



ASHLEA STRONG, MEM, EAP

*Principal Consultant (Planning & Advisory Services),
Environment & Energy*



Years with the firm

8

Years of experience

18

Professional qualifications

EAPASA

Areas of expertise

Auditing

ESIR

Energy

Environmental Control

Infrastructure

Mining

Training

Waste Management

CAREER SUMMARY

Ashlea is a Principal Consultant with 18 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range of projects in the environmental management field, including environmental scoping and impact assessment studies, environmental management plans, waste and water management, as well as the provision of environmental management solutions and mitigation measures.

Ashlea has been involved in the management of a number of large EIAs specifically within the energy sector such as the Medupi Power Station, and Pebble-Bed Modular Reactor (PBMR) and numerous Transmission Powerlines. She also has significant environmental auditing experience and expertise having undertaken over 70 compliance audits.

Ashlea holds a Masters in Environmental Management; a BTech (Nature Conservation), and a National Diploma (Nature Conservation). She is also a Registered Environmental Assessment Practitioner.

EDUCATION

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| Masters in Environmental Management, University of the Free State, South Africa | 2006 |
| B Tech, Nature Conservation, Technikon SA, South Africa | 2001 |
| National Diploma in Nature Conservation, Technikon SA, South Africa | 1999 |

ADDITIONAL TRAINING

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| Conduct outcomes based assessment (NQF Level 5), South African Qualifications Authority (SAQA) | 2009 |
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PROFESSIONAL MEMBERSHIPS

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| Registered Environmental Assessment Practitioner (Registration Number: 2019/1005) | 2020 |
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PROFESSIONAL EXPERIENCE

Energy Sector

- 100MW Solar Photovoltaic (PV) Plant (2021). Project Director. This project involved the compilation of a Basic Assessment and Environmental Management Plan for a 100MW Solar PV Plant near Springs in Gauteng, South Africa. Client: Calodex (Pty) Ltd.
- Erica 400kV Loop-in-Loop-out (LILO) Powerline (2020). Compilation of an environmental screening assessment for the Erica 400kV LILO Powerline in Cape Town, Western Cape, South Africa. Client: Eskom Holdings SOC Limited.
- Maralla East and West Wind Energy Facilities (2019). Project Manager. Compilation of two Part 2 Amendment Processes for the changes in technical scope of the Wind Energy Facilities near Sutherland in the Northern and Western Cape, South Africa. Client: BioTherm Energies (Pty) Ltd.
- Ruigtevallei 132kV Powerline (2019): Project Manager. Compilation of a Part 2 Amendment Process for the deviation of the Ruigtevallei – Dreunberg 132 kV powerline near Gariiep in the Free State, South Africa. Client: Eskom Holdings SOC Limited.



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Principal Consultant (Environmental Services), Environment & Energy

- Nakonde and Mpika Wind Energy Projects (2018): Project Manager. Compilation of two Environmental Project Briefs for the establishment of meteorological masts at the Proposed Nakonde and Mpika Wind Project Sites in Zambia. Client: Globeleq
- Rietkloof Wind Energy Facility Project (2018): Project Director. Compilation of a Basic Assessment and Environmental Management Programme for a 140MW Wind Energy Facility, Matjiesfontein, Western Cape. Client: G7 Renewable Energies
- Mozambique – Zambia Interconnector Powerline (2018): Project Manager. This project involved the compilation of the Environmental and Social Impact Assessment and Environmental and Social Management Plan for a 300km 400kV powerline between Tete, in Mozambique, and Chipata, in Zambia. Client: Southern African Power Pool (SAPP).
- Ankerlig – Koeberg 132kV powerline walkdown (2017): Project Manager. This project involved the compilation of a Construction and Operation Environmental Management Plans for the Ankerlig – Koeberg 132kV powerline. Client: Eskom Holdings SOC Limited.
- Gwanda 100MW Solar Project (2018): Project Manager. This project involved the high-level review of the Environmental Impact Assessment for a 100MW Photovoltaic (PV) Solar Project near the town of Gwanda, Matebeleland South Province of Zimbabwe against relevant legislation and international standards. Client: WSP | Parsons Brinckerhoff.
- Southern Energy Coal Fired Power Station (2016): Project Manager. This project involved the high-level review of the Environmental Impact Assessment for the Southern Energy Coal Fired Power Station near Hwange in Zimbabwe against relevant legislation and standards. Client: WSP | Parsons Brinckerhoff.
- Proposed Solar and Wind Projects located in the Northern and Western Cape Provinces (2015) Project Manager. This project involved the compilation of 15 Environmental Impact Assessments and Environmental Management Plans for 2 Solar and 2 Wind energy Projects near Aggenys and Sutherland respectively. Client: BioTherm Energy (Pty) Ltd.
- Proposed Solar Park, Northern Cape Province, South Africa (2012): Strategic Environmental Advisor. This project involved the provision of process expertise for the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Solar Park in the Northern Cape Province. Client: Central Energy Fund (CEF).
- Proposed Tabor - Nzhelele 400kV Transmission Lines and associated infrastructure, Limpopo Province, South Africa (2012): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 100km 400kV powerline between Louis Trichardt and Musina in the Limpopo Province. Client: Eskom Transmission.
- Retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at Units 2, 3 and 4 at the Grootvlei Power Station, South Africa (2012): Project Manager. This project involved the compilation of a Basic Assessment Report and Environmental Management Plan for the proposed retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at the Grootvlei Power Station. Client: Eskom Holdings SOC Limited.
- Proposed Mulilo Coal Fired Power Station and associated infrastructure as well as associated power lines and substations, Musina, Limpopo, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Mulilo Coal Fired Power Station and associated infrastructure as well as associated power lines and substations in the Musina area of the Limpopo Province. Client: Parsons Brinckerhoff Africa and Mulilo Power.

- Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure, Western Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure in the Western Cape Province. Client: Eskom Generation.
- Proposed Bantamsklip – Kappa 765 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for four 260km 765kV powerlines between the Bantamsklip Nuclear Power Station Site and the proposed new Kappa Substation in the Karoo, Western Cape Province. Client: Eskom Transmissions.
- Proposed Bantamsklip – Bacchus, Bacchus - Kappa and Bacchus – Muldersvlei 400 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a number of 400kV powerlines between the Bantamsklip Nuclear Power Station Site and a number of substations, including Bacchus, Kappa and Muldersvlei, in the Western Cape Province. Client: Eskom Transmission.
- Westgate – Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the Westgate – Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure in the Gauteng Province. Client: Eskom Distribution – Central region.
- Environmental Scoping Study for the proposed new distribution line and substation for Eskom, Dundonald, Mpumalanga (also involved in the Public Participation Process), Mpumalanga, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline as well as a new substation in the Tarlton area of Gauteng.
- The proposed new 132 kV sub-transmission line between the Dinaledi and GaRankuwa substations for Eskom, GaRankuwa, North West, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline between the Dinaledi and GaRankuwa substations in the GaRankuwa area of the North West Province. Client: Eskom Distribution.
- Expansion of the Transmission powerline network and associated infrastructure between the Perseus substation and the Beta substation, Free State, South Africa (2008): Project Manager. This project involved the compilation of an alignment specific construction Environmental Management Plan for the 13km 765kV Perseus Beta Turn-ins. Eskom Transmission
- Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline as well as a new substation in the Tarlton area of Gauteng. Client: Eskom Distribution – Central Region.
- Basic Assessment for the proposed Watershed – Mmabatho 88kV Power line. North West, South Africa (2008): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for a new 88kV powerline near Mmabatho in the North West Province. Client: Eskom Distribution – Central Region.

