

Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

CAREER SUMMARY

Brad is currently employed as a Director at WSP Group Africa, Earth & Environment. Brad has a BSc Honours degree in Geography and Environmental Management from the University of KwaZulu-Natal. Since completing his studies, Brad has worked as an Air Quality Specialist for seventeen years. Brad's key areas of expertise include ambient air quality monitoring, emissions inventories, dispersion modelling (AERMOD and CALPUFF) and licensing, having completed numerous Air Quality Impact Assessments, Atmospheric Impact Reports, Air Quality Management Plans and Atmospheric Emission License applications. Sectors in which Brad has substantial experience include mining, oil and gas, power and industrial.



Countries of work experience include South Africa, Botswana, Mozambique, Swaziland, Tanzania, Saudi Arabi and Australia.

13 years with WSP

17 years of experience

Area of expertise

Ambient Air Quality Monitoring
Emission Inventories and Dispersion Modelling
Air Quality Impact Assessments, Atmospheric Impact Reports, and Air Quality Management Plans
Licensing

Language

English - Fluent

EDUCATION

| | |
|--|------|
| Bachelor of Science (Honours), Environmental Management, University of KwaZulu-Natal, Pietermaritzburg, South Africa | 2006 |
| Bachelor of Science, Geography, University of KwaZulu-Natal, Pietermaritzburg, South Africa | 2005 |

ADDITIONAL TRAINING

| | |
|---|------|
| Hazard Identification & Risk Assessment | 2016 |
| Snake Awareness and First Aid for Snakebite and Scorpion Sting, African Snakebite | 2016 |
| Legal Liability | 2016 |
| Project Management, Graduate School of Business UCT | 2013 |

PROFESSIONAL MEMBERSHIPS

| | |
|------------------------------------|----------------|
| National Association for Clean Air | 2007 - Current |
|------------------------------------|----------------|



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd

July 2011 - present

Gondwana Environmental Solutions (Pty) Ltd

January 2007 – June 2011

PROFESSIONAL EXPERIENCE – MINING

AIR QUALITY

**Genmin Limited, Air Quality Impact Assessment for the Proposed Baniaka Iron Ore Project, Gabon
2022 - 2023**

Project Director

The assessment included the supply and installation of monitoring equipment forming the baseline study, with a comprehensive emissions inventory and dispersion model (CALPUFF) for the proposed iron ore mine.

**AfriSam South Africa (Pty) Ltd, Roodepoort Operations Particulate Matter Monitoring, South Africa
2017 - Current**

Project Director

The monthly maintenance, management and compliance reporting of a continuous particulate monitor (TOPAS).

**AfriSam South Africa (Pty) Ltd, Dust Fallout and Water Compliance Monitoring, South Africa
2020 – Current**

Project Director and Project Manager

WSP were appointed to undertake dust fallout, meteorological, environmental noise, surface water and groundwater sampling at 16 AfriSam quarries located nationally. The monitoring included routine monthly reports to determine compliance with relevant dust fallout standards and WUL conditions, as well as annual reporting of environmental noise levels.

**Seriti Coal SA, Ambient Monitoring, South Africa
2018 – 2023**

Project Director

The monthly maintenance, management and compliance reporting of continuous particulate monitors and dust fallout networks for the Kriel, New Vaal, New Denmark and New Largo collieries.

**Thungela Resources (prev. Anglo American Coal SA), Ambient Monitoring, South Africa
2014 - 2023**

Project Director

The monthly maintenance, management and compliance reporting of continuous particulate monitors and dust fallout networks for the Isibonelo, Greenside, Zibulo, Goedehoop and Khwezela collieries.

**G&W Base and Industrial Minerals, Dust Fallout Monitoring, South Africa
2016 – 2023**

Project Director

Dust fallout monitoring was undertaken at a minerals processing facility for compliance purposes.

**Stonewall Mining (Pty) Ltd, Air Quality Impact Assessment for the Theta Hill Mining Right Amendment Application, South Africa
2021**

Project Manager and Lead Consultant

Compilation of an Air Quality Impact Assessment for the proposed Environmental Authorisation amendment for the Theta Hill Project, inclusive of a comprehensive emissions inventory and dispersion modelling.

**Two Rivers Platinum Mine, Air Quality Impact Assessment, South Africa
2021**

Project Director



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

WSP was appointed to undertake an AQIA for the proposed TSF expansion located at their existing operations. The study comprised a regulatory review, baseline air quality assessment, and emissions assessment with recommendations for impact mitigation.

Assmang Black Rock Mine, Operations Compliance Monitoring, Northern Cape, South Africa 2012, 2021

Project Director and Project Manager

The environmental monitoring comprised noise monitoring, continuous particulates monitoring and vehicle noise and emissions testing.

Tshukudu (Sandfire), Supply and Installation of a Particulate Monitor and Weather Station, Botswana 2021

Project Manager and Lead Consultant

Supply and installation of a TOPAS particulate monitor and Davis weather station at the Tshukudu Mine in Botswana, including remote equipment support.

WSP Australia (on behalf of Williamsdale Quarry), Air Quality Impact Assessment, Australia 2019 – 2020

Project Director (Lead Consultant on Project Updates)

An AQIA was undertaken to determine impacts associated with expansions of a quarry in Melbourne, Australia. Project included CALPUFF modelling to predict these impacts.

Envirologistics – Dwarsrivier Chrome Mine, Air Quality Impact Assessment for the proposed TSF at Dwarsrivier Chrome Mine, South Africa 2018

Project Director

WSP undertook an Air Quality Impact Assessment for a proposed Tailings Storage Facility (TSF) at Dwarsrivier Chrome Mine. The assessment included a baseline assessment, emissions inventory, dispersion modelling using AERMOD and comparison of the predicted concentrations with the National Ambient Air Quality Standards.

