase 1 and Phase 2 near Kuruman, Northern Cape                                                                                                | Project Manager and Environmental Assessment Practitioner | Mulilo Renewable Project Developments (Pty) Ltd                           |
| 2012 – 2016            | Bioprospecting beneficiation and implementation of the Nourivier Medicinal Plants Project at Nourivier, Northern Cape                                                                                                                           | Project Manager, Environmental Scientist                  | Department of Science and Technology (DST)                                |
| 2012 – 2016            | Bioprospecting beneficiation and implementation of the Witdraai Medicinal Plants Project at Andriesvale, Northern Cape                                                                                                                          | Project Manager, Environmental Scientist                  | Department of Science and Technology (DST)                                |
| 2012 – 2016            | Bioprospecting beneficiation and implementation of the Letsemeng Medicinal Plants Project at Petrusburg, Free State                                                                                                                             | Project Manager, Environmental Scientist                  | Department of Science and Technology (DST)                                |
| 2013 – 2016            | Bioprospecting beneficiation and implementation of the Abbey Medicinal Plants Project near Madibeng, Northern Cape                                                                                                                              | Project Manager, Environmental Scientist                  | Department of Science and Technology (DST)                                |
| 2013 – 2016            | Bioprospecting beneficiation and implementation of the Driekop Essential Oils and Moringa Project near Burgersfort, Limpopo                                                                                                                     | Project Manager, Environmental Scientist                  | Department of Rural Development and Land Reform (DRDLR)                   |
| 2013 – 2014            | Resource assessment, including bioprospecting, biotrade and biodiversity permitting applications for <i>Elephantorrhiza elephantina</i> , Northern Cape                                                                                         | Project Manager, Environmental Scientist                  | DST and CSIR Biosciences                                                  |
| 2009 – 2010            | Environmental screening and legal compliance of the Sidasoas Essential Oils (Rose Geranium) project near Onseepkans, Northern Cape                                                                                                              | Environmental Scientist                                   | DST and CSIR ECD                                                          |
| 2009 – 2010            | Environmental screening and legal compliance of the Pelsan Essential Oils (Rose Geranium) project near Pella, Northern Cape                                                                                                                     | Environmental Scientist                                   | DST and CSIR ECD                                                          |
| 2009 – 2010            | Environmental screening and legal compliance of the Oppermans Essential Oils (Rose Geranium) project near Maubane, North West                                                                                                                   | Environmental Scientist                                   | DST and CSIR ECD                                                          |
| 2009 – 2010            | Section 24G Rectification Application for the Sidasoas Essential Oils (Rose Geranium) project near Onseepkans, Northern Cape                                                                                                                    | Environmental Scientist                                   | DST and CSIR ECD                                                          |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

| <b>Completion Date</b> | <b>Project description</b>                                                                                                                                                                   | <b>Role</b>             | <b>Client</b>                    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------|
| 2009 – 2011            | Bioprospecting beneficiation, environmental screening and legal compliance of the Nourivier Medicinal Plants Project at Nourivier, Northern Cape                                             | Environmental Scientist | DST and CSIR ECD                 |
| 2009 – 2011            | Bioprospecting beneficiation, environmental screening and legal compliance of the Witdraai Medicinal Plants Project at Witdraai, Northern Cape                                               | Environmental Scientist | DST and CSIR ECD                 |
| 2009 – 2010            | EIA and Waste Management License Application at the Kumba Iron Ore Mine at Sishen, Northern Cape                                                                                             | Project Manager and EAP | Anglo American / Kumba Iron Ore  |
| 2009 – 2010            | EIA for the development of the new Veremo Magnetite Mine near Stoffberg, Mpumalanga                                                                                                          | Project Manager and EAP | Veremo Holdings / Kermas Limited |
| 2009 – 2010            | EIA for the proposed construction and upgrades of roads on various properties east of Orange Farm and west of the R82, Gauteng                                                               | Project Manager and EAP | Basil Read (Pty) Ltd             |
| 2009 – 2010            | BA for the proposed establishment of the new head office complex for the National Department of Land Affairs (DLA) as part of a public private partnership process, Pretoria, Gauteng        | Project Manager and EAP | Basil Read (Pty) Ltd             |
| 2009 – 2010            | BA for the proposed construction of the internal road network and associated storm water pipes at Flamingo Park X2, Welkom, Free State                                                       | Project Manager and EAP | Basil Read (Pty) Ltd             |
| 2009 – 2010            | BA for the proposed construction of an access road and a sewer pipeline for the use of the proposed Gautrain Visitors Centre, Midrand, Gauteng                                               | Project Manager and EAP | Bombela Consortium               |
| 2009 – 2010            | BA for the proposed residential development and associated infrastructure on Erf 7402 and Erf 19642, Mamelodi-West, City of Tshwane, Gauteng                                                 | Project Manager and EAP | Basil Read (Pty) Ltd             |
| 2009 – 2010            | BA for the MTN Fibre Optic Deployment along roads R21 and R101, Gauteng                                                                                                                      | Project Manager and EAP | MTN Group Limited                |
| 2009 – 2010            | BA and Waste Management License Application for the establishment of Phase 1 of the proposed provision of Bulk Water Supply Infrastructure and Purified Water Supply, Jozini, Kwa-Zulu Natal | Project Manager and EAP | PD Naidoo and Associates         |
| 2009 – 2010            | BA for the proposed housing development situated on Klipspruit Ext 11, a portion of the remaining extent of the Farm Freehold 389 IQ, Gauteng                                                | Project Manager and EAP | Basil Read (Pty) Ltd             |
| 2009 – 2010            | Environmental Management Plan for the Blouberg Local Municipality, Capricorn District, Limpopo                                                                                               | Project Manager and EAP | Capricorn District Municipality  |
| 2009 – 2010            | Environmental Fatal Flaw Assessment for the proposed development of the Statistics South Africa Head Office Complex: Persequor Park, Gauteng                                                 | Project Manager and EAP | Eco-Agent CC                     |
| 2009 – 2010            | Environmental Fatal Flaw Assessment for the proposed development of the Statistics South Africa Head Office Complex: Salvokop, Gauteng                                                       | Project Manager and EAP | Eco-Agent CC                     |

## **EMPLOYMENT RECORD**

- |                                                            |                     |
|------------------------------------------------------------|---------------------|
| • CSIR Environmental Management Services (EMS)             | Apr 2016 – present  |
| • CSIR Enterprise Creation for Development (ECD)           | Jan 2012 – Mar 2016 |
| • Midrand Graduate Institute                               | Jan 2011 – Dec 2011 |
| • Polygon Environmental Planning cc                        | Jan 2011 – Dec 2011 |
| • The MSA Group (Environmental, Legal and Mining Services) | Apr 2009 – Dec 2010 |
| • Department of Botany, University of Pretoria             | Aug 2003 – Mar 2009 |



## QUALIFICATIONS

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- 2006 University of South Africa (Postgraduate Certificate for Higher Education and Further Training)
- 2004 University of Pretoria MSc *Cum Laude* (Botany)
- 2001 University of Pretoria BSc Honours (Botany)
- 2000 University of Pretoria BSc (Zoology and Entomology)

## SHORT-COURSES / WORKSHOPS

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- 2015 Finances for Non-Financial Managers, CSIR Innovation Leadership & Learning Academy, Pretoria.
- 2014 IWRM, the NWA, and Water Use Authorisations, focusing on Water Use License Applications – Procedures, Guidelines, IWWMP's and Monitoring, Carin Bosman Sustainable Solutions, Pretoria.

## CONFERENCE PRESENTATIONS & PAPER PUBLICATIONS

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### INTERNATIONAL CONFERENCES

- **Kellerman, L.** Snyman-Van der Walt, L., Morant, P., Mashabela, K. & Lochner, P. (2017). Progress on the Strategic Environmental Assessment (SEA) for aquaculture development in South Africa. International Association for Impact Assessment – South Africa Conference 2017, Rawsonville, Western Cape Province.
- **Kellerman, L.** Snyman-Van der Walt, L., Morant, P., Mashabela, K. & Lochner, P. (2017). National Strategic Environmental Assessment (SEA) for aquaculture development in South Africa – A synopsis of the current marine and freshwater aquaculture environment and the need to promote sustainable growth and incentivisation. World Aquaculture Conference 2017, Cape Town, Western Cape Province.
- **Kellerman, L.** (2012). Success with Technology Transfer activities within the context of Enterprise Development that generate Social and Economic Development Opportunities. Conference on Innovation for Poverty Alleviation: South Africa - European Union Summit, Brussels, Belgium.
- **Kellerman, L.** (2012). New Medicinal Plants Demonstration Agronomy. European Union's Conference for Sector Budget Support. Department of Science and Technology, Roodevallei, Pretoria, Gauteng Province.
- **Kellerman, L.** (2012). Wild-harvesting for Commodity Beneficiation. European Union's Conference for Sector Budget Support. Department of Science and Technology, Roodevallei, Pretoria, Gauteng Province.

### NATIONAL CONFERENCES

- **Kellerman, L.** & Moeng, E. (2013). Technology transfer to facilitate the sustainable cultivation harvesting and processing of arid zone indigenous plants. Annual Conference of the Indigenous Plant Use Forum, Agricultural Research Council, Nelspruit, Mpumalanga Province.
- **Kellerman, L.** (2012). Capitalizing on South Africa's Indigenous Plants – Demonstration agro-processing for social impact. Annual Conference of the Indigenous Plant Use Forum, University of Venda, Thohoyandou, Limpopo Province.
- **Kellerman, M.J.S.,** Strobach, M. & Van Rooyen, M.W. (2008). Comparison of leaf trait spectra of two contrasting southern African environments. Annual Conference of South African Association for Botanists, Drakensville, Free State Province.
- Strobach, M, **Kellerman, M.J.S.** & Van Rooyen, M.W. (2008). Comparison of leaf functional types of two contrasting southern African environments. Annual Conference of South African Association for Botanists, Drakensville, Free State Province.
- **Kellerman, M.J.S.** & Grote, W. (2007). The Tswaing Crater... A blast from the past. 10th Annual Conference of the South African Association for Science and Technology Centres, Bayworld, Port Elizabeth, Eastern Cape Province.
- **Kellerman, M.J.S.** & Van Rooyen, M.W. (2006). Plant diversity in old fields of various ages in the Upland Succulent Karoo, South Africa. Arid Zone Ecology Forum, Kamieskroon, Northern Cape Province.

- **Kellerman, M.J.S. & Van Rooyen, M.W. (2002).** Seed bank dynamics of selected habitat types in the Tembe Elephant Park, Maputaland. Annual Conference of South African Association for Botanists, Rhodes University, Eastern Cape Province.

#### SCIENTIFIC BOOKS / JOURNAL PUBLICATIONS

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- **Kellerman, L. & Wild, S. (2015):** A ‘happy pill’ to boost rural economies. – In: Wild, S. (Author), Fraser, S. [Editor]: Innovation – Shaping South Africa Through Science. Part 3: pp. 113-120, Pac Macmillan South Africa, in association with the Gordon Institute of Business Science, University of Pretoria.
- **Wesuls, D., Strohbach, M., Horn, A., Kos, M., Zimmermann, J., Hoffmann, J., Geldenhuys, C., Dreber, N., Kellerman, L., van Rooyen, M. W., Poschlod, P. (2010):** Plant functional traits and types as a tool to analyse landuse impacts on vegetation. – In: Schmiedel, U., Jürgens, N. [Eds.]: Biodiversity in southern Africa. Volume 2: Patterns and processes at regional scale: pp. 222–232, Klaus Hess Publishers, Göttingen & Windhoek.
- **Kellerman, L & Van Rooyen, G. (2009).** Can time heal the old fields of the Kamiesberg? Veld & Flora 95(2): 78-81.
- **Kellerman, M.J.S. & Van Rooyen, M.W. (2007).** Seasonal variation in soil seed bank size and species composition of selected habitat types in Maputaland, South Africa. Bothalia 37,2: 249-258.
- **Van Rooyen, M.W., Tosh, C.A., Van Rooyen, N., Matthews, W.S. & Kellerman, M.J.S. (2004).** Impact of harvesting and fire on *Phragmites australis* reed quality in Tembe Elephant Park, Maputaland. Koedoe 47(1): 31-40.
- **Steenkamp, Y., Kellerman, M.J.S. & Van Wyk, A.E. (2001).** Fire, frost, waterlogged soil or something else: What selected for the Geoxylic Suffrutex growth form in Africa? Plantlife 25: 4-6.

#### MEDIA INTERVIEWS / PUBLICATIONS

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- **L Kellerman,** article on the Nile Tilapia Citizen Science Survey for the Aquaculture SEA published online at the Landbouweekblad on 26 May 2017. <http://www.landbou.com/nuus/help-die-wnnr-met-nylkurper-opname/>
- **L Kellerman,** article on the Nile Tilapia Citizen Science Survey for the Aquaculture SEA published in the Farmersweekly Magazine on 09 June 2017.
- **L Kellerman,** article on the Nile Tilapia Citizen Science Survey for the Aquaculture SEA published in the Stywe Lyne/Tight Lines Magazine, Issue 690 in August 2017.
- **L Kellerman,** article on the Nile Tilapia Citizen Science Survey for the Aquaculture SEA published online at the CSIR website on 26 June 2017. <https://www.csir.co.za/csir-calls-public-participate-rapid-citizen-science-survey/>
- **L Kellerman,** article on the Nile Tilapia Citizen Science Survey for the Aquaculture SEA published online at the DEA website in July 2017. <https://www.environment.gov.za/projectsprogrammes/operationphakisa/oceanseconomy/>
- **Kellerman, L. (2015).** Landbou – Kougoed. kykNet – Dagbreek television show.
- **Interviewed by Wild, S. (2015).** Bushmen cure – all’s prospects hit a new high. Mail & Guardian Newspaper, pp: 26-27.
- **Interviewed by Mostert, M. (2015).** Kougoed-projek in Nourivier. Die Plattelander Newspaper, pp: Annexure.
- **Interviewed by Smith, M. (2015).** Geld te maak uit Kougoed, Jantjie-Bêrend. Landbouweekblad Magazine, pp: 28.
- **Kellerman, L. (2014).** Kougoed (*Sceletium tortuosum*) Medicinal Plants Project in Nourivier. SKEP eNews – [www.skep.org.za](http://www.skep.org.za)
- **Interviewed by Van Rooyen, B. (2014).** Reaping rewards from South Africa’s botanical riches. – In: Improving lives – Careers at the CSIR. ScienceScope, Volume 7(1), pp: 38-39. Publication of the Council for Scientific and Industrial Research, Pretoria.
- **Interviewed by Van Rooyen, B. (2014).** Successful cultivation of medicinal plants in the Kalahari generates work for hundreds. CSIR eNews – Enterprise Creation for Development.