- Proposed Watershed – Mmabatho 88kV Power line. North West, South Africa (2007): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the Watershed – Mmabatho 88kV Power line in the North West Province. Client: Eskom Distribution – Central Region.
- Proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba, Mpumalanga, South Africa (2007): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba in the Mpumalanga Province. Client: Eskom Holdings SOC Limited.
- Proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure, Western Cape, South Africa (2006): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure in the Western Cape Province. Client: Eskom Generation.
- Proposed Concentrated Solar Thermal Plant in the Northern Cape, South Africa (2006): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Concentrated Solar Thermal Plant near Upington in the Northern Cape Province. Client: Eskom Holdings SOC Limited.
- Proposed Underground Coal Gasification plant, Eskom, Mpumalanga, South Africa (2006): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Underground Coal Gasification plant near the Majuba Power Station in the Mpumalanga Province. Client: Eskom Holdings SOC Limited.
- Proposed new Coal-fired Power Station in the Lephalale Area for Eskom, Limpopo, South Africa (2005): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed new Coal-fired Power Station in the Lephalale Area in the Limpopo Province. Client: Eskom Generation.
- Proposed Open Cycle. Gas Turbine Power Station at Atlantis for Eskom, Western Cape, South Africa (2005): Environmental Consultant. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Open Cycle. Gas Turbine Power Station at Atlantis in the Western Cape Province. Client: Eskom Generation.

Infrastructure Sector

- Emalahleni Water Treatment Plant Amendment Project (EWRP) (2020). Project Manager. Compilation of a Part 1 Amendment Process for the changes to the EWRP Environmental Authorisation as well as an update of the Environmental Management Programme for the EWRP near Emalahleni in Mpumalanga, South Africa. Client: Anglo American
- Hendrina Leachate Dam (2018): Project Manager. This project involves the compilation of a Basic Assessment and Environmental Management Plan for a leachate Dam at the Domestic Waste Landfill Site at the Hendrina Power Station. Client: Eskom Holdings SOC Limited.
- Rehabilitation of the R34 between Vryburg and Schweizer-Reneke, North West, South Africa (2016): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the upgrading of the R34 between Vryburg and Schweizer-Reneke. Client: SANRAL
- Proposed Expansion of the Cremation Facilities at the Envirocin Pet Crematorium, Gauteng, South Africa (2013): Project Manager. This project involves the compilation of a basic assessment for the expansion of the cremation facilities at

the Envirocin Pet Crematorium in Kyasands, Gauteng Province. Client: Envirocin Incineration Systems CC.

- Proposed Kraft Paper Mill in Frankfort, Frankfort, Free State, South Africa (2013): Project Manager. This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme, for the proposed establishment of a KRAFT paper mill in Frankfort in the Free State Province. Client: Industrial Development Corporation of SA (Pty) Ltd.
- Rehabilitation of the N14 between Delerayville and Sannieshof, North West, South Africa (2011): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the upgrading of the N14 between Sannieshof and Delerayville as well as the construction of a new bridge over the Hartsriver. This project also included the compilation of Water Use License and Mining Permit Applications. Client: SANRAL.
- Proposed new Waterfall Cemetery, Limpopo, South Africa (2011): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the new Waterfall Cemetery, Limpopo Province. Client: Makhado Municipality.
- Route determination of the proposed Metro Boulevard, Gauteng, South Africa (2008): Project Manager. This project involved the undertaking of an Environmental Impact Assessment for the route determination of the proposed Metro Boulevard in the Weltevreden Park Area of the Gauteng Province. Client: Johannesburg Roads Agency.
- Proposed new fuel supply pipeline between Milnerton and Atlantis, Western Cape, South Africa (2007): Project Manager. This project involved undertaking an Environmental Impact Assessment for the proposed new fuel supply pipeline between Milnerton and Atlantis to supply the Ankerlig Power Station in the Western Cape Province. Client: Eskom Generation.

Mining Sector

- Establishment of the Proposed Rietvlei Opencast Coal Mine, Mpumalanga, South Africa (2013): Project Manager. This project involves the undertaking of an integrated environmental authorisation process, including an Environmental Impact Assessment, Environmental Management Programme Report, Waste Management License Application and Water Use License Application, for the establishment of an opencast coal mine north of Middelburg. Client: Rietvlei Mining Company.
- Decommissioning of Redundant Infrastructure at the Vaal River Operations, North West and Free State, South Africa (2013): Project Manager. This project involves undertaking an integrated Environmental Authorisation and Waste Management License process for the proposed decommissioning of redundant infrastructure at AngloGold Ashanti's Vaal River Operations. Client: AngloGold Ashanti.
- Decommissioning of Redundant Infrastructure at the West Wits Operations, Gauteng, South Africa (2013): Project Manager. This project involves undertaking a Basic Assessment process for the proposed decommissioning of redundant infrastructure at AngloGold Ashanti's West Wits Operations. Client: AngloGold Ashanti (Pty) Ltd.
- Inyanda Mine Pegasus South Expansion, Mpumalanga, South Africa (2011): Project Manager. This project included the compilation of an Environmental Impact Assessment, Environmental Management Plan, the Amendment of the existing Environmental Management Programme Report and the amendment of the existing Water Use License for the Inyanda Mine Pegasus South Expansion project, north of Middelburg in the Mpumalanga Province. Client: Exxaro Coal (Pty) Ltd.

- Sishen Infrastructure Program, Northern Cape, South Africa (2010): Project Manager. This project involved the compilation of an Environmental Impact Assessment and an Environmental Management Plan for the infrastructure expansion programme proposed by the Sishen Mine in the Northern Cape. Client: Sishen Iron Ore (Pty) Ltd.
- Prospecting Permit Applications in the Kuruman area of the Northern Cape, South Africa (2011): Project Manager. This project involved the compilation of Environmental Management plans as part of six applications for Prospecting Permits in the Kuruman area of the Northern Cape. Client: Sound Mining Solutions.
- Borrow pits required by the Limpopo Department of Roads and Transport, Limpopo, South Africa (2010): Project Manager. This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the rehabilitation of provincial roads in the Limpopo Province. Client: Limpopo Department of Roads and Transport.
- Borrow pits required for the Medupi Coal Fired Power Station, Limpopo, South Africa (2008): Project Manager. This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the Medupi Coal Fired Power Station in the Limpopo Province. Client: Eskom Generation.
- Borrow pits required for the Ingula Pumped Storage Scheme, KwaZulu-Natal, South Africa (2008): Project Manager. This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the Ingula Pumped Storage Scheme in the Kwa-Zulu Natal Province. Client: Eskom Generation.
- Project Manager, Mining Right Application for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme, Mpumalanga, South Africa (2007): Project Manager. This project entailed the compilation of the required Environmental Management Programme Report in support of a Mining Right Application for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme in the Mpumalanga Province. Client: Eskom Generation.
- Renewed Mining and Prospecting Activities on the farm Quaggaskop 215, Vanrhynsdorp, Western Cape, South Africa (2004): Environmental Consultant. This project involved the compilation of an Environmental Management Programme Report for the recommencement of mining and prospecting activities on the farm Quaggaskop 215 outside Vanrhynsdorp in Western Cape Province. Client: Minexpo.