Anglo Operations, Operational Risk Assurance Audit, South Africa 2018 – 2019

Lead Consultant and Project Manager

Undertaking the Operational Risk Assurance (ORA) audit as part of the internal Anglo American ORA team at the Kumba Iron Ore Sishen Mine. The audit focused on risks associated with air quality non-compliance and recommendations for improvements to reach compliance with local standards as well as the Global Anglo-American Performance Standards.

Foskor (Pty) Ltd, Ambient Monitoring, Air Quality Management Plan and Air Quality Impact Assessment, South Africa 2016 – 2020

Project Director

The monthly maintenance and management of a continuous particulate monitor and dust fallout network and compilation of an annual AQMP and Air Quality Impact Assessment.

Anglo American, Coal SA Air Quality Management Plan, Mpumalanga, South Africa 2014

Project Manager

A combined AQMP was developed assessing emissions associated with the Landau, Kleinkopje and Greenside collieries using the CALPUFF modelling platform.

AfriSam South Africa (Pty) Ltd, Dudfield Plant Passive Diffusive Monitoring, North-West, South Africa 2011 - 2014

Lead Consultant and Project Manager



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Radiello passive diffusive samplers were deployed to monitor for SO₂, NO₂ and BTEX.

AfriSam South Africa (Pty) Ltd, Ulco Plant Particulates Monitoring, Northern Cape, South Africa 2013 – 2014

Lead Consultant and Project Manager

The installation, management and reporting for one TOPAS monitor on a custom designed solar system trailer, capable of simultaneously monitoring TSP, PM₁₀, PM_{2.5} and PM₁, wind speed and direction.

Anglo American Coal SA Landau Colliery, Particulates Monitoring, Mpumalanga, South Africa 2013 – 2014

Lead Consultant and Project Manager

Installation, management and reporting for two TOPAS and ETL monitors installed on custom designed solar system trailers, capable of simultaneously monitoring TSP, PM₁₀, PM_{2.5} and PM₁, benzene, nitrogen dioxide, wind speed and direction.

BHP Billiton Samancor Meyerton Works, Air Quality Impact Assessment, Gauteng, South Africa 2013

Lead Consultant and Project Manager

An AQIA and associated AEL amendment was undertaken for the proposed upgrade of the fugitive emissions extraction system at the Samancor Meyerton Works using AERMOD.

Anglo American Platinum Lt, Air Quality Impact Assessment, Northwest, South Africa 2013

Lead Consultant and Project Manager

As part of a larger EIA, WSP was contracted to compile an AQIA for the Waterval Tailings Re-mining Project using ADMS v4.2.

Rustenburg Platinum Mines Limited, Air Quality Impact Assessment, Limpopo, South Africa 2013

Lead Consultant and Project Manager

As part of a larger EIA, WSP was commissioned to compile an AQIA for the proposed Tumela Five Shaft and associated infrastructure at the existing Tumela mine using ADMS v5.

Anglo American Coal SA Isibonelo Colliery, Air Quality Impact Assessment, Mpumalanga, South Africa 2013

Project Manager

An AQIA was undertaken for a proposed tanks farm comprising a baseline review, emissions inventory and dispersion modelling using ADMS v4.2.

Anglo American Coal SA Kriel Colliery, Particulates Monitoring, Mpumalanga, South Africa 2013

Lead Consultant and Project Manager

One TOPAS monitor was supplied on a custom designed solar system trailer, capable of simultaneously monitoring TSP, PM₁₀, PM_{2.5}, PM₁, wind speed and wind direction. The project included maintenance of the monitor, data management and verification and reporting on a monthly basis.

Anglo American Coal SA Kleinkopje Colliery, Passive Diffusive Monitoring, Mpumalanga, South Africa 2012 – 2013

Lead Consultant and Project Manager

Radiello passive diffusive samplers were deployed to monitor SO₂, NO₂ and BTEX.

Anglo American Coal SA Kleinkopje Colliery, Air Quality Management Plan, Mpumalanga, South Africa 2012

Lead Consultant and Project Manager

An AQMP was developed for the Kleinkopje Colliery, accounting for all sources of emissions at the colliery.

AfriSam South Africa (Pty) Ltd, Dudfield Plant, Air Quality Management Plan, North-West, South Africa

Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

2012

Lead Consultant and Project Manager

An AQMP was developed for a cement plant, accounting for all sources of emissions at the plant.

**Anglo American Coal SA Landau Colliery, Air Quality Management Plan, Mpumalanga, South Africa
2012**

Project Manager

An AQMP was developed accounting for all sources at the colliery, with dispersion modelling undertaken to determine pollution hotspots at the colliery, as well as potential impacts on the receiving environment.

**Anglo American Coal SA Kleinkopje Colliery, Particulates Monitoring, Mpumalanga, South Africa
2012**

Project Manager

One TOPAS monitor was supplied on a custom designed solar system trailer, capable of simultaneously monitoring TSP, PM10, PM2.5, PM1, wind speed and wind direction. The project included maintenance of the station, data management and verification and reporting on a monthly basis.

**Orica Mining Services, Passive Diffusive and Fugitive Emissions Monitoring, Tanzania, Africa
2011-2012**

Lead Consultant and Project Manager

Radiello passive diffusive samplers were deployed to monitor SO₂, NO₂ and BTEX. Samples extracted directly from the process were analysed for SO₂, NO₂, VOC's and formaldehyde.

**Kumba Iron Ore Sishen Mine, Ambient Monitoring, Northern Cape, South Africa [prior employment]
2011**

Lead Consultant and Project Manager

Siting, supply, installation and management of six PM10 E-SAMPLERS, three PM10 BAM 1020 monitors and three meteorological stations. The project included the realtime reporting of data and quarterly maintenance visits.

**Exxaro Resources Ltd Grooteegeluk Mine Char Plant, Stack Monitoring, Limpopo, South Africa [prior employment]
2010-2011**

Lead Consultant and Project Manager

Quarterly stack monitoring was conducted for SO₂, NO₂, CO, O₂, CO₂, PM and PAH's.