- Interviewed by Van Rooyen, B. (2012). Local succulents yield natural, calmative agent. CSIR eNews – Enterprise Creation for Development.
- Interviewed by Van Rooyen, B. (2012). Mr Derek Hanekom visits DST-funded projects in the Northern Cape. CSIR eNews – Enterprise Creation for Development.

#### LANGUAGE CAPABILITY

|           | Speaking  | Reading   | Writing   |
|-----------|-----------|-----------|-----------|
| Afrikaans | Excellent | Excellent | Excellent |
| English   | Excellent | Excellent | Excellent |

#### PROFESSIONAL REGISTRATIONS / MEMBERSHIPS

- Professional Natural Scientist (Pr.Sci.Nat. Number 400076/10 – Botanical Sciences) with the SACNASP
- International Association of Impact Assessment South Africa (IAIASa) – Registration number: 343955
- Botanical Society of South Africa (BotSoc) – Registration Number: S01/58657

### A.1.3 CV OF ROHAIDA ABED

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|                         |                                       |
|-------------------------|---------------------------------------|
| <b>Name of firm</b>     | CSIR                                  |
| <b>Name of staff</b>    | Rohaida Abed                          |
| <b>Profession</b>       | Environmental Assessment Practitioner |
| <b>Position in firm</b> | Environmental Assessment Practitioner |
| <b>Nationality</b>      | South African                         |

#### Biographical Sketch

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Rohaida Abed is an Environmental Assessment Practitioner in the CSIR Environmental Management Services team based in Durban. She has 10 years of experience in the Environmental Management field, and has been involved in various transport infrastructure related projects as an Environmental Control Officer, which included monitoring compliance with Environmental Authorizations and Environmental Management Plans. She has also been conducting Environmental Assessments relating to Port infrastructure, Bulk Liquid Storage facilities and renewable energy in the capacity of Project Manager.

She has been involved in Screening Studies, Applications for Amendments to Environmental Authorisations, Environmental Management Programmes, Legislative Reviews and reviewing Specialist Studies. She is also the Project Manager for the Gas Pipeline and Electricity Grid Infrastructure Expansion Strategic Environmental Assessment (SEA) for the National DEA, DOE, DPE, iGas, Transnet and Eskom.

#### Tertiary Education

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| Year        | Degree                                              | Institution                 |
|-------------|-----------------------------------------------------|-----------------------------|
| 2003 - 2005 | Bachelor of Science (Environmental Science)         | University of KwaZulu-Natal |
| 2006 - 2006 | Bachelor of Science Honours (Environmental Science) | University of KwaZulu-Natal |
| 2007 - 2009 | Master of Science (Environmental Science)           | University of KwaZulu-Natal |

#### Professional Registration

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- Registered Professional Natural Scientist (Pr.Sci.Nat.) in Environmental Science (Registration Number: 400247/14) with the South African Council of Natural Scientific Professions (SACNASP) in July 2014.
- Member of the International Association for Impact Assessment South Africa (IAIASa) – Membership number: 5840

#### Employment Record

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| Period                    | Employer                               | Position                |
|---------------------------|----------------------------------------|-------------------------|
| 2006 – 2008               | University of KwaZulu-Natal            | Academic Demonstrator   |
| March 2010 – April 2010   | EnAq Consulting                        | Environmental Officer   |
| May 2010 – September 2011 | Henwood & Nxumalo Consulting Engineers | Environmental Scientist |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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|                           |      |                                       |
|---------------------------|------|---------------------------------------|
| October 2011 – to present | CSIR | Environmental Assessment Practitioner |
|---------------------------|------|---------------------------------------|

**Short Courses, Seminars and Conferences**

| Year                       | Course, Seminar, Conference                                                                  | Institution                                                                       |
|----------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| May 2009<br>(5 days)       | Management of Estuaries in South Africa                                                      | Marine and Estuarine Research, FET Water, and Water Research Commission           |
| October 2010<br>(5 days)   | Environmental Impact Assessment: A Practical Approach                                        | North West University (Potchefstroom Campus), Centre for Environmental Management |
| October 2017<br>(3 days)   | International Gas Cooperation Summit in Durban                                               | EnergyNet Africa                                                                  |
| June 2018<br>(1 day)       | Training on the National Web-based Environmental Screening Tool, Pietermaritzburg, KZN       | National Department of Environmental Affairs                                      |
| March 2019<br>(2 days)     | African Conference for Linear Infrastructure and Ecology, Skukuza Camp, Kruger National Park | Endangered Wildlife Trust                                                         |
| September 2019<br>(2 days) | EIA Seminar, Empangeni, KZN                                                                  | National Department of Environmental Affairs                                      |

**List of Key Project Experience**

| Date        | Project Description                                                                                                                      | Role                          | Client                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|
| 2010 – 2011 | The Repair and Rehabilitation of the Umzinto River Bridge Number 823 on the South Coast of KwaZulu-Natal                                 | Environmental Control Officer | KwaZulu-Natal Department of Transport |
| 2010 – 2011 | The Construction of the Kwahlongwa Bridge Number 3257 over the Kwa-Malukaka River on D297 near Umzumbe, South Coast of KwaZulu-Natal     | Environmental Control Officer | KwaZulu-Natal Department of Transport |
| 2010 – 2011 | The Construction of a bridge and approach roads across the Indaka River at Eludimbi, within the Msinga Local Municipality, KwaZulu-Natal | Environmental Control Officer | KwaZulu-Natal Department of Transport |
| 2010 – 2011 | The Extension of the Lion Park Pipeline along the P566 and D2173 in the Manyavu area, KwaZulu-Natal                                      | Environmental Control Officer | Umgeni Water                          |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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| <b>Date</b> | <b>Project Description</b>                                                                                                                                                                                                                       | <b>Role</b>                   | <b>Client</b>                                                           |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------|
| 2010 – 2011 | The Construction of a bridge and approach roads across the Tugela River at Thulwane, within the Nkandla Local Municipality, KwaZulu-Natal                                                                                                        | Environmental Control Officer | KwaZulu-Natal Department of Transport                                   |
| 2010 – 2011 | The Construction of a bridge and approach roads across the Mona River at Nqolotshe, within the Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal                                                                                           | Environmental Control Officer | KwaZulu-Natal Department of Transport                                   |
| 2010 – 2011 | The Construction of the Mdloti River Bridge (Northbound) on the R102, within the eThekweni Municipality, KwaZulu-Natal.                                                                                                                          | Environmental Control Officer | KwaZulu-Natal Department of Transport                                   |
| 2010 – 2011 | The Upgrade of the R102 from the Duffs Road Interchange to King Shaka International Airport, within the eThekweni Municipality, KwaZulu-Natal.                                                                                                   | Environmental Control Officer | KwaZulu-Natal Department of Transport                                   |
| 2010 – 2011 | The Construction of the P701 Provincial Road from Ulundi to Empangeni, KwaZulu-Natal                                                                                                                                                             | Environmental Control Officer | KwaZulu-Natal Department of Transport                                   |
| 2010        | Environmental Impact Assessment for the construction of a bridge and approach roads across the Mona River at Nqolotshe, within the Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal                                                       | Project Assistant             | KwaZulu-Natal Department of Transport                                   |
| 2011 - 2014 | Environmental Impact Assessment for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura                                                                                                            | Project Manager               | Oiltanking Grindrod Calulo (PTY) Ltd                                    |
| 2012 - 2014 | Environmental Impact Assessment for the proposed Manganese Export Terminal in Zones 8, 9 and 11 of the Coega IDZ, including the Port of Ngqura, and surrounding area                                                                             | Project Assistant             | Hatch Africa (PTY) Ltd<br>c/o Transnet                                  |
| 2012 - 2014 | Basic Assessment for the Provision of Landside Structures and Infrastructure to the Bulk Liquid Storage and Handling Facility in the Port of Ngqura                                                                                              | Project Manager               | Eastern Cape Infrastructure Joint Venture c/o Transnet Capital Projects |
| 2013 – 2014 | Environmental Impact Assessment for the Provision of Marine Infrastructure, including a General Cargo Berth and Liquid Bulk Berths at the Port of Ngqura                                                                                         | Project Manager               | Transnet Capital Projects                                               |
| 2013 – 2016 | Basic Assessment for the decommissioning of unused infrastructure at the Port of Ngqura                                                                                                                                                          | Project Manager               | Transnet Capital Projects                                               |
| 2015        | Public Participation Process for the Application for non-substantive Amendment to the Environmental Authorisation for the proposed Landside Structures and Infrastructure to the Bulk Liquid Storage and Handling Facility in the Port of Ngqura | Project Manager               | Transnet Capital Projects                                               |



**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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| <b>Date</b>    | <b>Project Description</b>                                                                                                                                                                                                                                                                                                                                     | <b>Role</b>       | <b>Client</b>                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------|
| 2014 – 2016    | Basic Assessment for the Proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal                                                                                                                                                                                                    | Project Manager   | Oiltanking Grindrod Calulo Terminals (PTY) Ltd                 |
| 2015 – ongoing | Environmental Management Plan for the Proposed Construction of a Bulk Liquid Storage and Handling Facility in the Port of Cape Town, Western Cape                                                                                                                                                                                                              | Project Manager   | Oiltanking Grindrod Calulo Terminals (PTY) Ltd                 |
| 2015 – 2016    | Basic Assessment Process for the Proposed development of three Transmission Lines and electrical infrastructure to connect to the proposed 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape. | Project Manager   | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2015 – 2016    | Scoping and EIA Process for the Proposed development of three 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.                                                                                                                                              | Project Manager   | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2015 - 2016    | Environmental Impact Assessment Process for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure at Tongaat and Lovu on the KwaZulu-Natal North Coast and South Coast                                                                                                                    | Project Assistant | Umgeni Water Amanzi                                            |
| 2015 – 2016    | EIA for a Gas-To-Power project and associated infrastructure, forming part of the proposed Uyekraal Gas-to-Power Development, Saldanha Bay, Western Cape                                                                                                                                                                                                       | Project Manager   | Mulilo Thermal Developments                                    |
| 2016           | Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura                                                                                                                                                                         | Project Manager   | Oiltanking Grindrod Calulo (PTY) Ltd                           |
| 2016           | Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Victoria West Renewable Energy Facility, Northern Cape                                                                                                                                                                                                       | Project Manager   | South Africa Mainstream Renewable Power Developments (Pty) Ltd |
| 2016           | Scoping and EIA Process: Proposed Development of the Teekloof WEF, near Victoria West, Northern Cape.                                                                                                                                                                                                                                                          | Project Assistant | South Africa Mainstream Renewable Power Developments (Pty) Ltd |
| 2016           | Scoping and EIA Process: Proposed Development of the Platberg WEF, near Victoria West, Northern Cape.                                                                                                                                                                                                                                                          | Project Assistant | South Africa Mainstream Renewable Power Developments (Pty) Ltd |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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| <b>Date</b> | <b>Project Description</b>                                                                                                                                                                                                                                                                                                                                          | <b>Role</b>                | <b>Client</b>                                                  |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------|
| 2016        | Appeal Processes for the three 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) and three transmission Lines and electrical infrastructure (i.e. Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line), north-east of Kenhardt, Northern Cape.                                                      | Project Consultant         | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2016 - 2017 | Screening Assessment for the proposed storage of Dangerous Goods at an existing Storage Terminal at Maydon Wharf, Port of Durban, KwaZulu-Natal                                                                                                                                                                                                                     | Project Manager            | Oiltanking Grindrod Calulo Terminals (PTY) Ltd                 |
| 2016 – 2017 | Basic Assessment Processes: Proposed development of three Distribution Lines and electrical grid infrastructure to connect to the proposed Sutherland WEF, Sutherland 2 WEF and Rietrug WEF to the National Grid, near Sutherland in the Northern and Western Cape                                                                                                  | Project Manager            | South Africa Mainstream Renewable Power Developments (Pty) Ltd |
| 2017        | Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal                                                                                                                                                                          | Project Manager            | Oiltanking Grindrod Calulo (PTY) Ltd                           |
| 2017        | Notification of the outcome of the Appeal Processes and Re-Issued EAs for the three 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) and three transmission Lines and electrical infrastructure (i.e. Kenhardt PV 1 – Transmission Line, Kenhardt PV 2 – Transmission Line, and Kenhardt PV 3 – Transmission Line), north-east of Kenhardt, Northern Cape. | Project Manager            | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2017 – 2019 | Strategic Environmental Assessment (SEA) for a Phased Gas Pipeline Network for South Africa                                                                                                                                                                                                                                                                         | Project Manager            | National DEA, DOE, DPE, Transnet, iGas and Eskom               |
| 2017 – 2019 | Strategic Environmental Assessment (SEA) for the expansion of Electricity Grid Infrastructure (EGI) for South Africa                                                                                                                                                                                                                                                | Project Manager            | National DEA, DOE, DPE, Transnet, iGas and Eskom               |
| 2018        | Three Basic Assessment Processes for the proposed development of three transmission Lines and three 115 MW Solar PV Facilities (Vryburg PV 1, PV 2, and PV 3) near Vryburg, North-West.                                                                                                                                                                             | Project Advisor and Mentor | Veroniva (Pty) Ltd - Energy   Property; and ABO Wind           |
| 2019        | Equator Principles Review of the Final EIA Report for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura                                                                                                                                                                                                             | Project Manager            | Oiltanking Grindrod Calulo (PTY) Ltd                           |
| 2019        | Three Basic Assessment Processes: Proposed development of three Distribution Lines and electrical grid infrastructure to connect to the proposed Sutherland WEF, Sutherland 2 WEF and Rietrug WEF to the National Grid, near Sutherland in the Northern and Western Cape                                                                                            | Co-Project Manager         | South Africa Mainstream Renewable Power Developments (Pty) Ltd |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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| Date           | Project Description                                                                                                                                                                                                                                                                                                                                                                       | Role                         | Client                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------|
| 2019           | Three Applications for Substantive Amendment to the Environmental Authorisations for the proposed Sutherland WEF, Sutherland 2 WEF and Rietrug WEF, near Sutherland in the Northern and Western Cape                                                                                                                                                                                      | Project Team Member          | South Africa Mainstream Renewable Power Developments (Pty) Ltd |
| 2019           | Three Basic Assessment Processes for the proposed development of three 100 MW Solar PV Facilities (Kenhardt PV 4, PV 5, and PV 6) and associated Electricity Grid Infrastructure on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.                                                                                                                | Project Advisor and Reviewer | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2019 – ongoing | Environmental Compliance And Performance Improvement For Foundries                                                                                                                                                                                                                                                                                                                        | Project Team Member          | NFTN and NCPC                                                  |
| 2019           | Notification of Environmental Authorisation Process for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure at Tongaat on the KwaZulu-Natal North Coast.                                                                                                                                                           | Project Manager              | Umgeni Water Amanzi                                            |
| 2020           | Amendment to the Environmental Authorisations for the Development of the Kenhardt PV 1, PV 2 and PV 3 Solar Energy Facilities near Kenhardt, Northern Cape Province                                                                                                                                                                                                                       | Project Manager              | Scatec Solar SA 163 (PTY) Ltd                                  |
| 2020           | Four Basic Assessment Processes for the Proposed Development of nine 175 MW Solar Photovoltaic Facilities, associated Infrastructure, and Electrical Grid Infrastructure (i.e. Witte Wall PV 1, Witte Wall PV 2, Grootfontein PV 1, Grootfontein PV 2, Grootfontein PV 3, Hoek Doornen PV 1, Hoek Doornen PV 2, Hoek Doornen PV 3, and Hoek Doornen PV 4), near Touws River, Western Cape | Project Manager              | Veroniva (PTY) Ltd                                             |
| 2020           | Independent review of an EIA Project (Confidential)                                                                                                                                                                                                                                                                                                                                       | Project Manager              | National DEFF                                                  |
| 2020           | Four Basic Assessments for the Proposed Gromis and Komas Wind Energy Facilities and Power Lines in the Northern Cape                                                                                                                                                                                                                                                                      | Project Team Member          | Enertrag                                                       |

