

DRAFT BASIC ASSESSMENT REPORT



APPENDICES

- Appendix A: EAP Details, Expertise and Declaration of Interest
- Appendix B: Specialist Declarations of Interest
- Appendix C: Maps
- Appendix D: Specialist Reports
 - Appendix D.1: Agriculture Compliance Statement
 - Appendix D.2: Visual Impact Assessment
 - Appendix D.3: Heritage Impact Assessment (Archaeology, Cultural Landscape and Palaeontology)
 - Appendix D.4: Terrestrial Biodiversity and Species Impact Assessment
 - Appendix D.5: Aquatic Biodiversity Impact Assessment
 - Appendix D.6: Avifauna Impact Assessment
 - Appendix D.7: Civil Aviation Site Sensitivity Verification
 - Appendix D.8: Defence Site Sensitivity Verification
- Appendix E: Public Participation
 - Appendix E.1: Copies and Proof of Placement of Site Notice Boards
 - Appendix E.2: Copy of the Content of the Newspaper Advertisement
 - Appendix E.3: I&AP Database
 - Appendix E.4: Proof of Submission of the Notification of Intent to Develop (NID) to Heritage Western Cape (HWC)
 - Appendix E.5: Acknowledgement of Receipt of the Notification of Intent to Develop (NID) from Heritage Western Cape (HWC)
- Appendix F: Pre-Consultation with the Competent Authority
 - Appendix F.1: Pre-Application Meeting Request Form
 - Appendix F.2: Pre-Application Meeting Presentation
 - Appendix F.3: Pre-Application Meeting Notes
 - Appendix F.4: Correspondence from the DFFE with Approval of the Pre-Application Meeting Notes
- Appendix G: Environmental Management Programme (EMPr) for the Powerlines
- Appendix H: Additional Information