**Lonmin Platinum, Ambient Monitoring, Northwest, South Africa [prior employment]
2010-2011**

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of five full ambient air quality monitoring stations, including reporting

**Anglo American Coal SA Kleinkopje Colliery, Particulates Monitoring, Mpumalanga, South Africa [prior employment]
2010 – 2011**

Lead Consultant and Project Manager

One EBAM particulate monitor was supplied and installed with the project involving monthly maintenance of the unit and routine compliance reporting.

**Lonmin Platinum, Dust Fallout Monitoring, North-West, South Africa [prior employment]
2010 – 2011**

Project Manager

Management of the dust fallout network comprising 120 samplers. The project included monthly collection of units, gravimetric analysis, monthly reporting and adhoc network audits.

**Exxaro Resources Grooteegeluk Mine Char Plant, Fugitive Dust Assessment, Limpopo, South Africa
[prior employment]**



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

2010

Project Manager

An assessment was undertaken to determine fugitive sources of dust emissions at the Char Plant providing recommendations to mitigate key sources.

Kumba Iron Ore Sishen Mine, Particulates Monitoring, Northern Cape, South Africa [prior employment]

2010

Lead Consultant and Project Manager

Two PM10 monitors were installed onsite on a short-term basis to inform the siting of the larger, permanent monitoring network.

Anglo Gold Ashanti Vaal River Operations, Ambient Monitoring, Orkney, South Africa [prior employment]

2009-2010

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of continuous, real-time monitoring equipment, comprising one full monitoring station, one continuous stack monitor, two meteorological stations and four PM10 monitors, including monthly reporting.

Exxaro Resources Grootegeeluk Mine, Particulates Monitoring, Limpopo, South Africa [prior employment]

2009

Project Manager

Two PM10 monitors were managed and maintained on a quarterly basis, including compilation of quarterly compliance monitoring reports.

Exxaro Resources Grootegeeluk Mine, Passive Monitoring, Limpopo, South Africa [prior employment]

2009

Project Manager

Radiello passive diffusive samplers were deployed at the mine for SO₂, NO₂ and BTEX, including the submission of monthly monitoring reports for a period of six months.

Kumba Iron Ore Sishen Mine, Meteorological Monitoring, Northern Cape, South Africa [prior employment]

2008 – 2011

Project Manager

Management of one meteorological station, including data management and quarterly maintenance of the station.

PROFESSIONAL EXPERIENCE – POWER GENERATION

GCS Water and Environmental (Pty) Ltd, Air Quality Impact Assessment for a Proposed Solar PV Facility, South Africa

2021

Project Director and Project Manager

WSP was appointed to compile an AQIA assessing the air quality impacts associated with the construction of the proposed Lephalale Solar PV facility. The study comprised a regulatory review, baseline air quality assessment, and emissions assessment for the construction phase of the project with recommendations for impact mitigation.

WSP Group Africa, Air Quality Review and Support, South Africa

2018

Project Director



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Review of air quality work undertaken for a proposed power station and recommendations for improvements to the studies.

Parsons Brinckerhoff Africa, Air Quality Impact Assessment, Botswana 2015

Lead Consultant and Project Manager

A Screening AQIA was undertaken to determine the impacts associated with a proposed 320MW coal fired power station.

Eskom Majuba Power Station, Dust Fallout Monitoring, Mpumalanga, South Africa 2013-2015

Project Manager

Management of the dust fallout monitoring network at the Majuba Power Station.

Sasol New Energy Holdings, Dust Fallout Monitoring, Mozambique, South Africa 2013-2015

Lead Consultant and Project Manager

Management of the CTRG gas engine power plant dust fallout monitoring network in the Ressano Garcia area, Mozambique.

Gledhow Sugar Company, Air Quality Impact Assessment, KwaZulu-Natal, South Africa 2013

Lead Consultant and Project Manager

An AQIA and associated AEL amendment was undertaken for a proposed biomass boiler at the Gledhow Mill using ADMS v4.2.

Sappi Southern Africa Limited Lomati Mill, Air Quality Impact Assessment, Mpumalanga, South Africa 2012

Lead Consultant and Project Manager

An AQIA was undertaken to determine the impact of emissions associated with a proposed biomass boiler using ADMS v4.2, including amendment of the AEL.

Sappi Southern Africa Limited Ngodwana Mill, Air Quality Impact Assessment, Mpumalanga, South Africa 2012

Lead Consultant and Project Manager

An AQIA was undertaken to determine the impact of emissions associated with a proposed biomass boiler using ADMS v4.2, including amendment of the AEL.

Sasol New Energy Holdings, Air Quality Impact Assessment, Mozambique, Africa 2012

Lead Consultant and Project Manager

This AQIA included baseline monitoring of NO₂, SO₂, BTEX, dust fallout and meteorology. The AQIA assessed emissions associated with a proposed gas engine power plant using ADMS v4.2.

Group Five Construction, Dust Fallout Monitoring, Northern Cape, South Africa 2011 – 2012

Project Manager

Dust fallout monitoring at the proposed solar power plant in the Kathu area.

PROFESSIONAL EXPERIENCE – OIL & GAS

Vopak Durban Terminal, Environmental Advisory Role, South Africa 2022 – 2023

Project Director and Lead Consultant



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Provision of guidance and support to Vopak focusing on areas of key non-compliance and developing plans of actions to address this until compliance is reached, inclusive of air quality and general environmental compliance with authorisations.

Vopak Durban Terminal, AEL Compliance Support, South Africa 2020 – 2023

Project Manager and Lead Consultant

Provision of AEL compliance support inclusive of fenceline monitoring, leak detection and repair, annual emissions inventory compilations with the use of emission factors and the US EPA TANKs model, AEL auditing, and annual reporting to NAEIS and eThekweni Metropolitan Municipality.