**Language Capabilities**

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|         | Speaking  | Reading   | Writing   |
|---------|-----------|-----------|-----------|
| English | Excellent | Excellent | Excellent |

#### A.1.4 CV OF DHIVESHNI MOODLEY

|                                              |                                                                                                                                                                                                                    |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Full Name:</b>                            | Moodley, Dhiveshni                                                                                                                                                                                                 |
| <b>Professional Registration:</b>            | Candidate Natural Scientist – Reg No: 1472997/19                                                                                                                                                                   |
| <b>Nationality:</b>                          | South Africa                                                                                                                                                                                                       |
| <b>Current employer:</b>                     | CSIR Environmental Management Services                                                                                                                                                                             |
| <b>Position in Firm:</b>                     | Environmental Scientist and Assessment Practitioner (Intern)                                                                                                                                                       |
| <b>Specialisation and Research interest:</b> | Geographic Information Systems; Spatial Analysis; Mapping; Environmental Assessment and Management; Strategic Environmental Assessment; Food security; Flood Vulnerability Assessment, Hydrogeological Assessment. |

#### BIOSKETCH

Dhiveshni Moodley is an EAP Intern at the CSIR in Stellenbosch in the EMS group of the CSIR. Dhiveshni holds a BSc, BSc Honours (cum laude) and MSc (cum laude) degrees in Environmental Science from the University of KwaZulu-Natal. She has about two year's work experience in flood risk, hydrogeological- and wetland functional assessment specialist studies, as well as conducting BAs and Scoping/EIAs in the Renewable Energy sector. Her key interest lies in using GIS analyses to apply the formation of accurate, feasible solutions to complex environmental challenges. Dhiveshni is a registered Candidate Natural Scientist (Reg. No. 1472997/19) with the SACNASP.

#### PROJECT TRACK RECORD

| Completion  | Description                                                                                                                                                                                                                                                                                                                         | Role            | Client                                |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------|
| In progress | Scoping and Environmental Impact Assessment Processes for the Proposed Development of three Wind Energy Facilities; Kwagga 1 (279 MW), Kwagga 2 (341 MW) and Kwagga 3 (204.6 MW), near Beaufort West in the Western Cape Province                                                                                                   | Project Manager | ABO Wind renewable energies (Pty) Ltd |
| In progress | Basic Assessment Processes for the Proposed Development of seven Solar Photovoltaic (PV) Energy Facilities; namely Rinkhals 1 (30 MW), Rinkhals 2 (30 MW), Rinkhals 3 (150 MW), Rinkhals 4 (150 MW), Rinkhals 5 (150 MW), Rinkhals 6 (150 MW) and Rinkhals 7 (150 MW), near Kimberley in the Free State and Northern Cape Provinces | Project Officer | ABO Wind renewable energies (Pty) Ltd |

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape**

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| Completion    | Description                                                                                                                      | Role                                                               | Client                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------|
| December 2019 | The KwaDukuza Mall and Mixed-Use Precinct<br>Wetland Functional Update Assessment, iLembe District Municipality, KwaZulu-Natal   | Project member-<br>Wetland<br>delineation and<br>assessment inputs | Wallace & Green Consulting (Pty) Ltd    |
| July 2019     | Specialist desktop hydropedology assessment for the Ballito Hills Development, eThekweni Municipality, KwaZulu-Natal             | Project member-<br>Hydropedological<br>assessment                  | Triplo4 Sustainable Solutions (Pty) Ltd |
| July 2019     | Specialist desktop hydropedology assessment for the Umhlali Development, eThekweni Municipality, KwaZulu-Natal                   | Project member-<br>Hydropedological<br>assessment                  | Triplo4 Sustainable Solutions (Pty) Ltd |
| June 2019     | Specialist desktop hydropedology assessment for the Sheffield Waste Water Treatment Works, eThekweni Municipality, KwaZulu-Natal | Project member-<br>Hydropedological<br>assessment                  | Triplo4 Sustainable Solutions (Pty) Ltd |

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#### PAST EMPLOYMENT RECORD

**2020 – current** Environmental Scientist and Assessment Practitioner (Intern), Council for Scientific and Industrial Research – Environmental Management Services (EMS), Implementation Unit (IU) - Stellenbosch.

**2020 - 2020** Agronomy and GIS Research Intern. South African Sugar Research Institute – Agronomy - Durban.

**2019-2020** Junior Environmental Consultant. Aeon Nexus (Pty) Ltd - Durban

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#### QUALIFICATIONS

|             |                                                       |                                                 |
|-------------|-------------------------------------------------------|-------------------------------------------------|
| <b>2019</b> | MSc. Environmental Science ( <i>Cum Laude</i> )       | University Kwa-Zulu Natal, Durban, South Africa |
| <b>2017</b> | BSc. Hons. Environmental Science ( <i>Cum Laude</i> ) | University Kwa-Zulu Natal, Durban, South Africa |
| <b>2016</b> | BSc. Environmental Science                            | University Kwa-Zulu Natal, Durban, South Africa |

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#### SOFTWARE SKILLS

- |                                                                                                                                               |                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• ESRI Arcmap</li> <li>• Microsoft Office (Word, Excel, Powerpoint)</li> <li>• Google Earth</li> </ul> | <ul style="list-style-type: none"> <li>• QGIS</li> <li>• ERDAS IMAGINE</li> <li>• Pix4Dmapper</li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|

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#### RELEVANT COURSES

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FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape

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- 2020**
- CiLLA Conflict Resolution course
  - Groundwater, Boreholes, and Water use Licenses-E-learning lecture, Ground Water Division of the Geological Society of South Africa.
- 2019**
- Flood Determination Workshop, Acute Training Management, Johannesburg.
- 2019**
- The Department of Water and Sanitation Hydropedology-Course 1, Digital Soils South Africa, Centre for Wildlife Management, University of Pretoria.

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**PROFESSIONAL AFFILIATIONS/REGISTRATIONS**

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- 2019-current**
- South African Council for Natural Scientific Professions (SACNASP), Candidate Professional Natural Scientist (Reg. no. 1472997/19).

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**HONOURS AND AWARDS**

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- 2017**
- Allan Gray Achievement Award nominee
- 2016-current**
- Golden Key International Academic Honours Association

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**LANGUAGE CAPABILITY**

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|                | <b>Speaking</b> | <b>Reading</b> | <b>Writing</b> |
|----------------|-----------------|----------------|----------------|
| <b>English</b> | Excellent       | Excellent      | Excellent      |

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## A.2. CURRICULUM VITAE OF THE SPECIALISTS

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### A.2.1 NOISE SPECIALIST

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#### Dr Brett Williams

Name of Organization: Safetech  
Position in Firm: Owner  
Date of Birth: 21/04/1963  
Years with Firm: 29  
Nationality: South African

#### MEMBERSHIP OF PROFESSIONAL BODIES

Occupational Hygienist Registered with the Southern African Institute of Occupational Hygienists (Registration Number 0221).

#### BIOGRAPHICAL SKETCH

Brett Williams has been involved in Health, Safety and Environmental Management since 1987. He has been measuring noise related impacts since 1996. Brett is the owner of Safetech who have offices in Pretoria and Port Elizabeth. He has consulted to many different industries including, mining, chemical, automotive, food production etc.

He is registered with the Department of Employment and Labour as well as the Chamber of Mines to measure environmental stressors, which include chemical monitoring, noise and other physical stresses.

#### PROJECT EXPERIENCE

Brett has conducted various projects to assess environmental noise impacts. The list below presents a selection of his project experience, relevant to noise:

- CES – Coega SEZ Floating Power Barge (Gas to Power)
- SRK – Coega SEZ Zone 13 and Zone 10 North and Zone 10 South (Gas to Power)
- SRK – Engie SEZ Zone 13 (Gas to Power)
- SLR Consulting – Atlantis Azura (Gas to Power)
- SiVest – Oya Hybrid Energy Facility
- Arcus Gibb – Kouga Wind Energy Project
- CSIR – Umgeni Water Desalination Plant
- CSIR – Saldanha Desalination Plant
- CSIR – Atlantis Gas to Power Project (current)
- CSIR – Walvis Bay Port Extension
- CSIR – Noise Impact Study of Namwater Desalination Plant
- CSIR – Kouga Wind Energy Project – Background Noise Measurements
- CSIR – Kouga Wind Energy Project
- CSIR – Wind Current Wind Energy Project
- CSIR – Langefontein Wind Energy Project
- CSIR – Mossel Bay Wind Energy Project
- CSIR – Coega IDZ Wind Energy Project

- CSIR – Baakenskop Wind Energy Project
- CSIR – Biotherm Wind Energy Project
- CSIR – Innowind Mossel Bay
- CSIR – Langefontein Wind Energy Project
- CSIR – Bulk Manganese Terminal (Port of Ngqura)
- CSIR – Phyto Amandla Biodiesel Project
- CSIR – Vleesbaai Wind Energy Project
- CSIR - Kudusberg Wind Energy Project
- CES – Coega IDZ Gas to Power Project (Current)
- CES – Coega IDZ Wind Energy Project
- CES – Middleton Wind Energy Project
- CES – Waainek Wind Energy Project
- CES – Ncora Wind Energy Project
- CES – Qunu Wind Energy Project
- CES – Nqamakwe Wind Energy Project
- CES – Plan 8 Wind Energy Project
- CES – Qumbu Wind Energy Project
- CES – Peddie Wind Energy Project
- CES – Cookhouse Wind Energy Project
- CES – Madagascar Heavy Minerals
- CES – Richards Bay Wind Energy Project
- CES – Hluhluwe Wind Energy Project
- CEN – Kwandwe Airport Development Project
- CEN – Swartkops Manganese Project
- CEN – N2 Petro Port Project
- SiVest - Rondekop Wind Energy Project
- SiVest - Tooverberg Wind Energy Project
- SRK – Roodeplaat Wind Energy Project
- SRK – Tronox Slimes Dam Pumping Station
- Savannah - Witberg Wind Energy Project
- Savannah - Kareebosch Wind Energy Project

#### **TERTIARY EDUCATION**

- PhD - University of Pretoria (Environmental Management)
- Various Health & Safety Courses.
- National Diploma Health & Safety Management
- Harvard University – Applications of Industrial Hygiene Principles – including noise
- United States EPA Pollution Measurement course conducted at the University Of Cincinnati (EPA Training Centre)
- US EPA Air Dispersion Modelling Training Course
- Master of Business Administration (University of Wales) with dissertation on environmental reporting in South Africa.
- Environmental Auditor (ISO 14001:2015 and ISO 45001:2018)

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## A.2.2 HERITAGE SPECIALIST

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### Curriculum Vitae

Jayson David John Orton



### ARCHAEOLOGIST AND HERITAGE CONSULTANT

#### Contact Details and personal information:

**Address:** 23 Dover Road, Muizenberg, 7945  
**Telephone:** (021) 788 1025  
**Cell Phone:** 083 272 3225  
**Email:** jayson@asha-consulting.co.za

**Birth date and place:** 22 June 1976, Cape Town, South Africa  
**Citizenship:** South African  
**ID no:** 760622 522 4085  
**Driver's License:** Code 08  
**Marital Status:** Married to Carol Orton  
**Languages spoken:** English and Afrikaans

#### Education:

|                         |                                                          |      |
|-------------------------|----------------------------------------------------------|------|
| SA College High School  | Matric                                                   | 1994 |
| University of Cape Town | B.A. (Archaeology, Environmental & Geographical Science) | 1997 |
| University of Cape Town | B.A. (Honours) (Archaeology)*                            | 1998 |
| University of Cape Town | M.A. (Archaeology)                                       | 2004 |

# FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape

University of Oxford

D.Phil. (Archaeology)

2013

\*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

## **Employment History:**

|                                             |                                                 |                     |
|---------------------------------------------|-------------------------------------------------|---------------------|
| Spatial Archaeology Research Unit, UCT      | Research assistant                              | Jan 1996 – Dec 1998 |
| Department of Archaeology, UCT              | Field archaeologist                             | Jan 1998 – Dec 1998 |
| UCT Archaeology Contracts Office            | Field archaeologist                             | Jan 1999 – May 2004 |
| UCT Archaeology Contracts Office            | Heritage & archaeological consultant            | Jun 2004 – May 2012 |
| School of Archaeology, University of Oxford | Undergraduate Tutor                             | Oct 2008 – Dec 2008 |
| ACO Associates cc                           | Associate, Heritage & archaeological consultant | Jan 2011 – Dec 2013 |
| ASHA Consulting (Pty) Ltd                   | Director, Heritage & archaeological consultant  | Jan 2014 –          |

## **Professional Accreditation:**

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233

CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)  
Stone Age archaeology (awarded 2007)  
  
Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)  
Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

# FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape

## ➤ **Memberships and affiliations:**

|                                                                    |             |
|--------------------------------------------------------------------|-------------|
| South African Archaeological Society Council member                | 2004 – 2016 |
| Assoc. Southern African Professional Archaeologists (ASAPA) member | 2006 –      |
| UCT Department of Archaeology Research Associate                   | 2013 –      |
| Heritage Western Cape APM Committee member                         | 2013 –      |
| UNISA Department of Archaeology and Anthropology Research Fellow   | 2014 –      |
| Fish Hoek Valley Historical Association                            | 2014 –      |
| Kalk Bay Historical Association                                    | 2016 –      |
| Association of Professional Heritage Practitioners member          | 2016 –      |

## **Fieldwork and project experience:**

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

### Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

### Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

### Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda, Namaqualand

## FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 and associated infrastructure near Beaufort West in the Western Cape

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- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