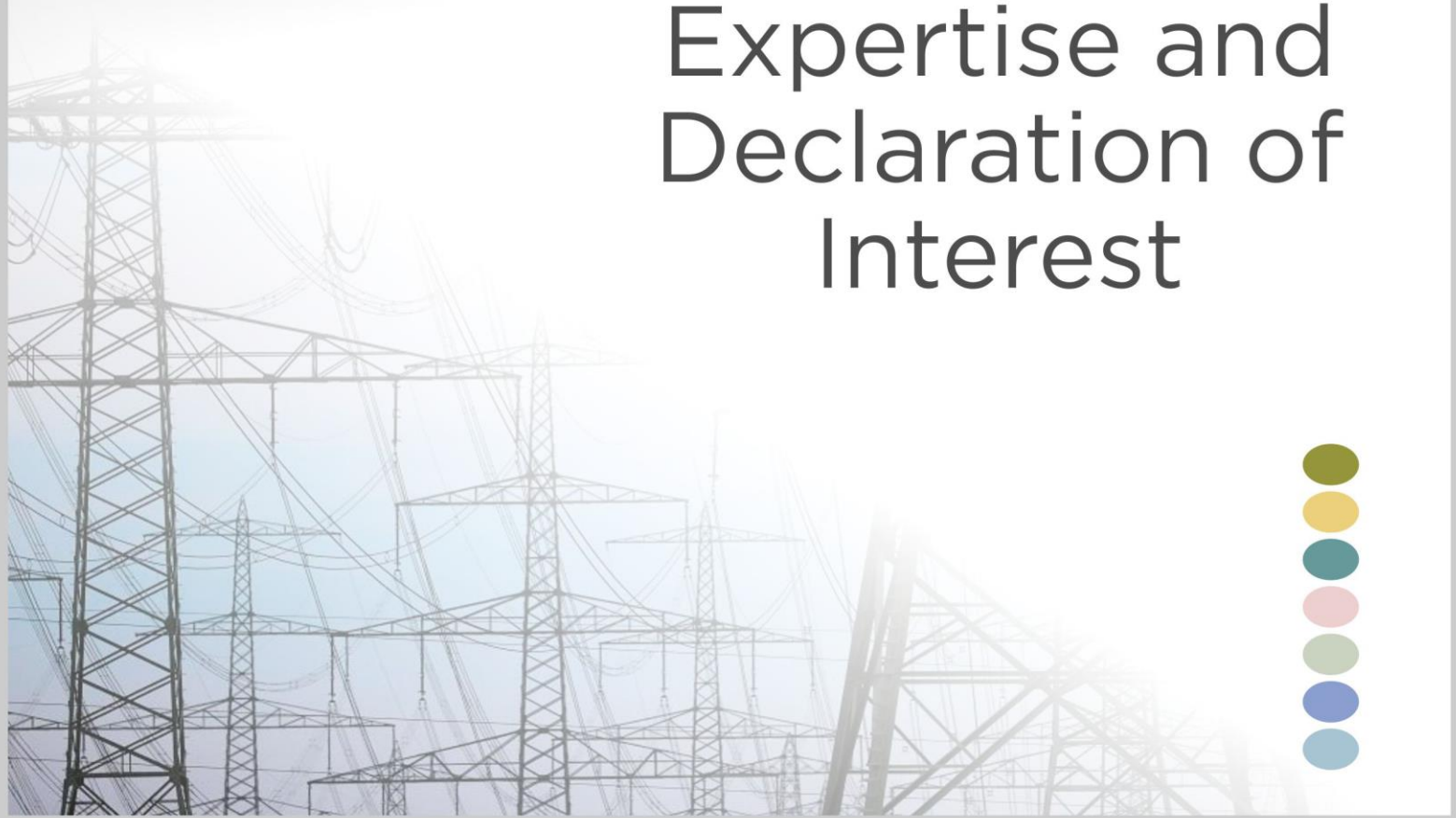


DRAFT BASIC ASSESSMENT REPORT

APPENDIX A



EAP Details, Expertise and Declaration of Interest



CONTENTS



<u>A.1.</u>	<u>CURRICULUM VITAE OF THE ENVIRONMENTAL ASSESSEMENT PRACTITIONER</u>	<u>2</u>
A.1.1	CV OF PAUL LOCHNER	2
A.1.2	CV OF LIZANDE KELLERMAN	7
A.1.3	CV OF ROHAIDA ABED	14
A.1.4	CV OF DHIVESHNI MOODLEY	20
<u>A.2.</u>	<u>CURRICULUM VITAE OF THE SPECIALISTS</u>	<u>23</u>
A.2.1	HERITAGE SPECIALIST	23
A.2.2	AQUATIC BIODIVERSITY SPECIALIST	27
A.2.3	AVIFAUNAL SPECIALIST	29
A.2.4	TERRESTRIAL BIODIVERSITY SPECIALIST	35
A.2.5	PALAEONTOLOGICAL SPECIALIST	45
A.2.6	AGRICULTURE AND SOILS SPECIALIST	46
A.2.7	VISUAL SPECIALIST	48

A.1. CURRICULUM VITAE OF THE ENVIRONMENTAL ASSESSEMENT PRACTITIONER

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A.1.1 CV OF PAUL LOCHNER

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

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

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)
2019 (in progress)	Environmental Performance Compliance Study for Foundries in South Africa	Project reviewer	National Foundries Technology Network