Waste Management Projects

- Sasol Waste Management Environmental Management Programme (2019). Compilation of an operational Environmental Management Programme for the Sasol Waste Ash Facility, Charlie 1 Disposal Facility and the Waste Recycling Facility. Client: Sasol Secunda Operations.
- Proposed continuous Ashing at Majuba Power Station, Mpumalanga, South Africa (2012): Project Manager. This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Majuba Power Station in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa (2012): Project Manager. This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa (2011): Project Manager. This project entailed the compilation

Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga. Client: Hendrina Power Station.

- Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape (2005). Project Manager. This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape. Client: Coega Development Corporation.

Specialist Projects

- Strategic Environmental Assessment for the Development. Master Plan Greater Port Harcourt, Rivers State, Nigeria, Africa (2008): Senior Environmental Consultant. This project entailed the compilation of a Strategic Environmental Assessment for the City of Port Harcourt as part of the development of the Master Plan for the Greater Port Harcourt Area. Client: Port Harcourt Government
- Development of an Environmental Policy, Gauteng, South Africa (2006): Environmental Consultant. This project entailed the development and compilation of an environmental policy for the Ekurhuleni Metropolitan Municipality. Client: Ekurhuleni Metropolitan Municipality.
- Environmental Input into the National Transport Master Plan, South Africa (2007): Environmental Consultant. This project included the provision of strategic environmental input in to the Draft National Transport Plan. Client: Department of Transport.
- Development of the Development Corridors, Ekurhuleni, Gauteng, South Africa (2006): Environmental Consultant. This project included the provision of strategic environmental input in to the Ekurhuleni Metropolitan Municipalities Development Corridor Study. Client: Ekurhuleni Metropolitan Municipality.

Auditing

- Compliance Audits at South 32 (2016 – 2020): Project Manager. This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32.
- Compliance Audits at Middelburg Water Reclamation Plant (MWRP) (2016 – 2020): Project Manager. This project involved the environmental compliance audits of the Water Use License and Waste Management License for the MWRP at South 32 in Mpumalanga. Client: South 32.
- BioTherm Round 4 Lenders Technical Advisor (2018 - 2021). Project Manager – Environmental. Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards. Client: Nedbank.
- Water Use Licence Audits (2019): Lead Auditor: External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Sasol Alrode and Pretoria West Depot Audits (2016 - 2020): Lead Auditor. Environmental compliance audits for environmental authorisations and environmental management plans for the Sasol Alrode and Pretoria West Depots. Client: Sasol Oil (Pty) Ltd
- Sasol Regulation 34 Audits (2019): Lead Auditor. Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations. Client: Sasol Oil (Pty) Ltd
- Regulation 34 Audits at Mogalakwena Mine (2019). Project Manager. Environmental compliance audits of the EMPR and various environmental

- authorisations at the Mogalakwena Mine in the Limpopo Province. Client: Anglo American Platinum.
- Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations (2019): Lead Auditor. Environmental compliance audits for 49 authorisations for the Sasol Secunda. Client: Sasol Secunda Operations
 - Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa (2019): Project Manager. Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine. Client: Palabora Company
 - Sasol Mining Water Use Licence Compliance, South Africa (2018): Project Manager. Environmental compliance audit of six WULs held by mining operations in Secunda. Client: Sasol Mining
 - Waste Management License Audits for the Sasol Waste Ash Site, Secunda, Mpumalanga, South Africa (2014 - 2019): Lead Auditor. These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities at the Secunda Site in Mpumalanga Province. Client: Sasol Chemical Industries: Secunda Synfuels Operations
 - Legal Assessment at South 32 (2019): Project Manager and Lead Auditor. This project involved the assessment of legal compliance against the mine's legal register for the Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
 - InvestChem Annual Environmental Compliance Monitoring, Kempton Park, Gauteng, South Africa (2013 - 2019): Lead Auditor. This project involved the annual environmental compliance auditing for InvestChem's Sulphonation Plant in Kempton Park, Gauteng Province. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision). Client: Investchem (Pty) Ltd.
 - Compliance Audits at Sasol Alrode and Pretoria West Depots (2015-2019). Project Manager and Lead Auditor. Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng. Client: Sasol Oil (Pty) Ltd
 - Water Use Licence for the Letabo Power Station (2018): Project Manager. Environmental compliance audit of the WUL held by Eskom Letabo Power Station, Free State, South Africa. Client: Eskom Holdings
 - Compliance Audits at Kriel Colliery (2018): Project Manager. This project involved the environmental compliance audits of the Water Use Licenses held by Kriel Colliery in Mpumalanga. Client: Seriti Coal
 - Legal Assessment at South 32 (2017): Project Manager and Lead Auditor. This project involved the assessment of legal compliance against the mine's legal register for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
 - EMPR Performance Assessment Report at South 32 (2016): Project Manager. This project involved the formal assessment and verification of the Environmental Management Programme Report for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
 - Compliance Audit for the Bokpoort Concentrating Solar Power (CSP) Facility, Groblershoop, Northern Cape, South Africa (2016): Lead Auditor. This project involved the environmental compliance auditing of the Waste Management License, Environmental Authorisation and Water Use License for the Bokpoort

CSP Facility near Groblershoop in the Northern Cape Province. Client: ACWA Power Solafrika Bokpoort CSP Power Plant (Pty) Ltd.

- EMPR Performance Assessment Report for the Landau Colliery, Mpumalanga, South Africa (2013): Auditor. This project involved the formal assessment and verification of the Landau Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002). Client: Anglo Thermal Coal.
- Waste Management License Audit for the Slagment Operation, Vanderbijlpark, Gauteng, South Africa (2013): Lead Auditor. This project involved the annual environmental compliance auditing for AfriSam's Slagment Operation in Vanderbijlpark in Gauteng Province. The audit included AfriSam's compliance to the conditions of their waste management license. Client: AfriSam Southern Africa (Pty) Ltd.
- EMPR Performance Assessment Report for the New Vaal Colliery, Free State, South Africa (2006-2007): Auditor. This project involved the formal assessment and verification of the New Vaal Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002). Client: Anglo American Thermal Coal.

Environmental Control Projects

- N14 rehabilitation between Sannieshof and Delareyville, North West, South Africa (2012): Environmental Control Officer. This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer and SANRAL. Client: SANRAL.
- Delmas and Bontlang Waste Water Treatment Works, Mpumalanga, South Africa (2009): Environmental Control Officer. This project involved a once off compliance audit of the above-mentioned Waste Water Treatment Works. Client: Victor Khanye Municipality.
- Nkonjaneni Water Borne Sewer Project in Piet Retief, Mpumalanga, South Africa (2009): Environmental Control Officer. This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer. Client: Mkhondo Local Municipality.
- Upgrading of the Waterval Water Care Works, Gauteng, South Africa (2005-2007): Environmental Control Officer. This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan. Client: ERWAT.
- Lotus Gardens Ext 2 Township establishment, Gauteng, South Africa (2003): Environmental Control Officer. This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan. Client: City of Tshwane.

Training

- N14 rehabilitation between Sannieshof and Delareyville, North West, South Africa (2012): Project Manager. This project involved the provision of training for the staff of the N14 rehabilitation project with regards to the contents of the environmental management plan. Client: SANRAL.
- Training in Environmental Aspects and Rehabilitation for the Small Scale Mining Division of Mintek, City, Province, South Africa (2004): Trainer. This project involved the provision of environmental awareness training for delegates involved in the small scale miner training programme run by the Mintek small scale mining division. Client: Mintek



ASHLEA STRONG, MEM, EAP

Principal Consultant (Environmental Services), Environment & Energy

- Training in Environmental Aspects and Impacts, Germiston, Gauteng, South Africa (2004): Trainer. This project involved the provision of environmental aspects and impacts training for the staff of Transwerk in Germiston. Client: Transwerk Germiston.