### **Awards:**

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

### A.2.3 AQUATIC BIODIVERSITY SPECIALIST

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                        | Antonia (Toni) Belcher ( <i>Pr. Sci. Nat</i> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Profession:</b>                  | Aquatic scientist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Nationality:</b>                 | South African                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Years of experience:</b>         | 30 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Professional Registration:</b>   | Professional Environmental Scientist (Pr. Sci. Nat 400040/10)<br>Professional Ecological Science (Pr. Sci. Nat 400040/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Accreditation:</b>               | SASS5 (Macro-invertebrate assessment method)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Academic Qualifications:</b>     | 1998 - M.Sc. in Environmental Management, Potchefstroom University ( <i>cum laude</i> )<br>1989 - B.Sc. (Hons) in Oceanography, University of Port Elizabeth<br>1987 - B.Sc. – Mathematics, Applied Mathematics, University of Port Elizabeth<br>1984 – Matriculation, Lawson Brown High School, Port Elizabeth                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Areas of specialisation:</b>     | Environmental water requirement studies<br>River maintenance and management plans (MMP)<br>Aquatic ecosystem monitoring and assessments<br>Design of water quality and monitoring programmes for aquatic ecosystems<br>Compilation of State of River reports (aquatic data collection, interpretation, presentation, graphic layout and design and preparation of technical and glossy print ready copies)<br>Environmental Impact Assessments<br>River classification and environmental water requirements (Ecological Reserve determinations)<br>Integrated Water Resource Management<br>River, Wetlands and Estuary management<br>Water quality assessment and management reporting<br>Water resource legislation<br>Water resource institutions<br>Water education |
| <b>Countries Worked in:</b>         | South Africa, Namibia, Swaziland, Lesotho, Rwanda                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Employment Record:</b>           | 2020 – present Self-employed<br>2013 -2020 BlueScience (Pty) Ltd (Principal Specialist Scientist)<br>2007 – 2012 Self-employed<br>1999 – 2007 Assistant and Deputy Director, Water Resource Protection, Western Cape Regional Office, Department of Water Affairs, Cape Town<br>1995 – 1999 Institute for Water Quality Studies, Department of Water Affairs<br>1991 – 1995 Water Pollution Control Officer, Water Quality Management, Department of Water Affairs, Pretoria<br>1989 – 1990 Mathematics tutor and administrator, Master maths, Randburg and Braamfontein Colleges, Johannesburg<br>1987 – 1988 Part-time field researcher, Department of Oceanography, University of Port Elizabeth                                                                    |
| <b>Awards and Achievements:</b>     | Woman in Water award for Environmental Education (2006)<br>Runner up for the Woman in Water prize for Water Research (2006)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Summary of recent experience</b> | 2008 –<br><b>Environmental water requirement studies</b> for various rivers in South Africa and Lesotho; Berg (Zones 1-3), Kingna, Baden, Konings and Poesjesnel <b>rivers maintenance and management plans</b> ;<br><b>Water quality impact assessment</b> for the upgrade of more than 15 waste water treatment works in the Western Cape and consideration of reuse of the treated wastewater from many of these works for potable water supply;<br>More than <b>500 freshwater impact assessments studies</b> as input into EIA decision making processes. Toni has conducted more than <b>150 water use authorisation applications</b> . This                                                                                                                     |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>included more than 40 freshwater impact assessments for roads, power line and substation and renewable energy projects.</p> <p>Development of RDM (<b>Resource Directed Measures</b>) curriculum for a Master degree programme at University of science institutions in South Africa.</p> <p>Free State <b>river health monitoring</b> programme (monitoring for 3 year period).</p> <p><b>Classification of the water resources</b> of the Olifants Doorn Water Management Area.</p> <p>Graphic design, layout, technical compilation and preparation of print ready glossy publications for the <b>State-of-River reports</b> for the Gouritz and Breede Water Management Areas</p> <p>Development and piloting of a National Strategy to <b>Improve Gender Representation in Water Management Institutions</b>, where the focus is on improving the capacity (specifically amongst women) to participate in water related decision making in Limpopo, Eastern Cape and KZN.</p> <p>Compilation of a background document as well as a framework management plan towards the development of an <b>integrated water resources management plan for the Sandveld</b>;</p> <p>Aquatic specialist to the City of Cape Town project: Determination of additional resources to <b>manage pollution in stormwater and river systems</b>;</p> <p>Framework for Education and Training in Water (FETWATER), Resource Directed Measures Network partner which has undertaken <b>training initiatives on environmental water requirements</b> in the SADC region;</p> <p>Resource Directed Management of Water Quality: <b>Development of training materials</b>, Department of Water Affairs and Forestry; and</p> <p>2000 –2007:</p> <p>Manager responsible for the implementation of the Reserve Directed Measures component of the National Water Act Western Cape Regional Office; and</p> <p>Provincial Champion for the River Health Programme in the Western Cape and designed, implemented and compiled State-of-River reports for 7 catchment areas in the Western Cape.</p> <p>1995 - 2000:</p> <p>Project manager and coordinator for the freshwater and marine water quality guidelines for South Africa; and</p> <p>Provided specialist input into various aspects of the new National Water Act and its implementation</p> <p>1991 -1995:</p> <p>Water quality catchment studies</p> <p>Development and implementation of marine water quality policy for South Africa.</p> |
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## A.2.4 BATS SPECIALIST

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### CURRICULUM VITAE

Craig Campbell (*Pr. Sci. Nat – Ecological Sciences*)

*Ecologist*

*Email: craigc@arcusconsulting.co.za*



- Specialisms**
- Bird and Bat baseline assessments
  - Field Research
  - Project Management
  - Reporting and GIS analysis
- Summary of Experience** Craig is an Ecologist at Arcus. He graduated with a Degree in Conservation Ecology from Stellenbosch University, South Africa. He is registered as a Professional Natural Scientist, in the field of Ecological Sciences (SACNASP). Since 2013, Craig has had extensive experience in ecological baseline studies, biodiversity monitoring surveys and due diligence on several renewable energy and other projects in South Africa, Mozambique, Portugal and Turkey. He has a sound background in management and ecology, and also focusses on project design & layout, GIS mapping, report compilation and stakeholder engagement.
- Professional History**
- Mar 2021 to present - Ecologist, Arcus Consultancy Services, Cape Town
  - Aug 2017 to Mar 2021 – National Manager & Senior Ecologist, Bioinsight, Cape Town
  - Nov 2013 to Aug 2017 – Ecologist, Bioinsight, Cape Town
- Qualifications**
- University of Stellenbosch, 2009 - 2013**  
BSc (hons) Conservation Ecology.
- University of Stellenbosch, 2008-2008**  
Certificate in Aquaculture Production Management
- Project Experience**
- Pre-Construction Monitoring and/or Impact Assessment**
- Kudusberg Wind Energy Facility
  - Sere Wind Energy Facility
  - Boulders Wind Energy Facility
  - Vredendal Wind Energy Facility
  - Juno Wind Energy Facility
  - Hartbeest Wind Energy Facility
  - Rondekop Wind Energy Facility
  - Noblesfontein 2 & 3 Wind Energy Facilities
  - Haga Haga Wind Energy Facility
  - Somerset East Wind Energy Facility
  - Spitskop West Wind Energy Facility
  - Witsand Wind Energy Facility
  - Gouda 2 Wind Energy Facility
  - Stormberg Wind Energy Facility
  - Kruispad, Doornfontein and Heuningklip Photovoltaic Solar Energy Facilities
- Operational Monitoring – Wind Energy Facility**
- Noblesfontein Wind Energy Facility
  - Sere Wind Energy Facility
  - Nxuba Wind Energy Facility
- Due Diligence**
- Bird monitoring at Kiyikoy Wind Energy Facility, Turkey

Arcus Consultancy Services South Africa (Pty) Limited  
Registered in South Africa No. 2015/416206/07

## A.2.5 AVIFAUNAL SPECIALIST

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### Curriculum vitae: Chris van Rooyen

|                           |                        |
|---------------------------|------------------------|
| Profession/Specialisation | : Avifaunal Specialist |
| Highest Qualification     | : BA LLB               |
| Nationality               | : South African        |
| Years of experience       | : 22 years             |

### Key Experience

Chris van Rooyen has twenty-two years' experience in the assessment of avifaunal interactions with industrial infrastructure. He was employed by the Endangered Wildlife Trust as head of the Eskom-EWT Strategic Partnership from 1996 to 2007, which has received international acclaim as a model of co-operative management between industry and natural resource conservation. He is an acknowledged global expert in this field and has consulted in South Africa, Namibia, Botswana, Lesotho, New Zealand, Texas, New Mexico and Florida. He also has extensive project management experience and he has received several management awards from Eskom for his work in the Eskom-EWT Strategic Partnership. He is the author and/or co-author of 17 conference papers, co-author of two book chapters, several research reports and the current best practice guidelines for avifaunal monitoring at wind farm sites. He has completed around 130 power line assessments; and has to date been employed as specialist avifaunal consultant on more than 50 renewable energy generation projects. He has also conducted numerous risk assessments on existing power lines infrastructure. He also works outside the electricity industry and he has done a wide range of bird impact assessment studies associated with various residential and industrial developments. He serves on the Birds and Wind Energy Specialist Group which was formed in 2011 to serve as a liaison body between the ornithological community and the wind industry.

### Key Project Experience

#### **Bird Impact Assessment Studies and avifaunal monitoring for wind-powered generation facilities:**

1. Eskom Klipheuwel Experimental Wind Power Facility, Western Cape
2. Mainstream Wind Facility Jeffreys Bay, Eastern Cape (EIA and monitoring)
3. Biotherm, Swellendam, (Excelsior), Western Cape (EIA and monitoring)
4. Biotherm, Napier, (Matjieskloof), Western Cape (pre-feasibility)
5. Windcurrent SA, Jeffreys Bay, Eastern Cape (2 sites) (EIA and monitoring)
6. Caledon Wind, Caledon, Western Cape (EIA)
7. Innowind (4 sites), Western Cape (EIA)
8. Renewable Energy Systems (RES) Oyster Bay, Eastern Cape (EIA and monitoring)
9. Oelsner Group (Kerriefontein), Western Cape (EIA)
10. Oelsner Group (Langefontein), Western Cape (EIA)
11. InCa Energy, Vredendal Wind Energy Facility Western Cape (EIA)
12. Mainstream Loeriesfontein Wind Energy Facility (EIA and monitoring)
13. Mainstream Noupoot Wind Energy Facility (EIA and monitoring)
14. Biotherm Port Nolloth Wind Energy Facility (Monitoring)
15. Biotherm Laingsburg Wind Energy Facility (EIA and monitoring)
16. Langhoogte Wind Energy Facility (EIA)
17. Vleesbaai Wind Energy Facility (EIA and monitoring)
18. St. Helena Bay Wind Energy Facility (EIA and monitoring)
19. Electrawind, St Helena Bay Wind Energy Facility (EIA and monitoring)
20. Electrawind, Vredendal Wind Energy Facility (EIA)
21. SAGIT, Langhoogte and Wolseley Wind Energy facilities
22. Renosterberg Wind Energy Project – 12-month preconstruction avifaunal monitoring project



23. De Aar – North (Mulilo) Wind Energy Project – 12-month preconstruction avifaunal monitoring project
24. De Aar – South (Mulilo) Wind Energy Project – 12-month bird monitoring
25. Namies – Aggenys Wind Energy Project – 12-month bird monitoring
26. Pofadder - Wind Energy Project – 12-month bird monitoring
27. Dwarsrug Loeriesfontein - Wind Energy Project – 12-month bird monitoring
28. Waaihoek – Utrecht Wind Energy Project – 12-month bird monitoring
29. Amathole – Butterworth Utrecht Wind Energy Project – 12-month bird monitoring & EIA specialist
30. Phezukomoya and San Kraal Wind Energy Projects 12-month bird monitoring & EIA specialist study (Innowind)
31. Beaufort West Wind Energy Facility 12-month bird monitoring & EIA specialist study (Mainstream)
32. Leeuwdraai Wind Energy Facility 12-month bird monitoring & EIA specialist study (Mainstream)
33. Sutherland Wind Energy Facility 12-month bird monitoring (Mainstream)
34. Maralla Wind Energy Facility 12-month bird monitoring & EIA specialist study (Biotherm)
35. Esizayo Wind Energy Facility 12-month bird monitoring & EIA specialist study (Biotherm)
36. Humansdorp Wind Energy Facility 12-month bird monitoring & EIA specialist study (Cennergi)
37. Aletta Wind Energy Facility 12-month bird monitoring & EIA specialist study (Biotherm)
38. Eureka Wind Energy Facility 12-month bird monitoring & EIA specialist study (Biotherm)
39. Makambako Wind Energy Facility (Tanzania) 12-month bird monitoring & EIA specialist study (Windlab)
40. R355 Wind Energy Facility 12-month bird monitoring (Mainstream)
41. Groenekloof Wind Energy Facility 12-month bird monitoring & EIA specialist study (Mulilo)
42. Tsitsikamma Wind Energy Facility 24-months post-construction monitoring (Cennergi)
43. Noupoot Wind Energy Facility 24-months post-construction monitoring (Mainstream)
44. Kokerboom Wind Energy Facility 12-month bird monitoring & EIA specialist study (Business Venture Investments)
45. Kuruman Wind Energy Facility 12-month bird monitoring & EIA specialist study (Mulilo)
46. Dassieklip Wind Energy Facility 3 years post-construction monitoring (Biotherm)
47. Loeriesfontein 2 Wind Energy Facility 2 years post-construction monitoring (Mainstream)
48. Khobab Wind Energy Facility 2 years post-construction monitoring (Mainstream)
49. Excelsior Wind Energy Facility 18 months construction phase monitoring (Biotherm)
50. Boesmansberg Wind Energy Facility 12-months pre-construction bird monitoring (juwi)
51. Mañhica Wind Energy Facility, Mozambique, 12-months pre-construction monitoring (Windlab)
52. Kwagga Wind Energy Facility, Beaufort West, 12-months pre-construction monitoring (ABO)
53. Pienaarspoort Wind Energy Facility, Touws River, Western Cape, 12-months pre-construction monitoring (ABO).
54. Koup 1 and 2 Wind Energy Facilities, Beaufort West, Western Cape, 12 months pre-construction monitoring (Genesis Eco-energy)
55. Duiker Wind Energy Facility, Vredendal, Western Cape 12 months pre-construction monitoring (ABO)
56. Perdekraal East Wind Energy Facility, Touws River, Western Cape, 18 months construction phase monitoring (Mainstream).
57. Swellendam Wind Energy Facility, Western Cape, 12-month pre-construction monitoring (Veld Renewables)
58. Lombardskraal Wind Energy Facility, Western Cape, 12-month pre-construction monitoring (Enertrag SA)
59. Mainstream Kolkies & Heuweltjies Wind Energy Facilities, Western Cape, 12-month pre-construction monitoring (Mainstream)
60. Great Karoo Wind Energy Facility, Northern Cape, 12-month pre-construction monitoring (African Green Ventures).
61. Mpumalanga & Gauteng Wind and Hybrid Energy Facilities (6x), pre-construction monitoring (Enertrag SA)
62. Dordrecht Wind Energy Facilities, Eastern Cape, Screening Report (Enertrag SA)
63. Dordrecht Wind Energy Facilities, Eastern Cape, Screening Report (ACED)
64. Nanibees North & South Wind Energy Facilities, Northern Cape, Screening Report (juwi)
65. Sutherland Wind Energy Facilities, Northern Cape, Screening Report (WKN Windcurrent)
66. Pofadder Wind Energy Facility, Northern Cape, Screening Report (Atlantic Energy)
67. Haga Haga Wind Energy Facility, Eastern Cape, Amendment Report (WKN Windcurrent)
68. Banken Wind Energy Facility, Northern Cape, Screening Report (Atlantic Energy)
69. Hartebeest Wind Energy Facility, Western Cape, 12-month pre-construction monitoring (juwi).