FFS Refiners, Atmospheric Impact Report for proposed expansions at the Maydon Wharf Tank Terminal South Africa 2023

Project Director

Compilation of an Atmospheric Impact Report, inclusive of an emissions inventory, AERMOD dispersion model, and recommendations to manage fugitive emissions due to the proposed expansions.

Bidvest Tank Terminals, Annual Emissions Inventory and NAEIS Reporting, South Africa 2021 – 2023

Project Director

Compilation of an annual emissions inventory for the Richards Bay, Isando and Durban Island View tank farms using emission factors and the US EPA TANKs model for reporting to NAEIS.

FFS Refiners, Atmospheric Screening Assessment for proposed product changes at the Cape Town Harbour Tank Farm, South Africa 2022

Project Manager and Lead Consultant

WSP undertook a screening assessment of the proposed changes in products to be stored when compared to a previous assessment to determine any substantial changes in emissions and impacts on the receiving environment.

NATREF, Passive Diffusive Monitoring at the NATREF Refinery, Free State, South Africa 2017 – 2023

Project Director

Radiello passive diffusive sampling was undertaken for BTEX, determining fenceline concentrations for compliance purposes and onsite concentrations for management purposes.

NATREF, Passive Diffusive Monitoring at NATCOS, KwaZulu-Natal, South Africa 2017 – 2023

Project Director

Radiello passive diffusive sampling was undertaken for BTEX, determining fenceline concentrations for compliance purposes and onsite concentrations for management purposes.

Total SA, Leak Detection and Repair, National, South Africa 2017

Project Manager

A leak detection and repair program was implemented at nine Total SA fuel depots with all flanges, valves and connections etc. being tested to identify leaks requiring maintenance.

Transnet Pipelines, Compliance Monitoring, National, South Africa 2014 – 2015

Project Manager

Radiello passive diffusive sampling for BTEX and leak detection and repair programs were undertaken at various depots across the country, inclusive of a number of air quality management reports to ensure compliance with AEL conditions.



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

FFS Refiners Evander, Passive Monitoring, Mpumalanga, South Africa

2012

Project Manager

Radiello passive diffusive monitoring was undertaken for BTEX as required within the facility AEL.

PROFESSIONAL EXPERIENCE - INDUSTRIAL

Foskor (Pty) Ltd, Atmospheric Emission License Audit at the Richards Bay Operation, South Africa

2023

Project Director, Project Manager, and Lead Consultant

Audit of the Atmospheric Emission License for the Richards Bay operation, inclusive of the review and gap analysis of a number of management plans and procedures.

Foskor (Pty) Ltd, Input to the Strategic Environmental Performance Assessment for the Richards Bay Operation, South Africa

2022 - 2023

Lead Consultant (Air Quality)

Various specialists assessed the current environmental performance at the Foskor Richards Bay operation, with a key focus provided to those items identified as non-compliant.

Grindrod (Pty) Ltd, Atmospheric Emission License Audit at Navitrade, South Africa

2022 - 2023

Project Director, Project Manager, and Lead Consultant

Audit of the Atmospheric Emission License for the Navitrade operation.

Arcelor Mittal South Africa, Atmospheric Impact Report and Atmospheric Emission License Application for a proposed Iron Ore Logistics Hub, South Africa

2021 - 2023

Project Director, Project Manager, and Lead Consultant

WSP were appointed by Saldanha Steel, in conjunction with Bidvest Port Operations, to undertake an Atmospheric Impact Report and AEL Amendment for the proposed Iron Ore Logistics Hub to be commissioned at the Saldanha Steel Facility. The AIR comprised a baseline assessment, comprehensive emissions inventory inclusive of existing steelmaking operations and the proposed Logistics Hub, various dispersion modelling scenarios using CALPUFF and presentation of likely impacts on the receiving environment. Following Public Participation, the Saldanha Steel AEL was updated to include the Logistics Hub.

Dolphin Coast Landfill Management (Pty) Ltd, Atmospheric Impact Report, South Africa

2021 – 2023

Project Manager

WSP was appointed to compile an AIR for the KwaDukuza Landfill, a hazardous waste landfill identified as the source of potential health and odour nuisance impacts. Field investigations included fenceline BTEX and H2S monitoring as well as the collection of instantaneous grab samples for analysis of speciated VOCs, H2S and dynamic olfactometry. The impact assessment included a Level 2 (AERMOD) dispersion model with emissions rates based on site measured concentrations, to assess health and nuisance impacts for proximate communities.

Dekro Paints (Pty) Ltd, AEL Compliance Support, South Africa

2021 – 2023

Project Director

WSP provided compliance support for Dekro's Provisional Atmospheric Emission License (PAEL) for their facility in Cape Town. The scope of work included biannual reporting, compliance auditing, NAIES and SAAELIP assistance, BTEX monitoring, LDAR monitoring and dust fallout monitoring

Sonae Arauco (Pty) Ltd, Air Quality Management Program, South Africa

2011 – 2023



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Project Director, Project Manager, and Lead Consultant

The monitoring program comprises dust fallout, continuous particulate matter, meteorology, formaldehyde, BTEX and environmental acoustics, with results presented to the community on a quarterly basis.

Safripol (Pty) Ltd, AEL Compliance Support, South Africa

2019 – 2023

Project Director

The scope of work comprises emissions inventory development (including emission rate modelling using TANKS), compilation of required reports and documents for submission to the online NAEIS and SAAELIP platforms, LDAR surveys, fenceline BTEX monitoring, and odour management planning.

Weir Minerals Heavy Bay Foundry (Pty) Ltd, Annual Reporting, South Africa

2018 - 2022

Project Director, Project Manager, and Lead Consultant

WSP was requested by Weir Heavy Bay Foundry to undertake the reporting of their emissions annually on the National Atmospheric Emission Inventory System (NAEIS). This included the development of an emissions inventory for the foundry and the subsequent reporting of this information onto NAEIS. An Annual Report for each reporting period was also compiled.