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Duration	Project description	Role	Client
2019	Independent Expert review 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	Greater Saldanha Bay Strategic Environmental Assessment (SEA): Phase 1 Monitoring and Decision Support System	Project leader	Western Cape provincial government
2018-2019	Environmental Screening Study 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	EIA for 150 MW wind power project in Ghana	Proposal and EIA Quality Assurance	Volta River Authority and Seljen Consult Ltd
2019	Environmental Assessment for the Kenhardt solar PV facility and electrical infrastructure (100 MW x 3), Northern Cape	Project leader	Scatec Solar Africa (Pty) Ltd
2017-2019	SEA for Wind & Solar Photovoltaic Energy development in South Africa (Phase 2)	Project reviewer	DEA & national Dept of Energy (DOE)
2017-2019	SEA for the Expansion of EGI Corridors in South Africa	Project reviewer	DEA, DOE, iGas, Eskom (national electricity utility)
2017-2019	SEA for Energy Corridors and development of a gas pipeline network for South Africa	Project reviewer	DEA, DOE, iGas, Eskom (national electricity utility)
2017-2019	SEA for Aquaculture Development in South Africa (marine and freshwater)	Project leader	DEA and national Dept of Agriculture Forestry and Fisheries (DAFF)
2018	Environmental Assessments 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	EIA for West Bank Waste Water Treatment works marine outfall pipeline , East London	Independent reviewer	WSP and Buffalo City Municipality
2017-2018	Site selection and environmental screening 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	EIA and EMP for Icyari Coltan Mine , Rwanda	Project reviewer	Mawarid Mining Rwanda Ltd (MMRL), UAE
2016-2017	SEA for the Square Kilometre Array radio-telescope in the Karoo, South Africa	Project leader	DEA and DST
2016-2017	SEA for Shale Gas Development in the Karoo region of South Africa	Project co-leader	DEA and other government departments
2015-2016	SEA for the development of Electrical Grid Infrastructure for South Africa	Project leader	DEA and Eskom (national electricity utility)
2017	EIA for the 75 MW x 12 solar photovoltaic energy projects near Dealesville, Free State	Project leader	Mainstream Renewable Power SA
2014-2015	EIA for Ishwati Emoyeni 140 MW wind energy project and supporting electrical infrastructure at Murraysburg, Western Cape	Project leader	Windlab South Africa
2012-2015	SEA for identification of renewable energy zones for wind and solar photovoltaic projects in South Africa	Project leader	DEA and other national government departments
2012-2013	Environmental Screening Study (ESS) for a desalination plant for the City of Cape Town	Project leader	City of Cape Town & WorleyParsons
2012-2013	EIA for the desalination plant for the Saldanha area	Project leader	West Coast District Municipality & WorleyParsons
2012-2013	EIA for the manganese export terminal at the Port of Ngqura and Coega Industrial Development Zone (IDZ)	Project leader	Transnet

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Duration	Project description	Role	Client
2011 - 2012	EIA (x2) for 100 MW solar photovoltaic 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 solar photovoltaic project 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 solar photovoltaic projects in the Western Cape, Northern Cape, Eastern Cape and Free State	Project leader	Conducted for Dutch, German, French and South African companies
2010/2011	EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands in the Eastern Cape	Project leader	WindCurrent SA (German-based company)
2010-2011	EIAs (x4) for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW) , Western Cape, South Africa	Project leader	InnoWind South Africa (Pty) Ltd
2009-2010	EIA for the proposed Electrawinds wind energy facility of 45-75 MW capacity in the Coega IDZ, Eastern Cape	Project leader	Electrawinds N.V. (Belgium)
2009-2010	EIA for proposed 180 MW Jeffreys Bay wind energy project , Eastern Cape	Project Leader and co-author	Mainstream Renewable Power South Africa
2009-2010	EIA for the proposed 70 megalitre/day desalination plant at Mile 6 near Swakopmund, Namibia	Project leader	NamWater, Namibia
2009	ESS for a proposed Deepwater Port , Container Hub and Industrial Development Zone, Ghana	Project Manager	Project Management International Pty Ltd
2009	EMP for the Operational Phase of the Berg River Dam , Franschoek, South Africa	Project leader and report co-author	TCTA (national water supply utility), South Africa
2006	Environmental Impact Assessment (EIA) for extension of Port of Ngqura, Eastern Cape	Project Leader and co-author	Transnet National Port Authority
2004-2005	Environmental and Social Impact Assessment (ESIA) report 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	Guideline for Environmental Management Plans (EMPs) for the Western Cape province	Author	Dept of Environmental Affairs & Development Planning, Western Cape
2003	Environmental Management Plan 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	Environmental Impact Assessment for the proposed Pechiney aluminium smelter at Coega, South Africa	Project Manager and lead author	Pechiney, France
1999-2000	Cape Action Plan for the Environment: 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	Management Plan 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)