**Bird Impact Assessment Studies for Solar Energy Plants:**

1. Concentrated Solar Power Plant, Upington, Northern Cape.
2. Globeleq De Aar and Droogfontein Solar PV Pre- and Post-construction avifaunal monitoring
3. JUWI Kronos PV project, Copperton, Northern Cape
4. Sand Draai CSP project, Groblershoop, Northern Cape
5. Biotherm Helena PV Project, Copperton, Northern Cape
6. Biotherm Letsiao CSP Project, Aggeneys, Northern Cape
7. Biotherm Enamandla PV Project, Aggeneys, Northern Cape
8. Biotherm Sendawo PV Project, Vryburg, North-West
9. Biotherm Tlitseng PV Project, Lichtenburg, North-West
10. JUWI Hotazel Solar Park Project, Hotazel, Northern Cape
11. Namakwa Solar Project, Aggeneys, Northern Cape
12. Brypaal Solar Power Project, Kakamas, Northern Cape
13. ABO Vryburg 1,2,3 Solar PV Project, Vryburg, North-West
14. Scatec Solar Kenhardt PV 4, PV 5 and PV6 Projects, Kenhardt, Northern Cape
15. NamPower CSP Facility near Arandis, Namibia
16. Dayson Klip PV Facility near Upington, Northern Cape
17. Geelkop PV Facility near Upington, Northern Cape
18. Oya PV Facility, Ceres, Western Cape
19. Vrede and Rondawel PV Facilities, Free State
20. Kolkies & Sadawa PV Facilities, Western Cape
21. Leeudoringstad PV Facility, North-West

**Bird Impact Assessment Studies for the following overhead line projects:**

1. Chobe 33kV Distribution line
2. Athene - Umfolozi 400kV
3. Beta-Delphi 400kV
4. Cape Strengthening Scheme 765kV
5. Flurian-Louis-Trichardt 132kV
6. Ghanzi 132kV (Botswana)
7. Ikaros 400kV
8. Matimba-Witkop 400kV
9. Naboomspruit 132kV
10. Tabor-Flurian 132kV
11. Windhoek - Walvisbaai 220 kV (Namibia)
12. Witkop-Overysel 132kV
13. Breyten 88kV
14. Adis-Phoebus 400kV
15. Dhuvu-Janus 400kV
16. Perseus-Mercury 400kV
17. Gravelotte 132kV
18. Ikaros 400 kV
19. Khanye 132kV (Botswana)
20. Moropule – Thamaga 220 kV (Botswana)
21. Parys 132kV
22. Simplon –Everest 132kV
23. Tutuka-Alpha 400kV
24. Simplon-Der Brochen 132kV
25. Big Tree 132kV
26. Mercury-Ferrum-Garona 400kV

27. Zeus-Perseus 765kV
28. Matimba B Integration Project
29. Caprivi 350kV DC (Namibia)
30. Gerus-Mururani Gate 350kV DC (Namibia)
31. Mmamabula 220kV (Botswana)
32. Steenberg-Der Brochen 132kV
33. Venetia-Paradise T 132kV
34. Burgersfort 132kV
35. Majuba-Umfolozi 765kV
36. Delta 765kV Substation
37. Braamhoek 22kV
38. Steelpoort Merensky 400kV
39. Mmamabula Delta 400kV
40. Delta Epsilon 765kV
41. Gerus-Zambezi 350kV DC Interconnector: Review of proposed avian mitigation measures for the Okavango and Kwando River crossings
42. Giyani 22kV Distribution line
43. Liqhobong-Kao 132/11kV distribution power line, Lesotho
44. 132kV Leslie – Wildebeest distribution line
45. A proposed new 50 kV Spoornet feeder line between Sishen and Saldanha
46. Cairns 132kV substation extension and associated power lines
47. Pimlico 132kV substation extension and associated power lines
48. Gyani 22kV
49. Matafin 132kV
50. Nkomazi\_Fig Tree 132kV
51. Pebble Rock 132kV
52. Reddersburg 132kV
53. Thaba Combine 132kV
54. Nkomati 132kV
55. Louis Trichardt – Musina 132kV
56. Endicot 44kV
57. Apollo Lepini 400kV
58. Tarlton-Spring Farms 132kV
59. Kuschke 132kV substation
60. Bendstore 66kV Substation and associated lines
61. Kuiseb 400kV (Namibia)
62. Gyani-Malamulele 132kV
63. Watershed 132kV
64. Bakone 132kV substation
65. Eerstegoud 132kV LILo lines
66. Kumba Iron Ore: SWEP - Relocation of Infrastructure
67. Kudu Gas Power Station: Associated power lines
68. Steenberg Booysendal 132kV
69. Toulon Pumps 33kV
70. Thabatshipi 132kV
71. Witkop-Silica 132kV
72. Bakubung 132kV
73. Nelsriver 132kV
74. Rethabiseng 132kV
75. Tilburg 132kV
76. GaKgapanne 66kV
77. Nobel Gilead 132kV
78. Bochum Nobel 132kV

79. Madibeng 132kV
80. Witbank Railway Line and associated infrastructure
81. Spencer NDP phase 2 (5 lines)
82. Akanani 132kV
83. Hermes-Dominion Reefs 132kV
84. Cape Peninsula Strengthening Project 400kV
85. Magalakwena 132kV
86. Benfiosa 132kV
87. Dithabaneng 132kV
88. Taunus Diepkloof 132kV
89. Taunus Doornkop 132kV
90. Tweedracht 132kV
91. Jane Furse 132kV
92. Majeje Sub 132kV
93. Tabor Louis Trichardt 132kV
94. Riversong 88kV
95. Mamatsekele 132kV
96. Kabokweni 132kV
97. MDPP 400kV Botswana
98. Marble Hall NDP 132kV
99. Bokmakiere 132kV Substation and LILO lines
100. Styltdrift 132kV
101. Taunus – Diepkloof 132kV
102. Bighorn NDP 132kV
103. Waterkloof 88kV
104. Camden – Theta 765kV
105. Dhuva – Minerva 400kV Diversion
106. Lesedi –Grootpan 132kV
107. Waterberg NDP
108. Bulgerivier – Dorset 132kV
109. Bulgerivier – Toulon 132kV
110. Nokeng-Fluorspar 132kV
111. Mantsole 132kV
112. Tshilamba 132kV
113. Thabamoopo - Tshebela – Nhlovuko 132kV
114. Arthurseat 132kV
115. Borutho 132kV MTS
116. Volspruit - Potgietersrus 132kV
117. Neotel Optic Fibre Cable Installation Project: Western Cape
118. Matla-Glockner 400kV
119. Delmas North 44kV
120. Houwhoek 11kV Refurbishment
121. Clau-Clau 132kV
122. Ngwedi-Silwerkrans 134kV
123. Nieuwehoop 400kV walk-through
124. Booyendal 132kV Switching Station
125. Tarlton 132kV
126. Medupi - Witkop 400kV walk-through
127. Germiston Industries Substation
128. Sekgame 132kV
129. Botswana – South Africa 400kV Transfrontier Interconnector
130. Syferkuil – Rampheri 132kV
131. Queens Substation and associated 132kV powerlines

132. Oranjemond 400kV Transmission line
133. Aries – Helios – Juno walk-down
134. Kuruman Phase 1 and 2 Wind Energy facilities 132kV Grid connection
135. Transnet Thaba 132kV

**Bird Impact Assessment Studies for the following residential and industrial developments:**

1. Lizard Point Golf Estate
2. Lever Creek Estates
3. Leloko Lifestyle Estates
4. Vaaloewers Residential Development
5. Clearwater Estates Grass Owl Impact Study
6. Somerset Ext. Grass Owl Study
7. Proposed Three Diamonds Trading Mining Project (Portion 9 and 15 of the Farm Blesbokfontein)
8. N17 Section: Springs To Leandra – “Borrow Pit 12 And Access Road On (Section 9, 6 And 28 Of The Farm Winterhoek 314 Ir)
9. South African Police Services Gauteng Radio Communication System: Portion 136 Of The Farm 528 Jq, Lindley.
10. Report for the proposed upgrade and extension of the Zeekoegat Wastewater Treatment Works, Gauteng.
11. Bird Impact Assessment for Portion 265 (a portion of Portion 163) of the farm Rietfontein 189-JR, Gauteng.
12. Bird Impact Assessment Study for Portions 54 and 55 of the Farm Zwartkop 525 JQ, Gauteng.
13. Bird Impact Assessment Study Portions 8 and 36 of the Farm Nooitgedacht 534 JQ, Gauteng.
14. Shumba’s Rest Bird Impact Assessment Study
15. Randfontein Golf Estate Bird Impact Assessment Study
16. Zilkaatsnek Wildlife Estate
17. Regenstone Communications Tower (Namibia)
18. Avifaunal Input into Richards Bay Comparative Risk Assessment Study
19. Maquasa West Open Cast Coal Mine
20. Glen Erasmia Residential Development, Kempton Park, Gauteng
21. Bird Impact Assessment Study, Weltevreden Mine, Mpumalanga
22. Bird Impact Assessment Study, Olifantsvlei Cemetery, Johannesburg
23. Camden Ash Disposal Facility, Mpumalanga
24. Lindley Estate, Lanseria, Gauteng
25. Proposed open cast iron ore mine on the farm Lylyveld 545, Northern Cape
26. Avifaunal monitoring for the Sishen Mine in the Northern Cape as part of the EMP requirements
27. Steelpoort CNC Bird Impact Assessment Study

Professional affiliations

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

## A.2.6 TERRESTRIAL BIODIVERSITY SPECIALIST

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### 1. Biographical information

|                           |                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------|
| Surname                   | Van Rooyen                                                                           |
| First names               | Noel                                                                                 |
| ID number                 | 501225 5034 084                                                                      |
| Citizenship               | South African                                                                        |
| Business address          | Ekotrust CC<br>7 St George Street<br>Lionviham 7130<br>Somerset West<br>South Africa |
| Mobile                    | 082 882 0886                                                                         |
| e-mail                    | <a href="mailto:noel@ekotrust.co.za">noel@ekotrust.co.za</a>                         |
| Current position          | Member of Ekotrust cc                                                                |
| Professional registration | Botanical Scientist : Pr.Sci.Nat; Reg no. 401430/83                                  |

Academic qualifications include BSc (Agric), BSc (Honours), MSc (1978) and DSc degrees (1984) in Plant Ecology at the University of Pretoria, South Africa. Until 1999 I was Professor in Plant Ecology at the University of Pretoria and at present I am a member of Ekotrust cc.

### 2. Publications

I am the author/co-author of 128 peer reviewed research publications in national and international scientific journals and was supervisor or co-supervisor of 9 PhD and 33 MSc students. More than 350 projects were undertaken by Ekotrust cc as consultant over a period of more than 40 years.

#### Books

VAN ROOYEN, N. 2001. *Flowering plants of the Kalahari dunes*. Ekotrust CC, Pretoria. (In collaboration with H. Bezuidenhout & E. de Kock).

VAN ROOYEN, N. & VAN ROOYEN, M.W. 2019. *Flowering plants of the southern Kalahari*. Somerset West.

Author / co-author of various chapters on the Savanna and Grassland Biomes in:

LOW, B. & REBELO, A.R. 1996. *Vegetation types of South Africa, Lesotho and Swaziland*, Department of Environmental Affairs and Tourism, Pretoria.

KNOBEL, J. (Ed.) 1999, 2006. *The Magnificent Natural Heritage of South Africa*. (Chapters on the Kalahari and Lowveld).

VAN DER WALT, P.T. 2010. *Bushveld*. Briza, Pretoria. (Chapter on Sour Bushveld).

Contributed to chapters on vegetation, habitat evaluation and veld management in the book:

BOTHMA, J. du P. & DU TOIT, J.G. (Eds). 2016. *Game Ranch Management*. 5th edition. Van Schaik, Pretoria.

Co-editor of the book:

BOTHMA, J. du P. & VAN ROOYEN, N. (eds). 2005. *Intensive wildlife production in southern Africa*. Van Schaik, Pretoria.

### 3. Ekotrust CC: Core Services

Ekotrust CC specializes in vegetation surveys, classification and mapping, wildlife management, wildlife production and economic assessments, vegetation ecology, veld condition assessment, carrying capacity, biodiversity assessments, rare species assessments, carbon pool assessments and alien plant management.

### 4. Examples of projects previously undertaken

Numerous vegetation surveys and vegetation impact assessments for Baseline, Scoping and Environmental Impact Assessments (BAs & EIA's) were made both locally and internationally.

Numerous projects have been undertaken in game ranches and conservation areas covering aspects such as vegetation surveys, range condition assessments and wildlife management. Of note is the Kgalagadi Transfrontier Park; iSimangaliso Wetland Park, Ithala Game Reserve, Phinda Private Game Reserve, Mabula Game Reserve, Tswalu Kalahari Desert Reserve, Maremani Nature Reserve and Associate Private Nature Reserve (previously Timbavati, Klaserie & Umbabat Private Game Reserve).

Involvement in various research programmes: vegetation of the northern Kruger National Park, Savanna Ecosystem Project at Nylsvley, Limpopo; Kuiseb River Project (Namibia); Grassland Biome Project; Namaqualand and Kruger Park Rivers Ecosystem research programme.

### 5. Selected references of other projects done by Ekotrust CC

VAN ROOYEN, N., THERON, G.K., BREDEKAMP, G.J., VAN ROOYEN, M.W., DEUTSCHLÄNDER, M. & STEYN, H.M. 1996. *Phytosociology, vegetation dynamics and conservation of the southern Kalahari*. Final report: Department of Environmental Affairs & Tourism, Pretoria.