Sappi Southern Africa Limited Ngodwana Mill, Air Quality Impact Assessment, South Africa

2019

Project Director

An AQIA was undertaken in support of the intended Minimum Emission Standard postponement application for the Ngodwana Mill.

Sappi Southern Africa Limited Ngodwana Mill Air Quality Impact Assessment, Mpumalanga, South Africa

2017

Lead Consultant and Project Manager

An AQIA was undertaken assessing impacts associated with various expansions proposed at the Ngodwana Mill using the CALPUFF modelling platform.

Sappi Southern Africa Limited Lomati Mill, Dust Fallout Monitoring, Mpumalanga, South Africa

2013 – 2023

Lead Consultant, Project Manager and Project Director

Management of the dust fallout monitoring network at the Lomati Mill.

York Timbers (Pty) Ltd Dust Fallout Monitoring, Mpumalanga, South Africa

2013 – 2016

Lead Consultant and Project Manager

Management of a dust fallout monitoring network in the Sabie area.

LeadCorp, Air Quality Impact Assessment, Gauteng, South Africa

2016

Lead Consultant and Project Manager

An AQIA was undertaken for a proposed lead processing facility using the AERMOD modelling platform.

Illovo Sugar Ltd. Ubombo Mill, Air Quality Impact Assessment, Swaziland

2015

Lead Consultant and Project Manager

An AQIA was compiled to determine the impacts of a proposed furfural plant and adjustments to boilers on the receiving environment through the application of AERMOD.

Sappi Southern Africa Limited. Ngodwana Mill, Air Quality Impact Assessment, Mpumalanga, South Africa

2015

Lead Consultant and Project Manager



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

An AQIA was undertaken to assess the impact of various expansions and process changes proposed at the Sappi Ngodwana Mill using CALPUFF.

Sappi Southern Africa Limited. Ngodwana Mill, Atmospheric Impact Report, Mpumalanga, South Africa 2014

Project Manager

An AIR was compiled for an MES Postponement to determine the impact should emission rates from certain boilers not meet the required Section 21 emission limits.

Evrz Highveld Steel & Vanadium Corporation Ltd Ambient Monitoring, Mpumalanga, South Africa 2011-2014

Project Manager

Management and reporting for six PM10 and PM2.5 monitors (MetOne E-Samplers), one meteorological station and one continuous multi-gas monitor (Aeroqual).

Columbus Stainless Fugitive, Dust Management Plan, Mpumalanga, South Africa 2013

Project Manager

Compilation of a fugitive dust management plan assessing all fugitive releases of dust onsite and providing mitigation recommendations to control these.

Sappi Southern Africa Limited Ngodwana Mill, Ambient Monitoring, Mpumalanga, South Africa 2012

Lead Consultant and Project Manager

A short-term continuous monitoring campaign was undertaken for PM10, PM2.5, SO₂, NO₂ and meteorological conditions, with dust fallout and passive sampling of NO₂ and SO₂ also being conducted. The purpose of the monitoring was to determine the impact of the facility on the receiving environment and to verify the dispersion model.

Evrz Highveld Steel and Vanadium, Passive Monitoring, Mpumalanga, South Africa 2011 – 2012

Lead Consultant and Project Manager

Radiello diffusive samplers were deployed for SO₂, NO₂ and BTEX, with monitoring reports compiled on a monthly basis.

Abalengeni, Air Quality Impact Assessment, North-West, South Africa 2012

Project Manager

An AQIA was undertaken to determine the impact of emissions associated with a proposed ferrochrome plant in Rustenburg using ADMS v4.2.

Evrz Highveld Steel and Vanadium, Dust Fallout Monitoring, Mpumalanga, South Africa 2011 – 2012

Lead Consultant and Project Manager

Dust fallout monitoring with a network comprising 13 samplers and monthly reporting for compliance purposes.

Sappi Southern Africa Lomati Mill, Air Quality Impact Assessment, Mpumalanga, South Africa 2011

Project Manager

An AQIA was undertaken to determine the impacts associated with the replacement of the wood drying kilns at the Lomati Mill. The AQIA was compiled in support of the Atmospheric Emission License application.

Sappi Southern Africa Limited Ngodwana Mill, Stack Monitoring, Mpumalanga, South Africa 2011

Lead Consultant and Project Manager

Once-off stack monitoring was conducted for SO₂, NO₂, CO, O₂ and CO₂ using a portable gas analyser.



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

**Arcelor Mittal Newcastle Plant, Air Quality Impact Assessment, KwaZulu-Natal, South Africa
2009**

Project Manager

An AQIA was undertaken to determine the impacts associated with an expansion of the chromium plant.

PROFESSIONAL EXPERIENCE – ROADS, RAIL & PORT

**Airports Company South Africa, O.R. Tambo International Airport, Ambient Air Quality Monitoring,
Somaliland**

2021 - Current

Project Director

The monitoring includes monthly dust fallout monitoring at five fenceline locations at the ORTIA, active CO monitoring and passive monitoring for NO₂, SO₂ (Radiello) and BTEX (US EPA) conducted quarterly at twelve sites in and around the ORTIA.

**DP World Berbera, Air Quality Impact Assessment for the Phase 2 Multipurpose Terminal Expansion,
South Africa**

2021 - 2022

Project Director

WSP was appointed to undertake a detailed Air Quality Impact Assessment for the Port of Berbera Multipurpose Terminal Phase 2 Expansion project, in Somaliland. The assessment included a baseline assessment, emissions inventory and dispersion modelling. Additionally, WSP also provided guidance in implementation of the Port's Masterplan from an air quality perspective.

Transnet Port Terminals, Ambient Monitoring, South Africa

2018-2019, 2022 - 2023

Project Director

The monthly maintenance and management of continuous particulate monitors and dust fallout samplers at the Maydon Wharf Terminal.