EAPASA

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Environmental Assessment Practitioners Association of South Africa

Advancing environmental assessment practice in South Africa



Email: registrar@eapasa.org / Website: www.eapasa.org

Mrs Ashlea-Robyn Strong
7 Hamerkop Road
Randpark Ridge
Johannesburg
2156

Sent by email to: ashlea.strong@wsp.com

Dear Mrs Strong

Registered Environmental Assessment Practitioner: Number 2019/1005
Ashlea-Robyn Strong : South African ID 7609030131081

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Ashlea-Robyn Strong is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

<https://registration.eapasa.org/registered-practitioners>

Your registration is effective for a period of five years from 23 April 2020, and expires on 23 April 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

Dr Richard Hill
Registrar
Date: 23 April 2020

Board Members: Ms Snowy Makhudu (Chairperson), Mr Khangwelo Desmond Musetsho (Vice-Chairperson),
Mr Ntsako Baloyi, Mr Zama Dlamini, Mr Siyabonga Gqalangile, Ms Jacqui Hex, Mr Phumudzo Nethwadzi, Mr Danie Neumann.
Registrar: Dr Richard Hill
NPO Reg. No. 122-986

UNIVERSITEIT
VAN DIE
VRYSTAAT



UNIVERSITY
OF THE
FREE STATE

HIERMEE WORD VERKLAAR DAT DIE THIS IS TO CERTIFY THAT THE

Magister in Omgewingsbestuur
Magister in Environmental Management

TOEGEKEN IS AAN
HAS BEEN CONFERRED UPON

ASHLEA-ROBYN STRONG

Met effek vanaf with effect from
1 Februarie / February 2006

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEËL VAN DIE UNIVERSITEIT HIERONDER. IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY. AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.


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VISEKANSELIER/VICE-CHANCELLOR


.....
DEKAAN/DEAN


.....
REGISTRATEUR/REGISTRAR

BLOEMFONTEIN
2006-04-25
2003049109



HASSEN KHAN, B.Sc.H, Pr.Sci.Nat.

Principal Consultant (Hydrologist), Environmental & Energy



CAREER SUMMARY

Hassen is a principal hydrologist with 10 years of experience in the engineering and environmental consulting sector. His experience in hydrology provides an ideal platform for innovative hydrological and hydraulic solutions in the mining, urban and agricultural sectors both locally and internationally.

His key areas of expertise include experience in design flood hydrology, hydrological simulation, 1D and 2D hydraulic modelling, dynamic and static water balance, conceptual and detailed designed storm water management plans, integrated water resource management plans (IWRM), Water Conservation and Water Demand Management (WC/WDM), water use license applications, ground water and surface water quality sampling, analysis and development of water quality monitoring plans.

Years with the firm

>4

Years of experience

10

Professional qualifications

Pr.Sci.Nat

Areas of practice

Hydrological modelling

Hydraulic modelling

Design flood assessment

Flood risk assessment

Storm Water Management Plans

Water Balance simulation

Water Conservation and Water Demand Management

Project management

EDUCATION

| | |
|---|---------|
| Executive Masters of Business Administration (MBA), Henley Business School Africa | Current |
| Bachelor of Science (Honours), Hydrology, University of KwaZulu-Natal, Pietermaritzburg, KwaZulu-Natal, South Africa | 2010 |
| Bachelor of Science, Majors in Hydrology and Soil Science, University of KwaZulu-Natal, Pietermaritzburg, KwaZulu-Natal, South Africa | 2009 |

ADDITIONAL TRAINING

| | |
|---|------|
| Water Governance Training | 2020 |
| Personal Mastery | 2019 |
| Section 21 (C) & (I) Training, DWS | 2018 |
| Hazard Identification and Assessment (HIRA) | 2018 |
| Fire Marshall Training | 2018 |
| Fundamentals of Project Management, PM Academy | 2018 |
| GoldSim | 2016 |
| Diploma in Excel, Shaw Academy | 2015 |
| Fundamentals of Project Management, University of Witwatersrand | 2015 |
| Design Flood Hydrology Course, University of Stellenbosch | 2014 |
| PCSWMM Urban Drainage Modelling, Chi Water | 2012 |
| AutoCAD Civil 3d Essentials, Autodesk | 2011 |

PROFESSIONAL MEMBERSHIPS

| | |
|---|---------|
| South African Council for Scientific Professions – Professional Scientist | SACNASP |
|---|---------|

PROFESSIONAL EXPERIENCE

Hydrology and Water Resources

- Kananga Erosion Protection Hydrological Analysis – Undertook hydrological modelling using Hec-HMS to determine peak flows for five sites within Kananga, DRC for the design of erosion protection measures. Client: UNOPS
- Phinda Power Station SWMP – Development of a conceptual SWMP using the PCSWMM model for the Phinda Power Station situated in Richards Bay. Client: Globeleq.
- H2 Energy SWMP - Development of a conceptual SWMP using the PCSWMM model for the H2 Power Station and associated infrastructure within the Mpumalanga Province.
- Etihad DCP2 Hydrological assessment – Undertook hydrological modelling using Hec-HMS to place and size culverts along the Design Control Point preliminary design (DCP1) Etihad Rail project
- Harmony Kalgold Mine Expansion Hydrological Expansion (2019), undertook a hydrological assessment as input into a Water Use License Application (WULA) for the Harmony Kalgold expansion project situated in the Kraaipan Greenstone Belt
- FFS Chlorkem Conceptual SWMP (2018), development of a Storm Water Management Plan (SWMP) using the PCSWMM model for the Chlorkem facility situated in Chloorkop, Kempton Park, Gauteng
- N3 Market Road Interchange Flood Risk Assessment (2018), Review and update an existing flood line assessment of a tributary of the Msunduzi River draining to Culvert 1 of the N3 Market Road Interchange situated near Pietermaritzburg, KwaZulu-Natal
- Agriprotein Storm Water Management Plan (2018): Project Reviewer. Conceptual Storm Water Management Plan for the for the AgriProtein industrial scale nutrient recycling bio-technology plant in Wadeville, Johannesburg to form part an EIA. Client: Agriprotein Gauteng
- Warden Rainfall Analysis (2017): Analyse rainfall data for the Warden area in order to establish the magnitude of storm event that caused damage to certain Warden farm properties
- Hydrological and Wetland Assessment for the Tau Lekoa Mine (2017), Undertook a surface water impact assessment for the Tau Lekoa Gold Mine and the associated Weltevreden Shaft to form part of an EIA. Study included a conceptual Storm Water Management Plan, water balance, water quality analysis and monitoring plan and risk assessment. Client: EIMS (Pty) Ltd
- Review of the Hwange Power Station (HPS) Plant Drain Containment and Effluent treatment Study (2017), Conduct a detail review on the Hwange Power Station and Water Balance and Water management Plan. Client: Parsons Brinckerhoff
- Ethiopia Agri-industrial Zone ESIA (2017), Surface Water Impact Assessment for the agricultural developments across Ethiopia. Client: UNOPS
- Detailed Design Storm Water Management Plan for the Ilangabi Plant 3 (2017). The site is situated in Nigel within the province of Gauteng. The SWMP was developed with the PCSWMM model and formed part of the Water Use Licence Application (WULA). Client: Ilangabi Investments 12 (Pty) Ltd
- Hydrological Assessment for Area 5 of the planned project for Angola Exploration Mining Resources (AEMR) operation, Angola, (2014): Project Manager. Providing a high-level hydrological model, dam yield assessment, Conceptual Storm Water Management Plan (SWMP) and a Water Balance for Area 5. Client: Tenova