- VAN ROOYEN, N. 1999 & 2017. The vegetation types, veld condition and game of Tswalu Kalahari Desert Reserve.
- VAN ROOYEN, N. 2000. Vegetation survey and mapping of the Kgalagadi Transfrontier Park. Peace Parks Foundation, Stellenbosch.
- VAN ROOYEN, N, VAN ROOYEN, M.W. & GROBLER, A. 2004. Habitat evaluation and stocking rates for wildlife and livestock - PAN TRUST Ranch, Ghanzi, Botswana.
- VAN ROOYEN, N. 2004. Vegetation and wildlife of the Greater St Lucia Wetland Park, KZN.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2008. Vegetation classification, habitat evaluation and wildlife management of the proposed Royal Big Six Nsubane-Pongola Transfrontier Park, Swaziland. Ekotrust cc.
- VAN ROOYEN, N., VAN DER MERWE, H. & Van Rooyen, M.W. 2011. The vegetation of the NECSA Vaalputs site. Report to NECSA.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2014. Ecological evaluation and wildlife management on Ndzalama Nature Reserve and adjacent farms, Gravelotte, Limpopo province.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2016. Ecological evaluation of the farm Springbokoog in the Van Wyksvlei region of Northern Cape, including a habitat assessment for the introduction of black rhinoceros. Ekotrust.
- VAN ROOYEN, M.W. & VAN ROOYEN, N. & VAN DEN BERG, H. 2016. Kathu Bushveld study: Research offset for first development phase of Adams Solar Energy Facility. Project conducted for Department of Environment and Nature Conservation Northern Cape (DENC) and the Department of Agriculture, Forestry and Fisheries (DAFF).
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2018. Environmental screening study for the proposed essential oils and Moringa oil enterprise on Ferndale farm, Bathurst, Eastern Cape. Ekotrust cc, Somerset West.
- VAN ROOYEN, M.W., GAUGRIS, J.Y. & VAN ROOYEN, N. 2018. Dish Mountain gold project, Republic of Ethiopia: Natural resource use evaluation - baseline report. FFMES, Report to SRK Consulting.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2018. Report on the terrestrial ecology (flora & fauna). Basic assessment report for the proposed development of the 325 MW Kudusberg Wind Energy Facility in the Northern and Western Cape. Ekotrust cc, Somerset West.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2019. Proposed amendments to the Ishwati Emoyeni Wind Energy Facility (WEF) of Special Energy Project (PTY) LTD, a subsidiary of Windlab Systems (PTY) LTD. Ekotrust cc, Somerset West.

## 6. Selected peer-reviewed research publications

- VAN ROOYEN, N. 1978. A supplementary list of plant species for the Kruger National Park from the Pafuri area. *Koedoe* 21: 37 - 46.
- VAN ROOYEN, N., THERON, G.K. & GROBBELAAR, N. 1981. A floristic description and structural analysis of the plant communities of the Punda Milia - Pafuri - Wambiya area in the Kruger National Park, Republic of South Africa. 2. The sandveld communities. *Jl S. Afr. Bot.* 47: 405 - 449.
- VAN ROOYEN, N., THERON, G.K. & GROBBELAAR, N. 1986. The vegetation of the Roodeplaat Dam Nature Reserve. 4. Phenology and climate. *S. Afr. J. Bot.* 52: 159 - 166.



- VAN ROOYEN, N. 1989. Phenology and water relations of two savanna tree species. *S. Afr. J. Sci.* 85: 736 - 740.
- VAN ROOYEN, N., BREDENKAMP, G.J. & THERON, G.K. 1991. Kalahari vegetation: Veld condition trends and ecological status of species. *Koedoe* 34: 61 - 72.
- VAN ROOYEN, M.W., GROBBELAAR, N., THERON, G.K. & VAN ROOYEN, N. 1992. The ephemerals of Namaqualand: effect of germination date on development of three species. *J. Arid. Environ.* 22: 51 - 66.
- VAN ROOYEN, N. BREDENKAMP, G.J., THERON, G.K., BOTHMA, J. DU P. & LE RICHE, E.A.N. 1994. Vegetational gradients around artificial watering points in the Kalahari Gemsbok National Park. *J. Arid Environ.* 26: 349-361.
- STEYN, H.M., VAN ROOYEN, N., VAN ROOYEN, M.W. & THERON, G.K. 1996. The phenology of Namaqualand ephemeral species: the effect of sowing date. *J. Arid Environ.* 32: 407 - 420.
- JELTSCH, F., MILTON, S.J., DEAN, W.R.J. & VAN ROOYEN, N. 1997. Analyzing shrub encroachment in the southern Kalahari: a grid-based modelling approach. *Journal of Applied Ecology* 34 (6): 1497 - 1509.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 1998. Vegetation of the south-western arid Kalahari: an overview. *Trans. Roy. Soc. S. Afr.* 53: 113 -140.
- DE VILLIERS, A.J., VAN ROOYEN, M.W., THERON, G.K. & VAN ROOYEN, N. 1999. Vegetation diversity of the Brandse-Baai coastal dune area, West Coast, South Africa: a pre-mining benchmark survey for rehabilitation. *Land Degradation & Development* 10: 207 - 224.
- VAN ESSEN, L.D., BOTHMA, J. DU P., VAN ROOYEN, N. & TROLLOPE, W.S.W. 2002. Assessment of the woody vegetation of Ol Choro Oiroua, Masai Mara, Kenya. *Afr. J. Ecol.* 40: 76 - 83.
- MATTHEWS, W.S., VAN WYK, A.E., VAN ROOYEN, N. & BOTHA, G.A. 2003. Vegetation of the Tembe Elephant Park, Maputaland, South Africa. *South African Journal of Botany* 67: 573-594.
- BOTHMA, J. DU P., VAN ROOYEN, N. & VAN ROOYEN, M.W. 2004. Using diet and plant resources to set wildlife stocking densities in African savannas. *Wildlife Society Bulletin* 32 (3): 840-851.
- VAN ROOYEN, M.W., THERON, G.K., VAN ROOYEN, N., JANKOWITZ, W.J. & MATTHEWS, W.S. 2004. Mysterious circles in the Namib Desert: review of hypotheses on their origin. *Journal of Arid Environments* 57: 467-48.
- STEENKAMP, J.C. VOGEL, A., VAN ROOYEN, N., & VAN ROOYEN, M.W. 2008. Age determination of *Acacia erioloba* trees in the Kalahari. *Journal of Arid Environments* 72: 302 - 313.
- VAN DER MERWE, H., VAN ROOYEN, M.W. & VAN ROOYEN, N. 2008. Vegetation of the Hantam-Tanqua-Roggeveld subregion, South Africa Part 2. Succulent Karoo Biome-related vegetation. *Koedoe* 50: 160-183.
- VAN ROOYEN, M.W., VAN ROOYEN, N. & BOTHMA, J. DU P. 2008. Landscapes in the Kalahari Gemsbok National Park, South Africa. *Koedoe*: 50: 32-41.
- VAN ROOYEN, M.W., HENSTOCK, R., VAN ROOYEN, N. & VAN DER MERWE, H. 2010. Plant diversity and flowering displays on old fields in the arid Namaqua National Park, South Africa. *Koedoe* 52: Art. #1004, 7 pages. DOI: 10.4102/koedoe.v52i1.1004.

- VAN ROOYEN, M.W., LE ROUX, A., GELDENHUYS, C., VAN ROOYEN, N., BROODRYK, N. & VAN DER MERWE, H. 2015. Long-term vegetation dynamics (40 yr) in the Succulent Karoo South Africa: effects of rainfall and grazing. *Applied Vegetation Science* 18: 311-322.
- VAN ROOYEN, M.W., VAN ROOYEN, N., ORBAN, B., GAUGRIS, B., MOUTSAMBOTÉ, J.M., NSONGOLA, G. & MIABANGANA, E.S. 2016. Floristic composition, diversity and stand structure of the forest communities in the Kouilou Département, Republic of Congo. *Tropical Ecology*: 54: 805-824.
- VAN ROOYEN, M.W., VAN ROOYEN, N., MIABANGANA, E.S., NSONGOLA, G., GAUGRIS, V. & GAUGRIS, J.Y. 2019. Floristic composition, diversity and structure of the rainforest in the Mayoko District, Republic of Congo. *Open Journal of Forestry* 9: 16-69. <https://doi.org/10.4236/ojf.2019.91002>.
- VAN DER MERWE, H., VAN ROOYEN, N., BEZUIDENHOUT, H., BOTHMA, J. DU P. VAN ROOYEN, M.W. 2019. *Vachellia erioloba* dynamics over 38 years in the Kalahari Gemsbok National Park, South Africa. *Koedoe* a1534. <https://doi.org/10.4102/koedoe.v61i1.1534>
- VAN DER MERWE, H., VAN ROOYEN, N., BEZUIDENHOUT, H., BOTHMA, J. DU P. & VAN ROOYEN, M.W. 2020. Woody vegetation change over more than 30 years in the interior duneveld of the Kalahari Gemsbok National Park. *Bothalia* 50 (1), a2 <http://dx.doi.org/10.38201/btha.abc.v50.i1.2>

## 1. Biographical information

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Surname                 | Van Rooyen                                                                           |
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| Home address            | 272 Thatcher's Field<br><br>Lynnwood<br><br>Pretoria<br><br>0081<br><br>South Africa |
| Mobile                  | 072 025 3386                                                                         |
| e-mail                  | Gretel@ekotrust.co.za                                                                |
| Current position        | Honorary Professor in Plant Ecology<br><br>Scientific advisor - Ekotrust             |
| Academic qualifications | BSc; BSc (Hons), HNOD, MSc (Botany), PhD (Plant ecology)                             |

## 2. Publications

I am author / co-author of more than 100 peer reviewed research publications and have presented / co-presented more than 100 posters or papers at international and national conferences. Five PhD-students and 29 Masters students have completed their studies under my supervision / co-supervision. I have co-authored a book as part of a series on the Adaptations of Desert Organisms by Springer Verlag (Van Rheede van Oudtshoorn, K. & Van Rooyen, M.W. 1999. **Dispersal biology of desert plants**. Springer Verlag, Berlin) and two wildflower guides (Van Rooyen, G., Steyn, H. & De Villiers, R. 1999. **Cederberg, Clanwilliam and Biedouw Valley**. Wild Flower Guide of South Africa no 10. Botanical Society of South Africa, Kirstenbosch, and Van der Merwe, H. & Van Rooyen, G. **Wild flowers of the Roggeveld and Tanqua**). I have also contributed to six chapters in the following books: (i) Dean, W.R.J. & Milton, S.J. (Eds) *The Karoo: Ecological patterns and processes*. Cambridge University Press, Cambridge. pp. 107-122; (ii) Knobel, J. (ed.) *The magnificent heritage of South Africa*. Sunbird Publishing, Llandudno. pp. 94-107; (iii) Hoffman, M.T., Schmiedel, U., Jürgens, N. [Eds]: *Biodiversity in southern Africa. Vol. 3: Implications for landuse and management*: pp. 109–150, Klaus Hess Publishers, Göttingen & Windhoek; (iv) Schmiedel, U., Jürgens, N. [Eds]: *Biodiversity in southern Africa. Vol. 2: Patterns and processes at regional scale*: pp. 222-232, Klaus Hess Publishers, Göttingen & Windhoek; (v) Stoffberg, H., Hindes, C. & Muller, L. *South African Landscape Architecture: A Compendium and A Reader*. Chapter 10, pp. 129 – 140; and (vi) Stoffberg, H., Hindes, C. & Muller, L. *South African Landscape Architecture: A Compendium and A Reader*. Chapter 11, pp. 141 – 146.

## 3. Research interests

My primary research interests lie in population biology and vegetation dynamics. The main aim of the research is to gain an understanding of ecosystem dynamics and to use this understanding to develop strategies to conserve, manage, use sustainably or restore ecosystems. Geographically the focus of the studies has been

primarily in Namaqualand (Northern Cape Province, South Africa; classified as Succulent Karoo) and the Kalahari although several studies were conducted in Maputaland (Northern KwaZulu-Natal) and Namibia.

#### 4. Selected project references

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- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2000. Environmental audit of Namakwa Sands Mine at Brand-se-Baai, Western Cape. Report for Namaqua Sands to Department of Mineral Affairs and Energy.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2004. Vegetation of the Langer Heinrich area, Swakopmund, Namibia. Report to SoftChem.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2004. Vegetation of the Power Line Route from Walvisbaai to Langer Heinrich. Namibia. Ekotrust cc, Pretoria.
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- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2011. Ecological evaluation of Kalahari Game Lodge, Namibia. Ekotrust cc, Pretoria.
- VAN ROOYEN, N., VAN DER MERWE, M.W. & VAN ROOYEN, M.W. 2011. The vegetation, veld condition and wildlife of Vaalputs. Report to NECSA.
- VAN ROOYEN, N., VAN ROOYEN, M.W. & VAN DER MERWE, H. 2012. The vegetation of Ratelkraal, Northern Cape. Report to Northern Cape Nature Conservation.
- VAN ROOYEN, N., & VAN ROOYEN, M.W. 2013. Vegetation of the Ongolo and Tumas sites of Reptile Uranium Namibia (RUN), Swakopmund, Namibia. Ekotrust cc, Pretoria.
- VAN ROOYEN, N. & VAN ROOYEN, M.W. 2013. Vegetation Monitoring Report: 2013 Veld condition Vaalputs. Report to NECSA.
- VELDSMAN, S. & VAN ROOYEN, M.W. 2003. An analysis of the vegetation of the Witsand Nature Reserve. Report to Northern Cape Nature Conservation.

#### 5. Selected research publications

- BENEKE, K., VAN ROOYEN, M.W., THERON, G.K. & VAN DE VENTER, H.A. 1993. Fruit polymorphism in ephemeral species of Namaqualand: III. Germination differences between polymorphic diaspores. *Journal of Arid Environments* 24: 333-344.
- BENEKE, K., VON TEICHMAN, I., VAN ROOYEN, M.W. & THERON, G.K. 1992. Fruit polymorphism in ephemeral species of Namaqualand: I. Anatomical differences between polymorphic diaspores of two *Dimorphotheca* species. *South African Journal of Botany* 58: 448 - 455.
- DE VILLIERS, A.J. VAN ROOYEN, M.W. THERON, G.K. & VAN DE VENTER, H.A. 1994. Germination of three Namaqualand pioneer species, as influenced by salinity, temperature and light. *Seed Science & Technology* 22: 427-433.
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- DE VILLIERS, A.J., VAN ROOYEN, M.W. & THERON, G.K. 2001. The role of facilitation in seedling recruitment and survival patterns in the Strandveld Succulent Karoo, South Africa. *Journal of Arid Environments* 49: 809-821.
- DE VILLIERS, A.J., VAN ROOYEN, M.W. & THERON, G.K. 2002a. Germination strategies of Strandveld Succulent Karoo plant species for revegetation purposes: I. Temperature and light requirements. *Seed Science & Technology* 30: 17-33.
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- VAN ROOYEN, M.W., GROBBELAAR, N., THERON, G.K. & VAN ROOYEN, N. 1992a. The ephemerals of Namaqualand. Effect of germination date on development of three species. *Journal of Arid Environments* 22: 51 - 66.
- VAN ROOYEN, M.W., GROBBELAAR, N., THERON, G.K. & VAN ROOYEN, N. 1992b. The ephemerals of Namaqualand. Effect of germination date on parameters of growth analysis of three species. *Journal of Arid Environments* 22: 117 - 136.
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- VAN ROOYEN, M.W., VAN ROOYEN, N. & STOFFBERG, G.H. 2013. Carbon sequestration potential of post-mining reforestation activities on the KwaZulu-Natal coast, South Africa. *Forestry* 86:211-233.
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- VAN ROOYEN, M.W., LE ROUX, A., VAN DER MERWE, H., VAN ROOYEN, N. & GELDENHUYS, C. 2018. Long-term vegetation change (>20 years) in the plains habitat on the Goegap Nature Reserve, Succulent Karoo, South Africa. *African Journal of Range & Forage Science* 35: 289 – 302.
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### **PALAEONTOLOGICAL SPECIALIST**

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape, Limpopo, Northwest Province, Mpumalanga, Gauteng, KwaZulu-Natal and the Free State under the aegis of his Cape Town-based company *Natura Viva* cc. He has served as a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHP (Association of Professional Heritage Practitioners – Western Cape).