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Duration	Project description	Role	Client
1998	Environmental Assessment of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique	Project manager and author	SNC-Lavalin-EMS
1996-1997	Strategic Environmental Assessment (SEA) 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	Environmental Impact Assessment and EMP for Development Scenarios for Thesen Island, Knysna, South Africa	Project manager and report writer	Thesen and Co.
1996	Environmental Impact Assessment for the Blouvlie wetlands at Century City, Cape Town	Project manager and report writer	Ilco Homes Ltd (now Monex Ltd)
1995	Environmental Impact Assessment for the Saldanha Steel Project, South Africa	Report author and project manager	Saldanha Steel Project
1994	Environmental Impact Assessment for the upgrading of resort facilities on Frégate Island, Seychelles	Project management, co-author, process facilitator	Schneid Israelite and Partners
1994	Environmental Impact Assessment for exploration drilling in offshore Area 2815, Namibia	Project manager and lead author	Chevron Overseas (Namibia) Limited
1994	Management Plan for the Rietvlie 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

LANGUAGES	Speaking	Reading	Writing
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
- 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.

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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A.1.2 CV OF LIZANDE KELLERMAN

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)

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

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 Assessment Practitioner	ABO Wind renewable energies (Pty) Ltd
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	ABO Wind renewable energies (Pty) Ltd

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Completion Date	Project description	Role	Client
		Assessment Practitioner	
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
2018	The Implementation of the Development of an Ecological Infrastructure Investment Framework (EIIIF) and an Alien Invasive Species Strategy (AISS) for the Western Cape Province	Public Participation Practitioner	Western Cape Department of Environmental Affairs and

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Completion Date	Project description	Role	Client
			Development Planning
2018	Basic Assessment for the proposed development of the 325 MW Kodusberg 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
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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Completion Date	Project description	Role	Client
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

- 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

- 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

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

- **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

- **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-nylukurper-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
- 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

Name of firm	CSIR
Name of staff	Rohaida Abed
Profession	Environmental Assessment Practitioner
Position in firm	Environmental Assessment Practitioner
Nationality	South African

Biographical Sketch

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

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

- 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

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
October 2011 – to present	CSIR	Environmental Assessment Practitioner

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Short Courses, Seminars and Conferences

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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Date	Project Description	Role	Client
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 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
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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Date	Project Description	Role	Client
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
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	Project Consultant	Scatec Solar SA 163 (PTY) Ltd

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Date	Project Description	Role	Client
	Kenhardt PV 3 – Transmission Line), north-east of Kenhardt, Northern Cape.		
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
2019	Three Applications for Substantive Amendment to the Environmental Authorisations for the proposed	Project Team Member	South Africa Mainstream Renewable

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

Date	Project Description	Role	Client
	Sutherland WEF, Sutherland 2 WEF and Rietrug WEF, near Sutherland in the Northern and Western Cape		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

	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent

A.1.4 CV OF DHIVESHNI MOODLEY

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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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

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

QUALIFICATIONS

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

SOFTWARE SKILLS

- ESRI Arcmap
- Microsoft Office (Word, Excel, Powerpoint)
- Google Earth
- QGIS
- ERDAS IMAGINE
- Pix4Dmapper

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

RELEVANT COURSES

- 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.
-

PROFESSIONAL AFFILIATIONS/REGISTRATIONS

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

HONOURS AND AWARDS

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

LANGUAGE CAPABILITY

	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent

A.2. CURRICULUM VITAE OF THE SPECIALISTS

A.2.1 HERITAGE SPECIALIST

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
University of Oxford	D.Phil. (Archaeology)	2013

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

*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

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 –

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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
- 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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

- 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.2.2 AQUATIC BIODIVERSITY SPECIALIST