- Integrated Water Management Plan (IWMP) for the Northern Coffee Corporation Limited (NCCL), Zambia (2015): Project Manager. Develop an IWMP for four coffee estates in the Northern Province of Zambia. The IWMP formed part of the EIA which addressed the needs to meet IFC Performance Standards and IFC EHS Guidelines. The water resource assessment was developed in SPATSIM which accounted for of environmental requirements, upstream and downstream water users and a storage dam feasibility assessment. Client: Olam
- Climate change analysis of the Ekurhuleni district, Johannesburg, Gauteng, South Africa (2013): Hydrologist. Trend analysis and statistical analysis of 140 years of hourly and daily rainfall was undertake on 6 Global Climate Models to analyse the effect of climate change for the Ekurhuleni district. This study concluded that climate change would result in short storm durations and higher intensities. Client: WRC
- Surface Water Assessment for Estima, Mozambique, (2015): Lead Hydrologist. Providing a hydrological assessment study for Estima Coal Mine located in the Tete Province of Mozambique, in Southern Africa. The surface water assessment included detailed flood lines, conceptual SWMP, Water Balance, a water quality assessment and a risk assessment. Client: ENRC
- Hydrological Impact Assessment for the Amersfoort and Paardekop Mine, Amersfoort and Paardekop, Mpumulanga, South Africa (2013): Hydrologist. Determining the hydrological impact assessment of the mining development on the catchments. The impact on water quantity and quality was determined and mitigation methods were put forward to the client. Client: SEF
- Environmental Impact Assessment for the Roodepoort Transmission Lines, Johannesburg, Gauteng, South Africa (2013): GIS specialists. Lead GIS specialist in the mapping of sensitivity impacts caused by transmission lines. This involved determining the overall impact of all specialists and choosing the route with the least amount of impacts. Client: ESKOM
- Identifying possible Hydro-Electric Power (HEP) sites, Northern Province, Zambia (2016): Project Manager. Identifying possible Hydro-Electric Power sites along Zambia’s north-eastern and north-western rivers. This study involved locating potential hydropower sites in the northern part of Zambia for a 40 MW station by analysing flow patterns and waterfall heights in order to determine the electricity potential of each site, Client: Horizon Investments
- Everest North Indicative Flood line, Lydenburg, Mpumulanga, South Africa, (2012): Hydrologist. Determining the indicative flood line for planning purposes of a new development at the Everest North Mine. This included a channel survey with a dumpy station. Client: Everest North
- Limpopo River and Bonwapitse River low flow and flood analysis, Mahalapwe, Botswana (2012): Analysis of flood responses from large ungauged rural catchments and determining the Environmental Water Requirements for the site using the Desktop Reserve Model. Client: Digby Wells
- Vedanta Indicative flood line assessment, Lephalale, Limpopo, South Africa (2013): GIS Specialist and Project Manager. Extrapolating an indicative flood line between two already existing detailed flood lines using SRTM30 and surveyor general 20m contours. Client: Digby Wells
- Flood assessment for the Atlasville Residential area, Johannesburg, Gauteng, South Africa (2013): Hydrologist. Developing an urban stormwater model for the Atlasville area using the PCSWMM model. An analysis of the local rainfall stations and radar data was undertaken to determine the rainfall variation within the Ekurhuleni district. This variation was then applied to the PCSWMM model. A combination of AutoCAD Civil 3D and Hec-RAS was used to develop flood lines for the area. AutoCAD Civil 3D was then used to design a new channel for the area to reduce the amount of flooding. Client: City of Johannesburg

- Dalys Hope Flood line, Lephalale, Limpopo, South Africa (2013): Project Manager. Study involved the manipulation of an existing ISIS model to determine the 100 year and 250 year flood line for a mine development. Sensitivity tests were undertaken on the bed slope and Manning’s coefficient to determine the effect of any errors in our model to our site. Client: Digby Wells
- Detailed stormwater management plan for the Kibali Mine, Ambaru, Orientale, DRC (2012): Hydrologist. Developing a calibrated storm water management in PCSWMM for the Randgold Kibali Mine. Client: Digby Wells
- Developing an Open Space Plan for the Greater Bassonia and Linbro Park, Johannesburg, Gauteng, South Africa (2015): Hydrologists. Providing specialist input into the development of the open space plan for the City of Johannesburg. Client: RHDHV
- Developing an Open Space Plan for the Ruimsig and Kyalami area, Johannesburg, Gauteng, South Africa (2016): Hydrologist. Providing specialist input into the development of the open space plan for the City of Johannesburg. Client: RHDHV

PUBLICATIONS AND PRESENTATIONS

Publications

- Riddel, Eddie., Khan, Hassen., Mauck, Benjamin., Ngcobo, Simphiwe., Pasi, Jonathan., Pickles, Andrew., Pickles, Jennifer., Sithole, Zinhle., Lorentz, Simon., Govender, Navashni. “Preliminary assessment of the impact of long-term fire treatments on in situ soil hydrology in the Kruger National Park” *Koedoe*, July 2012



THIGESH VATHER, Ph.D

Consultant (Hydrologist), Environment & Energy



Years with the firm

2

Years of experience

2

Areas of expertise

Hydrology

Soil Science

Remote Sensing

Cosmic Ray Neutron Technology

Languages

English

CAREER SUMMARY

Thigesh is a hydrologist with two year of consulting experience. He holds a PhD in hydrology, which focused on looking at the use of cosmic ray technology for hydrological applications. His academic research has allowed him to attend several local and international conferences.

Thigesh presented at the 17th (2014) and 18th (2016) South African National Committee for the International Association of Hydrological Sciences (SAN CIAHS). He also lectured the hydrology third year and honours classes on soil moisture networks and techniques in 2015, 2016 and 2017.

Thigesh attended the 5th International COSMOS workshop, which was held in Copenhagen (Denmark), in August 2016. He spent a month in 2016 at the University of Lincoln Nebraska, where he was mentored by Professor Trenton Franz on innovative soil moisture measurement technology, mainly cosmic ray technology.