## A.2.7 AGRICULTURE AND SOILS SPECIALIST

**Johann Lanz**

### Curriculum Vitae

#### Education

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

#### Professional work experience

I have been registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science since 2012 (registration number 400268/12) and am a member of the Soil Science Society of South Africa.

**Soil & Agricultural Consulting      Self employed      2002 - present**

In the past 5 years of running my soil and agricultural consulting business, I have completed more than 120 agricultural assessments (EIAs, SEAs, EMPRs) in all 9 provinces for renewable energy, mining, urban, and agricultural developments. My regular clients include: Aurecon; CSIR; SiVEST; Arcus; SRK; Environamics; Royal Haskoning DHV; Jeffares & Green; JG Afrika; Juwi; Mainstream; Redcap; G7; Mulilo; and Tiptrans. Recent agricultural clients for soil resource evaluations and mapping include Cederberg Wines; Western Cape Department of Agriculture; Vogelfontein Citrus; De Grendel Estate; Zewenwacht Wine Estate; and Goedgedacht Olives.

In 2018 I completed a ground-breaking case study that measured the agricultural impact of existing wind farms in the Eastern Cape.

**Soil Science Consultant      Agricultural Consultants International (Tinie du Preez)      1998 - 2001**

Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

**Contracting Soil Scientist      De Beers Namaqualand Mines      July 1997 - Jan 1998**

Completed a contract to advise soil rehabilitation and re-vegetation of mined areas.

#### Publications

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

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

## A.2.8 VISUAL SPECIALIST

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**MENNO KLAPWIJK**

**LANDSCAPE ARCHITECT AND ENVIRONMENTAL PLANNER**



|                          |                                             |
|--------------------------|---------------------------------------------|
| PRESENT POSITION IN FIRM | Principal – Bapela Cave Klapwijk            |
| TELEPHONE NO             | 0832558127                                  |
| WEBSITE                  | www.bck.co.za                               |
| ADDRESS                  | 891 Jan Shoba Street Brooklyn Pretoria 0181 |
| DATE OF BIRTH            | 9 June 1954                                 |
| NATIONALITY              | South African born in Johannesburg          |
| LANGUAGE                 | Mother Tongue: English<br>Others: Afrikaans |
|                          |                                             |

### ACADEMIC QUALIFICATIONS

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1983 : B.Sc. (Landscape Architecture) Texas A&M University, USA.  
1986 : Environmental Impact Assessment, Graduate School of Business, University of Cape Town.

### PROFESSIONAL QUALIFICATIONS

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Registered Landscape Architect

### KEY FIELDS OF EXPERIENCE

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Particular aspects of experience include:

- Visual impact assessment.
- Planning and design for conservation areas, natural resource areas, nature reserves and game farms
- Landscape design for parks, corporate headquarters, office and industrial parks, housing developments, hotels, plazas and pedestrian malls.
- Recreation planning.
- Environmental Monitoring and Auditing.
- Site / master planning and development.

- Integrated environmental assessment and planning for existing and future land uses.
- Mining and quarry reclamation and development planning and design.

#### PROFESSIONAL REGISTRATION AND MEMBERSHIP

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Registered: South African Council for Landscape Architecture (SACLAP) Reg No. 87006

- Member: Institute of Landscape Architects of South Africa (ILASA).
- Member: American Society of Landscape Architects (ASLA).
- Member: International Association of Impact Assessors (SA) (IAIA-SA).

#### YEARS OF EXPERIENCE AND CAREER SUMMARY

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Thirty seven years as landscape architect and environmental planner in the United States of America, Namibia, Botswana, Lesotho, Swaziland, Mozambique, Angola and South Africa

1989 - present: Bapela Cave Klapwijk, Pretoria - Principal

1988 - 1989: Plan Associates, Pretoria –Associate, Senior Landscape Architect.

1983 - 1988: Chris Mulder Associates Inc., Pretoria - Senior Landscape Architect..1982 - 1983: Austin and Landphair (SHWC), Landscape Architects, College Station, Texas.

#### ADVISORY POSITIONS

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- Executive Central Council Member (Institute of Landscape Architects of South Africa) (1986-1991).
- Elected member of the Board of Control for Landscape Architects of South Africa (BOCLASA now SACLAP)
- City Council of Pretoria, ILASA representative on CCP Town Planning and Aesthetics Committee (1987 - 2001).
- External Examiner, Department of Landscape Architecture, University of Pretoria (1985 - 2016).
- CSIR panel of experts to assist in the development of visual impact guidelines for the Western Cape
- Council for the Built Environment Council member (June 2010 – June 2014)
- Member of Alien and Invasive Species Review Panel 2020

#### PEER REVIEWER

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- VIA Shell Ultra City, Johannesburg for CSIR
- VIA Alpha Cement Factory, Saldanha for Mark Wood Consultants
- VIA Coega IDZ and Harbour, Port Elizabeth for African Environmental Solutions

## EDITORIAL BOARDS

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- Environmental Planning and Management (EMP) Journal
- Landscape SA Journal

## PROFESSIONAL AWARDS AND COMPETITIONS

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- 2015 Institute of Landscape Architects of South Africa (ILASA) National Award of Excellence: Category Design: Taung Skull World Heritage Site – Picnic Site
- 2007 Institute of Landscape Architects of South Africa (ILASA) National Award of Excellence: Category Environmental Planning: Taung Skull World Heritage Site
- 2001 Institute of Landscape Architects of South Africa (ILASA) National Award of Excellence: Category Environmental Planning: Driekoppies Dam
- 1997 SAACE Construction World: Olifants-Sand Water Transfer Scheme.
- 1996 Premier and National Awards from the Concrete Manufacturer's Association for paving design: Hatfield Plaza.
- 1995 EPPIC National Premium Award: Venetia Balance.
- South African Landscape Contractors Institute (SALI). Silver Award: Bentel Abramson Head Office (with Eksklusiewe Tuine).
  - South African Landscape Contractors Institute (SALI). Silver Award: AFCOL Head Office (with Eksklusiewe Tuine).
- 1994 South African Landscape Contractors Institute (SALI). Gold Award: Hampton Park (with Eksklusiewe Tuine).
- South African Landscape Contractors Institute (SALI). Silver Award: Gilooly's View (with Eksklusiewe Tuine).
- 1992 Institute of Landscape Architects of South Africa (ILASA). Commendation: Tourism RSA.
- 1991 Institute of Landscape Architects of South Africa. National Award of Merit: Category Environmental Planning: Limpopo (Greefswald) Government Water Scheme for DWAF.
- First place in design competition for the Chris Barnard Health Centre (with H Taljaard Carter and Partners).
- 1987 American Society of Landscape Architects. Honour Award: Category Planning and Research: Songimvelo Natural Resource Areas (with CMAI).
- 1986 Commendation: Design competition for Bloemfontein Urban River Front.
- 1983 Sigma Lambda Alpha Landscape Architecture Academic Honour Society (USA). Merit Award for academic excellence, Texas Chapter ASLA.
- 1982 Faculty Award, Texas A&M University.
- 1981 Faculty Award, University of Pretoria.
- 1980 ILASA Student Award, University of Pretoria.
- 1979 ILASA Student Award, University of Pretoria.

## A.2.9 SOCIO-ECONOMIC SPECIALIST

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**Sue Reuther**

**Principal Consultant and Partner**



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|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Profession</b>                      | Environmental Consultant                                                                                                    |
| <b>Education</b>                       | MPhil (Environmental Management), University of Cape Town, 2004<br>BSc (Hons), (Economics), University College London, 2001 |
| <b>Registrations/<br/>Affiliations</b> | Registered Environmental Assessment Practitioner (EAP):<br>Number 2020/425<br><br>Member, IAIAAsa                           |

### Specialisation

Environmental impact assessments, economic and resource economic impact assessment, environmental control officer, state of the environment reporting (including environmental management frameworks), visual impact assessment.

### Expertise

Sue Reuther has been involved in environmental assessment sector in South Africa, Africa and Latin America for the past 17 years. Her expertise includes:

- Socio-economic and resource economic specialist input and assessments for a range of developments, including mining, infrastructure and alternative energy projects in South Africa, Southern Africa, South America and Asia;
- A variety of environmental impact assessment and management projects, including IFC / PS compliant processes, strategic assessments and spatial planning projects, in South Africa, Africa (Mozambique, Angola, DRC, Guinea and Liberia) and South America (Suriname) for a range of projects, including mining, infrastructure, oil and gas and coastal and marine developments; and
- Environmental and Social Due Diligence (ESDD) reviews against Good International Industry Practice (GIIP) in Angola, Israel, Ethiopia and DRC.

She has 2 years of previous experience in strategy and financial research and assessment (London).

### Employment

|                         |                                                                                    |
|-------------------------|------------------------------------------------------------------------------------|
| <b>2005 - present</b>   | SRK Consulting (Pty) Ltd, Associate Partner and Principal Environmental Consultant |
| <b>2003 - 2004</b>      | University of Cape Town (UCT), MPhil Environmental Management                      |
| <b>2001 - 2002</b>      | JPMorgan Chase, Equity Research Analyst, London                                    |
| <b>2000 (Jul - Oct)</b> | Chase Manhattan Bank, Financial Institutions Analyst, London                       |
| <b>1998 - 2001</b>      | University College London (UCL), BSc (Honours) Economics, London                   |

### Publications

A number of publications, in *Development Southern Africa* and for JPMorgan.

I have been interviewed and quoted in numerous environmental and sustainability articles published in the press and sector specific journals, including *Urban Green File*, *Mining World*, *Construction World*, *Environmental Management and Civil Engineering*.

I hold guest lectures to UCT 4<sup>th</sup> year / post-graduate students on EIA/EMF since 2014.

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|------------------|------------------------------------------|
| <b>Languages</b> | English – read, write, speak (Excellent) |
|                  | German – read, write, speak (Excellent)  |
|                  | French – read, write, speak (Good)       |
|                  | Spanish – read, write, speak (Good)      |
|                  | Portuguese – read (Good)                 |
|                  | Dutch – read, speak (Good)               |
|                  | Afrikaans – read, understand (Good)      |

### Economic and Social Assessments

- CSIR, Social impact assessment for three Kwagga Wind Energy Facilities, Western Cape, South Africa, 2020-2021, R100 000
- Department of Environmental Affairs and Development Planning (DEA&DP), Ecosystem Services Assessment and Valuation of Papenkuils Wetland, Western Cape, South Africa, 2020-2021, R500,000
- Eskom, Socio-economic screening and baseline compilation to inform the selection of the preferred Eskom Kappa – Sterrekus transmission line corridor, Western Cape, South Africa, 2020, R120,000
- Aecom, Socio-economic impact assessment for a bulk water pipeline through an informal settlement, Stellenbosch Municipality, South Africa, 2020, R80,000
- SRK NA, on behalf of Centerra Gold, Input into and review of economic impact assessment for the Kumtor Gold Mine Conceptual Closure Plan Update, Kyrgyzstan, 2019, \$23,000
- KSEMS (on behalf of SANRAL), Social Impact Assessment for the Upgrade of National Road 3 Section 3 Pietermaritzburg, South Africa, 2019, R86,000
- Allied Gold Corp, Economic specialist study for the Dish Mountain Gold Project, Ethiopia, 2018 – suspended in Dec 2019, \$11,000
- Sierra Rutile Limited, Economic input into the SRL Area 1 Mine Environmental, Social and Health Impact Assessment, Sierra Leone, 2018, R35 000
- Serina Kaolin, Update of socio-economic impact assessment for proposed Chapman's Peak Estate, Cape Town, 2017, R45,000
- RSK, Economic specialist component of three socio-economic impact assessments for the East African Crude Oil Pipeline (EACOP), Uganda and Tanzania, 2016 – 2017, \$40,000
- Eskom, Economic input into socio-economic study for Eskom Generation Fleet Renewal Project, South Africa, 2016 – 2017, R25,000
- Tronox Mineral Sands, Socio-economic impact assessment for the Doringbaai Abalone Farm, West Coast, South Africa, 2016, R85,000
- Provincial Government Western Cape, Socio-economic impact assessment for the Hermanus CBD Bypass Project, Hermanus, Western Cape, 2016, R85,000
- River Club, Socio-economic impact assessment for the redevelopment of the River Club, Cape Town, January 2016 – 2017, R77,000
- Airports Company South Africa (ACSA), Socio-economic baseline study and Spatial Analysis study for proposed runway realignment at Cape Town International Airport, Cape Town, 2014 – 2016, R200,000
- PPC Cement, Update of the socio-economic assessment in the ESIA and ESMP for the PPC Barnet Songololo cement plant and quarry in Bas Congo Province to ensure compliance of the documents with IFC standards and other lender requirements, Bas Congo Province, Democratic Republic of Congo, 2013 – 2014,



- Nyumba Ya Akiba Sprl, Update of the socio-economic assessment in the ESIA and EMP for the Nyumba Ya Akiba cement plant in Bas Congo Province to ensure compliance of the documents with IFC standards and other lender requirements, Bas Congo Province, Democratic Republic of Congo, 2013, R94,000
- Sasol, Socio-economic specialist study for proposed mine development, Limpopo, South Africa, 2013, R90,000
- FCX / PDG, Socio-economic specialist study for proposed copper mine, Democratic Republic of Congo, 2012, R50,000
- AF-ROM Energy, Socio-economic specialist study for proposed 75 MW solar farm, Victoria West, Northern Cape, South Africa, 2012, R50,000
- AF-ROM Energy, Socio-economic specialist study for proposed 75 MW solar farm, Craddock, Eastern Cape, South Africa, 2012, R50,000
- Staatsolie Maatschappij Suriname, CRP for communities potentially affected by the refinery expansion, Suriname, 2012, US\$20,000
- SRK Cardiff, Input into review of Economic Impact Assessment, Pakistan, 2010, R50,000
- Courtrai Developments, Social Impact Assessment of proposed new retirement village and resettlement, Paarl, Western Cape, 2009 – 2010, R40,500
- Staatsolie, Social Impact Assessment of proposed oil refinery expansion, Wanica Province, Suriname, South America, 2009, US\$10,000
- BHP Billiton / SRK Consulting, Economic Impact Assessment of proposed dredging operations, Suriname, South America, 2008, US\$10,000
- BHP Billiton / SRK Consulting, Economic Impact Assessment of proposed bauxite transport activities, Suriname, South America, 2006 – 2007, US\$20,000
- BHP Billiton / SRK Consulting, Economic Impact Assessment of proposed bauxite mining activities at Bakhuis, Bakhuis, Apoera district, Suriname, South America, 2005 – 2007, US\$27,000