Transnet Port Terminals, Ambient Monitoring, South Africa

2018-2019, 2023

Project Director

The monthly maintenance and management of continuous particulate monitors and dust fallout samplers at the Richards Bay Terminal.

Transnet Port Terminals, Ambient Monitoring, South Africa

2018 – 2023

Project Director

Maintenance and management, including monthly reporting, of the meteorological stations located at various ports throughout South Africa.

Transnet Port Terminals, Air Quality Impact Assessment, South Africa

2018

Project Director

An AQIA was undertaken in support of an Atmospheric Emission License Application due to the proposed increase in throughputs at the Multi-Purpose Terminal at Saldanha Bay.

Transnet Port Terminals, Cape Town Harbour Terminal, Ambient Monitoring, Western Cape, South Africa

2017

Project Manager

Continuous particulates monitoring (PM₁₀ and PM_{2.5}) and dust fallout monitoring at the Cape Town Harbour Terminal, with compliance assessment reports submitted on a monthly basis.



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Transnet Port Terminals Saldanha Bay Terminal, Ambient Monitoring, Western Cape, South Africa 2016 – 2017

Project Manager

Dust fallout and dust flux monitoring at the Saldanha Terminal, including compilation of monthly compliance reports, inclusive of analysis of continuous stack monitoring data, particulate concentrations and meteorological conditions.

Transnet Port Terminals Saldanha Bay Terminal, Particulates Monitoring, Western Cape, South Africa 2015

Project Manager

Supply, installation and management of one continuous particulates monitor, including compilation of monthly compliance reports.

Transnet Port Terminals Saldanha Bay Terminal, Air Quality Impact Assessment, Western Cape, South Africa 2014

Project Manager

An AQIA was undertaken to investigate the relationship between iron ore emissions originating from the Saldanha Bay Terminal and staining in the nearby residential areas using the CALPUFF dispersion modelling platform.

PROFESSIONAL EXPERIENCE - PUBLIC

JG Afrika (on behalf of SANRAL), Air Quality Impact Assessment, South Africa 2019

Project Director

An AQIA was undertaken to determine impacts associated with the re-alignment of the N3 Highway in KwaZulu-Natal, South Africa, with the use of the AERMOD dispersion modelling platform.

EcoSense on behalf of City of Cape Town, Atmospheric Impact Report, Western Cape, South Africa 2018

Project Manager and Lead Consultant

Compilation of an AIR for the proposed Atlantis Crematorium, inclusive of an emissions inventory, dispersion modelling (AERMOD) and impact assessment.

Mpumalanga Department of Land Affairs and Agriculture, Ambient Monitoring, Mpumalanga, South Africa 2009-2011

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of four full ambient air quality monitoring stations located within the Highveld Priority Area, including reporting.

City of Tshwane Metropolitan Municipality, Ambient Monitoring, Gauteng, South Africa 2010

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of six full ambient air quality monitoring stations, including reporting.

KwaZulu-Natal Department of Agriculture and Environmental Affairs, Ambient Monitoring, KwaZulu-Natal, South Africa 2010

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of six full ambient air quality monitoring stations, including reporting.



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

Department of Environmental Affairs, Ambient Monitoring, Gauteng, South Africa

2008-2010

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of six full ambient air quality monitoring stations located within the Vaal Triangle Priority Area, including monthly reporting.

Airports Company South Africa OR Tambo International Airport, Ambient Monitoring, Johannesburg, South Africa

2008

Project Manager

Management of the technical team tasked with the calibration and onsite maintenance of one real-time monitoring station, including reporting.

City of Johannesburg Metropolitan Municipality, Passive Diffusive Monitoring, Gauteng, South Africa

2007

Project Manager

Radiello passive diffusive samplers were deployed throughout the City of Johannesburg to monitor sulphur dioxide, nitrogen dioxide and volatile organic compounds (specifically the BTEX range).

City of Tshwane Metropolitan Municipality Bon Accord Quarry, Passive Diffusive Monitoring, Gauteng, South Africa

2008

Project Manager

Radiello passive diffusive samplers were deployed at the Bon Accord quarry for SO₂, NO₂ and BTEX. The purpose of the monitoring was to determine baseline concentrations for input into a dispersion model to assess cumulative impacts.

PROFESSIONAL EXPERIENCE - OTHER

Climatology Research Group (CRG Wits University), Rain Enhancement Research, Flight Scientist, Riyadh and Abha, Saudi Arabia

2008-2009

Data Operator and Science Team Manager

The research involved the use of aircraft penetrating storms to determine the impact of cloud seeding on individual weather systems. Furthermore, upper air monitoring of criteria pollutants using the aircraft was conducted to determine the location and concentrations within the plume associated with Riyadh.

Calgro M3 Holdings, Particulates Monitoring, Gauteng, South Africa

2008 – 2009

Project Manager

One PM₁₀ monitor (E_SAMPLER) was installed and managed at a proposed residential development, including compilation of monthly compliance monitoring reports.

Calgro M3 Holdings, Baseline Assessment, Gauteng, South Africa

2007

Project Manager

An air quality baseline assessment was undertaken to determine potential air quality impacts on a nearby residential area during the construction of a low-cost housing development.



Bradley Keiser

Earth & Environment, Director, Air Quality and Climate Change

PROFESSIONAL EXPERIENCE – ENVIRONMENTAL ACOUSTICS

Sonae Arauco White River Plant, Noise Monitoring, Mpumalanga, South Africa

2011 – Current

Project Manager

Environmental noise monitoring is conducted on a quarterly basis at the plant to determine potential impacts on the receiving environment.

Sasol New Energy Holding (Pty) Ltd. Environmental Acoustic Monitoring, Ressano Garcia, Mozambique **2012 – 2013**

Project Manager

WSP Environmental was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake acoustic monitoring at the Central Termica De Ressano Garcia gas engine power plant site in order to assess the noise associated with the construction and operational phases of the plant.