EDUCATION

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| Doctor of Philosophy (Hydrology), University of KwaZulu-Natal, KwaZulu-Natal | 2020 |
| Master of Science (Hydrology) <i>cum laude</i> , University of KwaZulu-Natal, KwaZulu-Natal | 2016 |
| Bachelor of Science, Honours (Hydrology), University of KwaZulu-Natal, KwaZulu-Natal | 2014 |
| Bachelor of Science (Hydrology and Soil Science), University of KwaZulu-Natal, KwaZulu-Natal | 2013 |

PROFESSIONAL MEMBERSHIPS

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| Member of the Golden Key International Honour Society | 2012 |
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PROFESSIONAL EXPERIENCE

- October 2015 – April 2016. Research Assistant. Grouping vegetation spatially by hydrological characteristics. Client: Centre for Environmental, Agriculture and Development.
- Al Habshi Consultant (ACO) Water supply programme (Cote d' Ivoire) ESIA (2019), undertook the abstraction simulation and modelling (QSWAT) for the proposed water supply programme on the Comoe River in Cote d'Ivoire.
- Mooiplaats Colliery (2019), undertook a hydrological impact assessment for EIMS (Pty) Ltd, as input into the Water Use License Application (WULA) for the extension of underground mining from the existing Mooiplaats Colliery.
- Harmony Kalgold Mine Expansion (2019), undertook a hydrological assessment as input into a Water Use License Application (WULA) for the Harmony Kalgold expansion project situated in the Kraaipan Greenstone Belt.
- Medupi Power Station – Northern Ash Dump Facility (2019), undertook a hydrological assessment, as input into the Water Use License Application (WULA).
- Amandelbult Complex Modernisation (2019), undertook hydrological studies as input into the Water Use License Application (WULA) for Anglo American Platinum Limited for the proposed modernisation of the Amandelbult Complex.

- Guernica Chemicals (2019), undertook a hydrocensus at the Guernica chemicals site, which included surface water and groundwater sampling and analysis.
- Southern Cross Foundry (2019), undertook a Water Use License Application (WULA) for a borehole water abstraction at the Southern Cross Foundry.
- Parlock Umgeni (2019), undertook a hydrological assessment for the Parlock Umgeni river crossing for department maintenance.
- Samancor Lwala Mine (2020), undertook hydrological updates on the Samancor Lwala Mine, as per their WULA. This involved updating the IWWMP and RSIP reports.
- Etihad Railway (2020), undertook the hydrological modelling of peak flows (using HEC-HMS) for the development of the Etihad Railway in the Middle East, which also involved culvert sizing and technical assistance.
- Abbeydale Jet Park Development (2020), undertook and developed a conceptual Storm Water Management Plan, using PCSWMM, for the proposed Jet Park Development.
- Synfuels Operations a division of Sasol South Africa Ltd (2020), undertook a hydrogeological assessment for the Sasol site using auger point soil sampling.
- Shell and BP South African Petroleum Refineries (Pty) Ltd (2020), undertook a hydrogeological assessment as the SAPREF site (Prospecton, Durban) using auger point soil sampling.
- Grootvlei Power Station – Eskom (2020), undertook a wetland assessment, hydrological assessment, hydrogeological assessment and hydrogeological assessment at the Eskom Grootvlei Power Station.
- Kananga Erosion Protection Hydrological Analysis (2021), undertook hydrological modelling using HEC-HMS to determine peak flows for five sites within Kananga, DRC for the design of erosion protection measures

AWARDS

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| Roland Schulze Certificate of Excellence <i>Awarded for the Top 3rd Year Hydrology Student</i> | 2012 |
| International Impact Award <i>International Collaboration (University of Lincoln-Nebraska)</i> | 2016 |

PUBLICATIONS AND PRESENTATIONS

Publications

- Vather, T.; Everson, C.; Franz, T.E. The Applicability of the Cosmic Ray Neutron Sensor to Simultaneously Monitor Soil Water Content and Biomass in an Acacia meurnsii Forest. *Hydrology* 2020, 7, 48. <https://doi.org/10.3390/hydrology7030048>
- Vather, T.; Everson, C.; Franz, T.E. Calibration and Validation of the Cosmic Ray Neutron Rover for Soil Water Mapping within Two South African Land Classes. *Hydrology* 2019, 6, 65. <https://doi.org/10.3390/hydrology6030065>.
- Vather, T, Everson, C, Mengistu, M, Franz T. “Cosmic ray neutrons provide an innovative technique for estimating intermediate scale soil moisture.” *S. Afr J Sci.* 2018:114(7/8), Art. #2017-0422, 9 pages. <http://dx.doi.org/10.17159/sajs.2018/20170422>.



THIGESH VATHER, Ph.D

Consultant (Hydrologist), Environment & Energy

- Everson, C.S., Mengistu, M.G., Vather, T, and Domleo, J, 2014. “The Validation of the Variables (Evaporation and Soil Moisture) in Hydrometeorological Models: Phase II, Application of Cosmic Ray Probes for Soil Water Measurement “. (WRC PROJECT K5/2323/1).
- A Management Tool for the Inkomati Basin with Focus on Improved Hydrological Understanding for Risk-Based Operational Water Management. Report to the Water Research Commission by Edward S. Riddell & Graham PW Jewett (Editors), with contributions by: Kershani T. Chetty, Aline Saraiva-Okello, Brian Jackson, Amrita Lamba, Shaeden Gokook, Predarshan Naidoo, Thigesh Vather, Sean Thornton-Dibb.

Andrew Husted

M.Sc Aquatic Health (*Pr Sci Nat*)

Cell: +27 81 319 1225

Email: andrew@thebiodiversitycompany.com

Identity Number: 7904195054081

Date of birth: 19 April 1979



Profile Summary

Working experience throughout South Africa, West and Central Africa and also Armenia.

Specialist experience with on-shore drilling, mining, engineering, hydropower and renewable energy.

Considerable experience with project management of national and international multi-disciplinary projects. Including managing and compiling ESHIAs and EMPs

Specialist guidance, support and facilitation for the compliance with legislative processes, for in-country requirements, and international lenders.

Specialist expertise include Instream Flow and Ecological Water Requirements, aquatic ecology and wetlands resources.

Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Sustainability and Conservation.

Instream flow requirements

Publication of scientific journals and articles.

Key Experience

- Familiar with World Bank, Equator Principles and the International Finance Corporation requirements
- Environmental, Social and Health Impact Assessments (ESHIA)
- Environmental Management Programmes (EMP)
- Ecological Water Requirement determination experience
- Wetland delineations and ecological assessments
- Rehabilitation Plans and Monitoring
- Fish population structure assessments
- The use of macroinvertebrates to determine water quality
- Aquatic Ecological Assessments
- Aquaculture

Country Experience

Botswana, Cameroon
Democratic Republic of Congo
Ghana, Ivory Coast, Lesotho
Liberia, Mali, Mozambique
Nigeria, Republic of Armenia,
Senegal, Sierra Leone, South Africa
Tanzania

Nationality

South African

Languages

English – Proficient

Afrikaans – Conversational

German - Basic

Qualifications

- MSc (University of Johannesburg) – Aquatic Health.
- BSc Honours (Rand Afrikaans University) – Aquatic Health
- BSc Natural Science
- Pr Sci Nat (400213/11)
- Certificate of Competence: Mondli Wetland Assessments
- Certificate of Competence: Wetland WET-Management
- SASS 5 (Expired) – Department of Water Affairs and Forestry for the River Health Programme
- EcoStatus application for rivers and streams

SELECTED PROJECT EXPERIENCE

Project Name: Biodiversity baseline assessment for the Kingline Gas Power Project

Personal position / role on project: Project Manager/ Mammal Lead

Location: Nigeria

Main project features: To conduct a wet season terrestrial and aquatic ecological baseline assessment for the proposed project. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

Project Name: The Environmental and Social Impact Assessment (ESIA) the proposed Nondvo Dam

Personal position / role on project: Project Manager.

Location: Swaziland

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the proposed dam. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

Project Name: The Lower Mara Environmental Flow Assessment

Personal position / role on project: Specialist Ichthyologist.

Location: Tanzania

Main project features: To determine and prescribe environmental flows (eflows) for the Mara River system, with specific consideration for the Mara Wetland.