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

	<p>included more than 40 freshwater impact assessments for roads, power line and substation and renewable energy projects.</p> <p>Development of RDM (Resource Directed Measures) curriculum for a Master degree programme at University of science institutions in South Africa.</p> <p>Free State river health monitoring programme (monitoring for 3 year period).</p> <p>Classification of the water resources of the Olifants Doorn Water Management Area.</p> <p>Graphic design, layout, technical compilation and preparation of print ready glossy publications for the State-of-River reports for the Gouritz and Breede Water Management Areas</p> <p>Development and piloting of a National Strategy to Improve Gender Representation in Water Management Institutions, 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 integrated water resources management plan for the Sandveld;</p> <p>Aquatic specialist to the City of Cape Town project: Determination of additional resources to manage pollution in stormwater and river systems;</p> <p>Framework for Education and Training in Water (FETWATER), Resource Directed Measures Network partner which has undertaken training initiatives on environmental water requirements in the SADC region;</p> <p>Resource Directed Management of Water Quality: Development of training materials, 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.2.3 AVIFAUNAL SPECIALIST

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. Innwind (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

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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.

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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 Tlisitseng 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-Overysse 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)

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

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. Liphobong-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 Booyendal 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. GaKgapane 66kV
77. Knobel Gilead 132kV
78. Bochum Knobel 132kV
79. Madibeng 132kV
80. Witbank Railway Line and associated infrastructure
81. Spencer NDP phase 2 (5 lines)

DRAFT BASIC ASSESSMENT REPORT: Basic Assessment for the proposed construction of a 132 kV Overhead Powerline between the proposed Kwagga Wind Energy Facility 1 and the proposed Kwagga Wind Energy Facility 2, near Beaufort West in the Western Cape Province

82. Akanani 132kV
83. Hermes-Dominion Reefs 132kV
84. Cape Pensinsula 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. Styl drift 132kV
101. Taunus – Diepkloof 132kV
102. Bighorn NDP 132kV
103. Waterkloof 88kV
104. Camden – Theta 765kV
105. Dhuvu – 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. Booyesdal 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. Regenstein 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 EMPr 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.2.4 TERRESTRIAL BIODIVERSITY SPECIALIST

1. Biographical information

Surname	Van Rooyen
First names	Noel
ID number	501225 5034 084
Citizenship	South African
Business address	Ekotrust CC 7 St George Street Lionviham 7130 Somerset West South Africa
Mobile	082 882 0886
e-mail	noel@ekotrust.co.za
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 Ekotruster 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. Ekotruster 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. Ekotruster.
- VAN ROOYEN, M.W. & VAN ROOYEN, N. & VAN DEN BERG, H. 2016. Kathu Bushveld study: Research offset for first development phase of Adams Solor 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. Ekotruster 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. Ekotruster cc, Somerset West.
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1. Biographical information

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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 Rhee de 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., Hinds, C. & Muller, L. *South African Landscape Architecture: A Compendium and A Reader*. Chapter 10, pp. 129 – 140; and (vi) Stoffberg, H., Hinds, 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.

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- VAN ROOYEN, N. & VAN ROOYEN, M.W. 1998. Vegetation of the south-western arid Kalahari: an overview. *Transactions of the Royal Society of South Africa*. 53: 113-140.
- WESULS, D., STROHBACH, M., HORN, A., KOS, M., ZIMMERMANN, J., HOFFMANN, J., GELDENHUYS, C., DREBER, N., KELLERMANN, L., VAN ROOYEN, M.W., POSCHLOD, P. 2010. Plant functional traits and types as a tool to analyse landuse impacts on vegetation. In: Schmiechel, U., Jürgens, N. [Eds.]: *Biodiversity in southern Africa. Volume 2: Patterns and processes at regional scale*: 222-232, Klaus Hess Publishers, Göttingen & Windhoek.

A.2.5 PALAEOLOGICAL 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, Mupumalanga, 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.2.6 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 Consultors 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.2.7 VISUAL SPECIALIST

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 Others: Afrikaans

ACADEMIC QUALIFICATIONS

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

PROFESSIONAL QUALIFICATIONS

Registered Landscape Architect

KEY FIELDS OF EXPERIENCE

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

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

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

- 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

- 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

- Environmental Planning and Management (EMP) Journal

- Landscape SA Journal

PROFESSIONAL AWARDS AND COMPETITIONS

- 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.