Sonae Novobord (Pty) Ltd - Panbult Plant, Noise Monitoring, Mpumalanga, South Africa **2013**

Project Manager

Environmental noise monitoring was conducted during the daytime and night-time at the Sonae Panbult Plant.

Rustenburg Platinum Mines Limited, Environmental Noise Impact Assessment for the Amandelbult Mine, Limpopo, South Africa **2013**

Project Manager

As part of an environmental impact assessment, WSP Environmental was commissioned to conduct an environmental noise assessment for the sinking of a new shaft at the Tumela mine in the Limpopo Province.

Assmang Black Rock Mine Operations, Environmental Monitoring Assessment for a Manganese Mine, Hotazel, Northern Cape, South Africa **2012-2013**

Project Manager

WSP Environmental was commissioned to conduct environmental monitoring for their underground manganese mining venture at Black Rock in the Northern Cape Province. The environmental monitoring consisted of both environmental noise monitoring and particulate monitoring. Vehicle noise and emissions testing was also performed on various Assmang-owned vehicles onsite.

Anglo American Coal SA, Community Environmental Acoustic Monitoring Survey, Vereeniging, Gauteng, South Africa **2012 – 2013**

Project Manager

WSP was appointed to conduct community-based noise monitoring in a region adjacent to the New Vaal Colliery in order to assess the acoustic impacts of the colliery on the surrounding communities.

AngloGold Ashanti (Pty) Ltd, Noise Monitoring, Free State, South Africa **2012**

Project Manager

Environmental noise monitoring was conducted during the daytime and night-time at various plants at the Anglo Gold Vaal River and West Wits Operations.



Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

CAREER SUMMARY

Zayd Ebrahim is a Senior Consultant in the Air Quality unit, with a Bachelor of Science degree in Geology and Environmental & Geographical Science. He is also a registered Certified Natural Scientist (Cert. Nat. Sci.) with the South African Council for Natural Scientific Professions (SACNASP).

Zayd is a Senior Consultant with over 5 years' experience in the environmental industry. Zayd has a Geographical and Environmental Sciences (BSc) degree obtained from the University of Cape Town. His area of expertise lies within the air quality and dispersion modelling fields related to sectors including mining, industrial, transport and infrastructure operations. Zayd has a broad understanding of the various laws and regulations associated with the air quality procedures, emissions inventories, dispersion modelling and licensing. He holds the responsibility of infield monitoring, emission inventory development, compilation of air emission licenses, dispersion modelling and scientific reporting.

>1 years with WSP

>5 years of experience

Area of expertise

Atmospheric Dispersion Modelling
Air Quality Monitoring and Reporting

Language

English - Fluent

EDUCATION

| | |
|--|------|
| Bachelor of Science (Environmental and Geographical Sciences), University of Cape Town | 2017 |
|--|------|

ADDITIONAL TRAINING

| | |
|--|------|
| Foundations of Theoretical and Computer Science certificate, CHPC-NITheP Summer School | 2021 |
|--|------|

PROFESSIONAL REGISTRATIONS

| | |
|--|------|
| SACNASP – South African Council for Natural Scientific Professions – Registration No. 169777 | 2024 |
|--|------|

PROFESSIONAL HISTORY

| | |
|--|---------------------|
| WSP Group Africa, Senior Consultant (Air Quality) | July 2023 – current |
| Environmental Science Associates, Junior Environmental Management Consultant (Air Quality and Geographical Information Systems Modeller) | 2018 - 2023 |
| Environmental Science Associates, Air Quality Field Operative (Internship) | Nov'17 – Jan'18 |
| Environmental Science Associates, Air Quality and GIS Modeller (Internship) | Dec'14 – Feb'15 |



Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

PROFESSIONAL EXPERIENCE

Air Quality Impact Assessment (AQIA)

Sonae Arauco South Africa, AQIA in support of meeting Record of Decision and development of a new dispersion model, White River, Mpumalanga, South Africa

2023 – 2024

Senior Consultant

WSP was appointed to undertake an air quality impact assessment in the form of an atmospheric impact report (AIR) to determine the impacts of operations at the Sonae Facility. The assessment consisted of the compilation a comprehensive emissions inventory to account for emissions from the facility. An air quality impact assessment included a Level 2 (AERMOD) dispersion model assessing emissions at surrounding receptors from on-site sources including vents, stacks, roads and exposed surfaces. Measured (Sonae monitoring network) and predicted (modelled) concentrations were compared against World Health Organisation and South African national standards. The impact assessment was used to determine compliance with the Minimum Emission Standards and Record of Decision.

Protea Chemicals a Division of the Omnia Group (Pty) Ltd, AQIA for a Proposed process expansion and Atmospheric Emission License (AEL) amendment, Blackheath, Western Cape, South Africa

2023 – 2024

Senior Consultant

WSP was appointed to undertake an AQIA in the form of an atmospheric impact report to determine the impacts for the proposed expansion at the Protea Chemicals Blackheath Facility to support in the atmospheric emission licence amendment application. The assessment consisted of the compilation a comprehensive emissions inventory to account for emissions from the facility. An atmospheric impact assessment included a Level 2 (AERMOD) dispersion model assessing emissions at surrounding receptors from on-site point sources. Comparison of the predicted (modelled) concentrations were compared against South African national standards.

StrandFoam Group (Pty) Ltd, AQIA in support of AEL updates and amendment, Strand, Western Cape, South Africa

2023 – 2024

Senior Consultant

WSP was appointed to compile the required air quality study for the Strandfoam Group's Strand facility to aid in an atmospheric emission licence renewal and update application. The atmospheric impact assessment included a Level 2 (AERMOD) dispersion model with emissions assessed from on-site stack and storage tank sources. Comparison of the predicted (modelled) concentrations were compared against South African national standards and international guidelines for regulated air pollutants including Sulphur Dioxide, Oxide of Nitrogen, Ozone, Particulate Matter, Carbon Monoxide, Lead, Benzene and Total Volatile Organic compounds.