Project Name: The Environmental and Social Impact Assessment (ESIA) the proposed solar photovoltaic facility and transmission in Cuamba

Personal position / role on project: Project Manager.

Location: Mozambique

Main project features: To conduct a single season terrestrial and aquatic ecological baseline and impact assessment for the proposed dam. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

Project Name: A biodiversity baseline and impact assessment for the proposed Siguiri Gold Mine Project, in Kankan Province, Guinea.

Personal position / role on project: Project Manager.

Location: Siguiri, Guinea, West-Africa (2018/2019).

Main project features: To conduct a dual season ecological baseline assessment for the expected impact footprint area. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

Project Name: A biodiversity baseline and impact assessment for the proposed Lesotho Bulk Water Supply Scheme, Lesotho.

Personal position / role on project: Wetland & Aquatic Ecologist, PROBFLO and Project Manager.

Location: Mohale's Hoek, Lesotho (2018).

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the pipeline route and proposed weir. The study was required to meet national and IFC requirements, including a Critical Habitat assessment. The study also contributed to prescribing Instream Flow Requirements using PROBFLO for the system.

Project Name: A biodiversity baseline and impact assessment for the proposed Pavua Hydropower Project, in Sofala Province, Central Mozambique.

Personal position / role on project: Project Manager.

Location: Sofala Province, Mozambique (2017).

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the expected impact footprint area, including Gorongosa National. The study was required to meet national and IFC requirements, including a Critical Habitat assessment. The study also contributed to prescribing Instream Flow Requirements for the system.

Project Name: An aquatic and wetland specialist baseline and impact assessment for the proposed Onshore 2D seismic Survey in Block P5-A, in Maputo and Gaza Provinces.

Personal position / role on project: Wetland / Aquatic Specialist.

Location: Maputo & Gaza Provinces, Mozambique (2016).

Main project features: To conduct a dry season (Winter) ecological baseline and impact assessment of the watercourses for the proposed Delonex Energy project.

Project Name: The ecological constraints mapping and Critical Habitat re-evaluation for the Anadarko LNG project: Specialist Consultant to conduct Ecological Studies (Fauna and Habitat) and the delineation of wetland systems.

Personal position / role on project: Wetland Specialist.

Location: Afungi, Mozambique (2015).

Main project features: To identify and map the ecological constraints is to support contractor activities. To redefine the critical habitats within the project area

Project Name: A Joint Basin Survey of the Upper Orange, Lower Orange and Vaal catchments to determine the current status of the systems: Specialist Consultants to conduct Ecological Studies (Fish, Macroinvertebrate, Diatoms, Water Quality and Habitat) and report on the current status (defining system trends).

Personal position / role on project: Specialist Ichthyologist.

Location: South Africa (including Namibia, Botswana & Lesotho) (2015).

Main project features: To determine the current status of the catchments and to discuss the temporal and spatial trends of the monitoring reaches.

Project Name: Ecological baseline assessment of local river systems for the Ntem Iron Ore Mine: Specialist Consultants to Undertake Baseline Studies (Fish, Macroinvertebrate, Water Quality and Habitat).

Personal position / role on project: Senior Ichthyologist.

Location: Cameroon (2013).

Main project features: Establishment of the ecological baseline status and functioning assessment of the local river systems.

Project Name: Instream Flow Requirement determination study for the Kibali River hydropower project: Specialist Consultants to Undertake Baseline Studies (Flow, Water Quality and Geomorphology) and Instream Flow Requirement (IFR) Assessment.

Personal position / role on project: Ichthyologist and IFR.

Location: DRC (2012).

Main project features: Establishment of the ecological flow requirements of fishes within the Kibali River.

Project Name: Cost analysis, including the current and potential earning potential of an aquaculture facility: Specialist Consultants to determine the Cost (Current & Potential Earnings) and the Construction of an identical facility (Physical Costs).

Personal position / role on project: Ichthyologist.

Location: Ghana (2012).

Main project features: Conduct a detailed costs analysis of an aquaculture facility for the compensation for the removal of the operation.

Project Name: Instream Flow Requirement determination study for the Nzoro River hydropower project: Specialist Consultants to Undertake Baseline Studies (Flow, Water Quality and Geomorphology) and Instream Flow Requirement (IFR) Assessment.

Personal position / role on project: Ichthyologist and IFR.

Location: DRC (2011).

Main project features: Establishment of the ecological flow requirements of fishes within the Nzoro River.

Project Name: Environmental study to establish the baseline biological and physical conditions of the Letsibogo Dam.

Personal position / role on project: Ichthyologist.

Location: Selebi-Phikwe, Botswana (2007 - 2009).

Main project features: Evaluation of the existing fish communities within the Letsibogo Man-made lake with specific consideration of the threats of alien invasive fishes in the lake. The study resulted in the publication of two peer-reviewed papers titled: Comparative behavioural assessment of an established and a new Tigerfish *Hydrocynus vittatus* population in two man-made lakes in the Limpopo (O'Brien et al., 2013) and First observation of Africa Tigerfish (*Hydrocynus vittatus*) preying on Barn Swallows (*Hirundo rustica*) in flight (O'Brien et al., in press).

Project Name: Environmental and Social Impact Assessment of the Kazungula Bridge, Zambezi River.

Personal position / role on project: Ichthyologist.

Location: Botswana, Zambia, Namibia and Zimbabwe (2009-2010).

Main project features: Evaluation of the current ecological integrity status of various living and non-living components of the Zambezi River ecosystem and the potential ecological and social consequences of the construction and use of the Kazungula Bridge. The study showed that although water quality and habitat modification impacts will occur as a result of the construction and use of the bridge the long term impacts associated with the operation of the bridge should not result in any major impacts to the local aquatic ecosystem.

OVERVIEW

An overview of the specialist technical expertise include the following:

- Aquatic ecological state and functional assessments of rivers and dams.
- Instream Flow Requirement or Ecological Water Requirement using PROBFLO studies for river systems.
- Ecological wetland assessment studies, including the integrity (health) and functioning of the wetland systems.
- Wetland offset strategy designs.
- Wetland rehabilitation plans.
- Monitoring plans for rivers and other wetland systems.
- Toxicity and metal analysis of water, sediment and biota.
- Bioaccumulation assessment of fish communities.
- Fish telemetry assessment that included the translocation of fish as well as the monitoring of fish in order to determine the suitability of the hosting system.
- Faunal surveys which includes mammals, birds, amphibians and reptiles.
- The design, compilation and implementation of Biodiversity and Land Management Plans and strategies.

TRAINING

Some of the more pertinent training undergone includes the following:

- Wetland and Riparian Delineation Course for Consultants (Certificate of Competence) – DWAF 2008
 - The threats and impacts posed on wetlands by infrastructure and development: Mitigation and rehabilitation thereof – Gauteng Wetland Forum 2010
 - Ecological State Assessment of Lentic Systems using Fish Population Dynamics – University of Johannesburg/Rivers of Life 2010
 - Soil Classification and Wetland Delineation – Terra Soil Science 2010
 - Wetland Rehabilitation Methods and Techniques - Gauteng Wetland Forum 2011
 - Application of the Fish Response Assessment Index (FRAI) and Macroinvertebrate Response Assessment Index (MIRAI) for the River Health Programme 2011
 - Tools for a Wetland Assessment (Certificate of Competence) – Rhodes University 2011
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- PROBFLO for conducting Ecological Flow Assessments – 2018/19

EMPLOYMENT EXPERIENCE

CURRENT EMPLOYMENT: The Biodiversity Company (January 2015 – Present)

I founded The Biodiversity Company in 2015, now consisting of experienced ecologists who provide technical expertise and policy advice to numerous sectors, such as mining, agriculture, construction and natural resources. The team at The Biodiversity Company have conducted stand-alone specialist studies, and provided overall guidance of studies with a pragmatic approach for the management of biodiversity that takes into account all the relevant stakeholders, most importantly the environment that is potentially affected. We manage risks to the environment to reduce impacts with practical, relevant and measurable methods.