#### **Environmental (and Social) Impact Assessments (EIA or ESIA)**

- Tronox Mineral Sands, Screening study to provide environmental input into the site selection process for the Sand Tailings Facility (STF) and the preferred In-Pit Residue Storage Facility (RSF) for the Namakwa Sands East Mine Orange Feldspathic Sands (East OFS) Project, South Africa, 2019 – 2020, R300,000
- Tronox Mineral Sands, EIA for proposed construction and operation of an In-Pit Residue Storage Facility (RSF) and Sand Tailings Facility (STF) for the Namakwa Sands East Mine Orange Feldspathic Sands (East OFS) Project, South Africa, 2019 – 2020, R1,900,000
- Staatsolie Maatschappij Suriname, Environmental Management and Monitoring Plan (EMMP), including impact assessment, for Staatsolie's Cyclic Steam Stimulation (CSS) Enhanced Oil Recovery (EOR) project in the Tambaredjo oil field, Suriname, 2019 – 2020, \$40,500
- Staatsolie Maatschappij Suriname, Environmental Management and Monitoring Plan (EMMP), including impact assessment, for Staatsolie's Polymer Flooding Enhanced Oil Recovery (EOR) project in the Tambaredjo oil field, Suriname, 2019, \$64,000
- Maritime Authority Suriname, ESIA update for the Suriname River Dredging Project (SRDP), Suriname, 2019, US\$172,000
- Staatsolie Maatschappij Suriname, ESIA for the construction of a new 36 MW HFO-fuelled power plant in the Saramacca District, Suriname, 2018 – 2019, US\$125,000
- Sezigyn, EIA for Exploration Right Application, Offshore Block Orange Deep West, West Coast, South Africa, 2018, R150,000
- Ricocure, EIA for Exploration Right Application, Offshore Block 3B, West Coast, South Africa, 2018, R150,000

- Sezigyn, EIA for Exploration Right Application, Offshore Mid-Orange Basin, West Coast, South Africa, 2018, R150,000
- Mineral Sands Resources, Section 24G Application to apply for rectification of an unlawful activity, South Africa, 2018 - ongoing, R95,000
- Joule Africa, Initial Environmental and Social Assessment of the KPEP Hydropower Project, Cameroon, 2018, \$10,800
- Impact Oil and Gas, EIA for 2D and/or 3D Seismic Survey in Orange Deep Basin, South Africa, 2017, R600,000
- City of Cape Town, EIA in support of a Waste Management Licence application for the operation of the Vissershok North Landfill, Cape Town, 2017 – 2018, R650,000
- Sungu Sungu, EIA for proposed 3D seismic survey in the offshore Pletmos Basin, South Coast, 2016 – 2018, R500,000
- Mineral Sand Resources, EIA for the Tormin Coastal Mine Expansion, Western Cape, 2016 – 2017, R1,500,000
- Department of Agriculture, Forestry and Fisheries (DAFF), Project Definition and EIA for a proposed Aquaculture Development Zone (ADZ) in Saldanha Bay, Western Cape, 2016 – 2018, R1,000,000
- Provincial Government Western Cape, Environmental Authorisation Amendment Application process for a section of the R310 upgrade at Spier, Western Cape, South Africa, 2015 – 2019, R100,000
- Transnet Capital Projects, EIA for the construction of additional substations, transmission infrastructures and area lighting masts near the Port of Saldanha, Western Cape, 2015 – 2016, R360,000
- Simo Petroleum, ESIA to IFC standards for the transportation and storage of fuel in Liberia, 2015 – 2016 (suspended), \$175,000
- Simo Petroleum, ESIA to IFC standards for the transportation and storage of fuel in southern Guinea, 2015 – 2016 (suspended), \$175,000
- Provincial Government Western Cape, EIA for the construction of a bypass in Hermanus, including EMP and Water Use Authorisation (WUA), Hermanus, Western Cape, 2014 – 2020, R3,100,000
- Lucky Star, Section 24G Application and Environmental Impact Assessment to apply for rectification of an unlawful activity, St. Helena Bay, Western Cape, 2015 – 2016, R330,000
- Sable Mining / West Africa Explorations (WAE), Cumulative Impact Assessment for WAE's Nimba iron ore mine, Guinea, 2014 – 2015 (suspended), US\$90,000
- Hatch Goba, BA and WUA for the proposed upgrade of a portion of Slent Road, City of Cape Town, South Africa, 2013 – 2015, R200,000
- Sonangol, ESIA and EMP for terrestrial aspects of the four landing sites of SOOC, Angola, 2013, US\$47,000
- Maersk Oil Angola, ESIA and EMP for a 3D seismic survey in an offshore oil concession area, Angola, 2013, US\$35,000
- Lucky Star (formerly: Oceana Brands), Review and Public Participation for AEL renewal for fishmeal plant in St. Helena Bay, St. Helena Bay, Western Cape, 2013, R40,000
- N.V. Energiebedrijven Suriname (EBS), ESIA and EMMP for construction of a new 84 MW power plant in Paramaribo, Suriname, 2013 – 2014, US\$130,000
- Maersk Oil Angola, ESIA and EMP for prospect drilling of 6 wells in offshore Block 16, Angola, 2012 – 2013, US\$35,000
- WesternGeco, ESIA and EMP for a 3D seismic survey in an offshore oil concession area, Angola, 2012, US\$35,000
- Rare Metals Industries, Scoping study, including applications for AEL and WML, for construction of a specialty metals production complex, Saldanha, Western Cape, 2012 – 2014, R230,000
- WesternGeco, ESIA and EMP for a 3D seismic survey in an offshore oil concession area, Angola, 2012, US\$35,000

- Staatsolie Maatschappij Suriname, Rapid Environmental Assessment and EMP for expansion of a power plant from 14 MW to 28 MW, Suriname, 2012 – 2013, US\$100,000
- Transnet (TPT), Operational EMP for the Saldanha Terminal, including the Break Bulk and Bulk Terminals, Saldanha, Western Cape, 2012, R88,000
- AECOM (Pty) Ltd on behalf of Western Cape Department of Transport and Public Works, EIA and EMP for the proposed completion of the R45 road corridor near Malmesbury in the Western Cape, Western Cape, South Africa, 2012 – 2016, R600,000
- Provincial Government Western Cape, BA and EMP for proposed upgrade of Annandale Road, Stellenbosch, South Africa, 2011, R150,000
- Staatsolie Maatschappij Suriname, EIA and EMP for proposed construction of diesel, gasoline and LGP pipelines, Suriname, 2011 – 2012, US\$120,000
- Premier Fishing, EIA, incl. EMP and applications for AEL and CWDP, for proposed re-establishment of fishmeal plant in Saldanha, Saldanha Bay, South Africa, 2011 – 2015, R1 200,000
- WesternGeco, EIA and EMP for proposed offshore 3D seismic survey of concession Block 20, Angola, 2010, US\$30,000
- WesternGeco, EIA and EMP for proposed offshore 3D seismic survey of concession Block 19, Angola, 2010, US\$30,000
- Provincial Government Western Cape, EIA and EMP for upgrade of Main Road 168 through Stellenbosch Wine Route, Stellenbosch, South Africa, 2009 – 2012, R1 100,000
- Transnet, Basic Assessment and EMP to inform AEL application, Saldanha Bay, Western Cape, 2009 – 2010, R900,000
- BHP Billiton, Environmental and Social Impact Assessment of dredging operations, Suriname, South America, 2007 – 2008, US\$500,000
- Transnet, EIA of proposed expansion of Transnet's Iron Ore Terminal at Port of Saldanha, Saldanha Bay, Western Cape, 2007 – 2008, R22 000,000
- BHP Billiton, ESIA of bauxite transport options, Bakhuis, Sipaliwini district, Suriname, South America, 2006 – 2008, US\$2 000,000
- Transnet, EIA and EMP of deepening of Ben Schoeman Dock, Cape Town Harbour, Cape Town, Western Cape, 2006 – 2007, R1 500,000
- Provincial Government Western Cape, EIA and EMP for proposed upgrade of Main Road 108 in Gordon's Bay, Gordon's Bay, Western Cape, 2006 – 2007, R200,000
- Nassau IER, Initial Environmental Review of Phase 1 bauxite exploration activities in Nassau, Nassau Mountains, Suriname, South America, 2006, US\$12,200
- BHP Billiton, ESIA and EMP of proposed bauxite mine, Bakhuis, Sipaliwini district, Suriname, South America, 2005 – 2008, US\$4 000,000
- Provincial Government Western Cape, EIA and EMP for proposed upgrade of Trunk Road 2 in Somerset West, Somerset West, Western Cape, 2005 – 2006, R200,000

#### A.2.10 TRAFFIC SPECIALIST

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### IRIS SIGRID WINK

|                               |                                               |
|-------------------------------|-----------------------------------------------|
| <b>Profession</b>             | Civil Engineer (Traffic & Transportation)     |
| <b>Position in Firm</b>       | Associate                                     |
| <b>Area of Specialisation</b> | Manager: Traffic & Transportation Engineering |
| <b>Qualifications</b>         | PrEng, MSc Eng (Civil & Transportation)       |
| <b>Years of Experience</b>    | 18 Years                                      |
| <b>Years with Firm</b>        | 8 Years                                       |

#### SUMMARY OF EXPERIENCE

Iris is a Professional Engineer registered with ECSA (20110156). She joined JG Afrika (Pty) Ltd. in 2012. Iris obtained a Master of Science degree in Civil Engineering in Germany and has more than 15 years of experience in a wide field of traffic and transport engineering projects. Iris left Germany in 2003 and has worked as a traffic and transport engineer in South Africa and Germany. She has technical and professional skills in traffic impact studies, public transport planning, non-motorised transport planning and design, design and development of transport systems, project planning and implementation for residential, commercial and industrial projects and providing conceptual designs for the abovementioned. She has also been involved with transport assessments for renewable energy projects and traffic safety audits.

#### PROFESSIONAL REGISTRATIONS & INSTITUTE MEMBERSHIPS

- PrEng** - Registered with the Engineering Council of South Africa No. 20110156  
Registered Mentor with ECSA for the Cape Town Office of JG Afrika
- MSAICE** - Member of the South African Institution of Civil Engineers
- ITSSA** - Member of ITS SA (Intelligent Transport Systems South Africa)
- SAWEA** - Member of the South African Wind Energy Association
- SARF** - South African Road Federation: Committee Member of Council

IRF - Global Road Safety Audit Team Leader

## **EDUCATION**

**1996 - Matric** – Matric (Abitur) – Carl Friedrich Gauss Schule, Hemmingen, Germany

**1998 - Diploma** as Draughtsperson – Lower Saxonian State Office for Road and Bridge Engineering

**2003 - MSc Eng** (Civil and Transportation) – Leibniz Technical University of Hanover, Germany

## **SPECIFIC EXPERIENCE (Selection)**

**JG Afrika (Pty) Ltd (Previously Jeffares & Green (Pty) Ltd)**

**2016 – Date**

**Position** – Associate

- **Kudusberg Windfarm** – Transport study for the proposed Kudusberg Windfarm near Sutherland, Northern Cape – Client: G7 Renewable Energies
- **Kuruman Windfarm** – Transport study for the proposed Kuruman Windfarm in Kuruman, Northern Cape – Client: Mulilo Renewable Project Developments
- **Coega West Windfarm** – Transportation and Traffic Management Plan for the proposed Coega Windfarm in Coega, Port Elizabeth – Client: Electrawinds Coega
- **Traffic and Parking Audits** for the Suburb of Groenvallei in Cape Town – Client: City of Cape Town Department of Property Management.
- **Road Safety Audit** for the Upgrade of N1 Section 4 Monument River – Client: Aurecon on behalf of SANRAL
- **Sonop Windfarm** – Traffic Impact Assessment for the proposed Sonop Windfarm, Coega, Port Elizabeth – Client: Founders Engineering
- **Universal Windfarm** - Traffic Impact Assessment for the proposed Universal Windfarm, Coega, Port Elizabeth – Client: Founders Engineering
- **Road Safety Audit** for the Upgrade of N2 Section 8 Knysna to Wittedrift – Client: SMEC on behalf of SANRAL
- **Road Safety Audit** for the Upgrade of N1 Section 16 Zandkraal to Winburg South – Client: SMEC on behalf of SANRAL
- **Traffic and Road Safety Studies** for the Improvement of N7 Section 2 and Section 3 (Rooidraai and Piekenierskloof Pass) – Client: SANRAL
- **Road Safety Appraisals** for Northern Region of Cape Town – Client: Aurecon on behalf of City of Cape Town (TCT)
- **Traffic Engineering Services** for the Enkanini Informal Settlement, Kayamandi - Client: Stellenbosch Municipality

- **Lead Traffic Engineer** for the Upgrade of a 150km Section of the National Route N2 from Kangela to Pongola in KwaZulu-Natal, Client: SANRAL
- **Traffic Engineering Services** for the Kosovo Informal Settlement (which is part of the Southern Corridor Upgrade Programme), Client: Western Cape Government
- **Traffic and Road Safety Studies** for the proposed Kosovo Informal Housing Development (part of the Southern Corridor Upgrade Program), Client: Western Cape Government.
- **Road Safety Audit** Stage 3 – Upgrade of the R573 Section 2 between Mpumalanga/Gauteng and Mpumalanga/Limpopo, Client: AECOM on behalf of SANRAL
- **Road Safety Audit** Stage 1 and 3 – Upgrade of the N2 Section 5 between Lizmore and Heidelberg, Client: Aurecon on behalf of SANRAL
- **Traffic Safety Studies** for Roads Upgrades in Cofimvaba, Eastern Cape – Client: Cofimvaba Municipality
- **Road Safety Audit** Stage 1 and 3 – Improvement of Intersections between Olifantshoek and Kathu, Northern Cape, Client: Nadeson/Gibb on behalf of SANRAL
- **Road Safety Audit** Stage 3 – Upgrade of the Beacon Way Intersection on the N2 at Plettenberg Bay, Client: AECOM on behalf of SANRAL
- **Traffic Impact Assessment** for a proposed Primary School at Die Bos in Strand, Somerset West, Client: Edifice Consulting Engineers
- **Road Safety Audit** Stage 1 and 3 – Improvement of R75 between Port Elizabeth and Uitenhage, Eastern Cape, Client: SMEC on behalf of SANRAL