EMPLOYMENT: Digby Wells Environmental (October 2013 – December 2014)

Digby Wells assigned me to the role of Country Manager for the United Kingdom. This was a new endeavour for the company as the company's global footprint continues to increase. The primary responsibilities for the role included the following:

- **Client liaison** to be able to interact more efficiently and personally with current mining clients, mining industry service providers, legal firms and banking institutions in order to introduce Digby Wells as a services provider with the aim of securing work.
- **Project management** for international projects which may require a presence in the United Kingdom, this was dependent on the location and needs of the client. These projects would mostly be based on the Equator Principles (EP) and International Finance Corporation (IFC) Performance Standards.
- **Technical input** to provide specialist technical expertise for projects, this included fauna, aquatic ecology, wetlands and rehabilitation. Continued with the design and implementation of Biodiversity and Land Management Plans to assist clients with managing the natural resources. Responsibilities also included the mentorship and management (including reviewing and guiding) other expertise such as flora, fauna and pedology.

EMPLOYMENT: Digby Wells Environmental (March 2012 – September 2013)

Manager of a multi-disciplinary department of scientists providing specialist services in support of national and international requirements as well as best practice guidelines, primarily focussing on the mining sector. In addition to managing the department, I was also expected to contribute specialist services, most notably focusing on water resources. Further responsibilities also included the management of numerous projects on a national or international scale. A general overview of the required responsibilities are as follows:

- **Project management** for single as well as multi-disciplinary studies on a national and international scale. This included legislation and commitments for the respective country being operated in, as well as included the World Bank (WB), EP and IFC requirements.
- **Individual and/or team management** in order to provide mentoring and supportive structures for development and growth in support of the company's strategic objectives.
- **Scientific report writing** to ensure that the relevant standards and requirements have been attained, namely local country legislation, as well as WB, EP and IFC requirements.
- **Report reviewing** in order to ensure compliance and consideration of relevant legislation and guidelines and also quality control.
- **Specialist management** to facilitate the collaboration and integration of specialist skills for the respective projects. This also included the development of Biodiversity and Land Management Plan for clients.
- **Client Resource Manager** for numerous clients in order to establish as well as maintain working relationships.

An overview of the tenure working with the company is provided below:

- **October 2013 – December 2014: London Operations Manager** – Deployed to establish a presence for the company (remote office) in the United Kingdom by means of generating project work to support
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the employment of staff and operation of a business structure.

- **March 2012 – September 2013: Biophysical Department Manager** – Responsible for the development and growth of the department to consist of four specialist units. This included the development of a new specialist unit, namely Rehabilitation.
- **January 2011 - February 2012: Ecological Unit Manager** – In addition to implementing aquatic and wetland specialist services, the role required the overall management of additional specialist services which included fauna & flora.
- **June 2010 - December 2010: Aquatic Services Manager** – This required the marketing and implementation of specialist programmes for the client base such as biomonitoring and wetland off-set strategies. In addition to this, this also included expanding on the existing skill set to include services such as toxicity, bioaccumulation and ecological flow assessments.
- **August 2008: Aquatic ecologist** – Employed as a specialist to establish the aquatic services within the company. In addition to this, wetland specialist services were added to the existing portfolio.

PREVIOUS EMPLOYMENT: Econ@UJ (University of Johannesburg)

- June 2007 – July 2008: Junior aquatic ecologist
 - Researcher
 - Technical assistant for fieldwork
 - Reporting writing
 - Project management

ADDITIONAL EXPERIENCE

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|----------------------------|--|
| <i>Compliance audits</i> | Conducting site investigations in order to determine the level of compliance attained, ensuring that the client maintains an appropriate measure of compliance with environmental regulations by means of a legislative approach |
| <i>Control officer</i> | Acting as an independent Environmental Control Officer (ECO), acting as a quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts |
| <i>Screening studies</i> | Project investigations in order to determine the level of complexity for the environmental and social studies required for a project. This is a form of risk assessment to guide the advancement of the project. |
| <i>Public consultation</i> | The provision of specialist input in order to communicate project findings as well as assist with providing feedback if and when required. |
| <i>Water use licenses</i> | Consultation with the relevant authorities in order to establish the project requirements, as well as provide specialist (aquatics/wetland) input for the application in order to achieve authorisation. |
| <i>Closure</i> | Primarily the review of closure projects, with emphasis on the closure cost calculations. Support was also provided by assisting with the measurements of structures during fieldwork. |
| <i>Visual</i> | The review of visual studies as well as the collation of field data to be considered for the visual interpretation for the project. |

ACADEMIC QUALIFICATIONS

University of Johannesburg, Johannesburg, South Africa (2009): MAGISTER SCIENTIAE (MSc) - Aquatic Health:

Title: *Aspects of the biology of the Bushveld Smallscale Yellowfish (Labeobarbus polylepis): Feeding biology and metal bioaccumulation in five populations.*

Rand Afrikaans University (RAU), Johannesburg, South Africa (2004): BACCALAUREUS SCIENTIAE CUM HONORIBUS (Hons) – Zoology

Rand Afrikaans University (RAU), Johannesburg, South Africa (2001 - 2004): BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Zoology and Botany.

PUBLICATIONS

Desai M, Husted A., Fry C., Downs CT, & O'Brien GC (2019). Spatial shifts and habitat partitioning of ichthyofauna within the middle–lower region of the Pungwe Basin, Mozambique. *Journal of Freshwater Ecology*, 34(1), 685–702. doi: 10.1080/02705060.2019.1673221

Tate RB and Husted, A. 2015. Aquatic Biomonitoring in the upper reaches of the Boesmanspruit, Carolina, Mpumalanga, South Africa. *African Journal of Aquatic Science*.

Tate RB and Husted A. 2013. Bioaccumulation of metals in *Tilapia zillii* (Gervai, 1848) from an impoundment on the Badeni River, Cote D'Ivoire. *African Journal of Aquatic Science*.

O'Brien GC, Bulfin JB, Husted A. and Smit NJ. 2012. Comparative behavioural assessment of an established and new Tigerfish (*Hydrocynus vittatus*) population in two manmade lakes in the Limpopo catchment, Southern Africa. *African Journal of Aquatic Science*.

Tomschi H, Husted A, O'Brien GC, Cloete Y, Van Dyk C, Pieterse GM, Wepener V, Nel A and Reisinger U. 2009. Environmental study to establish the baseline biological and physical conditions of the Letsibogo Dam near Selebi Phikwe, Botswana. EC Multiple Framework Contract Beneficiaries.8 ACP BT 13 – Mining Sector (EDMS). Specific Contract N° 2008/166788. Beneficiary Country: Botswana. By: HPC HARRESS PICKEL CONSULT AG

Husted A. 2009. Aspects of the biology of the Bushveld Smallscale Yellowfish (*Labeobarbus polylepis*): Feeding biology and metal bioaccumulation in five populations. The University of Johannesburg (Thesis).