ArcelorMittal South Africa, AQIA in support of AEL renewal, proposed expansion to include a Logistics Hub and subsequent AEL amendment, Strand, Western Cape, South Africa

2023 – 2025

Senior Consultant

WSP were appointed by ArcelorMittal to compile an AQIA in the form of an AIR to determine the impacts from existing operations in support of an AEL renewal. The air quality assessment consisted of the compilation a comprehensive emissions inventory to account for emissions from the facility. Impact assessment included using a CALPUFF dispersion model to assess emissions at surrounding receptors from on-site operations.



Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

**ArcelorMittal South Africa, AQIA in support of AEL renewal, proposed expansion to include a Logistics Hub and subsequent AEL amendment, Strand, Western Cape, South Africa
2023 – 2025**

Senior Consultant

WSP were appointed by ArcelorMittal, in conjunction with Bidvest Port Operations, to undertake an air quality study in the form of an AIR in support of an AEL amendment for the proposed Bulk Commodities Logistics Hub to be commissioned at the Saldanha Steel Facility. The AIR comprised a baseline assessment, comprehensive emissions inventory inclusive of existing steelmaking operations and the proposed Logistics Hub, various dispersion modelling scenarios using CALPUFF and presentation of likely impacts on the receiving environment. Following Public Participation, the Saldanha Steel AEL was updated to include the Logistics Hub.

**Seriti Power (Pty) Ltd, development of a facility wide Air Quality Management Plan for the New Laro Mine operations, Ogies, Mpumalanga, South Africa
2024 – 2025**

Senior Consultant

WSP were appointed by Seriti Power (Pty) Ltd, to develop an Air Quality Management Plan (AQMP) for the New Largo coal mine. This entails undertaking an air quality study in the form of an AIR to assess the potential air quality impacts from the existing and proposed mining operations, on the surrounding environment. The AQMP comprised a baseline assessment and development of a comprehensive emissions inventory of existing and proposed operations. An atmospheric impact assessment included a Level 2 (AERMOD) dispersion model assessing emissions at surrounding receptors from on-site emission sources. Comparison of the predicted (modelled) concentrations were compared against South African national standards. Mitigation methods were recommended to support in the development of air quality goals and intervention strategies to achieve them and an AQMP for adoption and implementation.

**Tronox Kwa-Zulu Natal Sands (Pty) Ltd, development of an AQIA for the proposed Port Durnford mine, Port Durnford, Kwa-Zulu Natal, South Africa
2024 – 2025**

Senior Consultant

WSP were appointed by Tronox Kwa-Zulu Natal Sands, to develop an AQIA in the form of an AIR for the proposed Port Durnford mine. This entails undertaking An impact assessment included a Level 2 (AERMOD) dispersion model assessing emissions at surrounding receptors from on-site emission sources. Comparison of the predicted (modelled) concentrations were compared against South African national standards. Mitigation methods were recommended to support in the development of air quality goals and intervention strategies.

**Stellenbosch Municipality, Devon Valley Landfill Air Quality Assessment, South Africa
2021 – 2022**

Junior Environmental Management Consultant

Develop emission inventory of ventilation stacks and stockpiles. Atmospheric dispersion modelling of the current activities and proposed operations. This involved computational emission modelling determine the dispersion of pollutants (including use of WRF, CALPUFF and LandGem modelling Suites) from active and proposed on-site operations including wind erosion from stockpiles, wind entrainment from vehicular movement on unpaved roads, material handling emissions, gaseous emissions from ventilation stacks and landfill exposed surfaces.

**Mining Sector, Air Quality Assessment, South Africa
2018 – 2025**

Junior Environmental Management Consultant

Develop emission inventory of ventilation stacks, unpaved roads, earth moving vehicles, dust fallout rate and wind erosion from exposed surfaces. Atmospheric dispersion modelling of the current activities and proposed operations. Computational emission modelling to determine the dispersion of pollutants (including use of WRF and CALPUFF modelling Suites) from active and proposed on-site operations including wind erosion from stockpiles and exposed surfaces, wind entrainment from vehicular movement on unpaved roads, material



Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

handling emissions and gaseous emissions from ventilation stacks. Process flow diagram development for open-cast and underground mining activities, including the related emission sources.

Industrial Sector, Air Quality Assessment, South Africa

2018 – 2025

Junior Environmental Management Consultant

Assess and develop process flow diagrams and emission inventories for industrial activities including, but not limited to, incineration facilities, cement manufacturing, copper smelting, precious metal refineries, copper sulphide production and metallurgical casting. Atmospheric dispersion modelling of the current and/or proposed operations. This involved emission modelling of active and proposed on-site operations including wind erosion from exposed surfaces, wind entrainment from vehicular movement on unpaved roads, material handling emissions and gaseous emissions from ventilation stacks.

Air Quality Monitoring

Dekro Paints, Industrial Environmental Monitoring, South Africa

2023 – 2025

Senior Consultant

WSP was appointed to undertake environmental compliance monitoring in accordance with the facility's atmospheric emission licence. This involved the deployment of passive samplers at fence line locations to measure potential industrial emissions of Benzene, Toluene, Ethylbenzene and Xylene. Dust fallout monitoring at fenceline locations in accordance with the National Dust Control Regulations (GN827) and Leak Detection and Repair monitoring survey in accordance with United States Environmental Protection Agency's Method 21 – Determination of Volatile Organic Compounds Leaks. Zayd was responsible for the conducting the onsite monitoring.

Protea Chemicals, Industrial Environmental Monitoring, South Africa

2023 – 2025

Senior Consultant

WSP was appointed to undertake environmental compliance monitoring in accordance with the facility's atmospheric emission licence. This involved dust fallout monitoring at fenceline locations in accordance with the National Dust Control Regulations (GN827) and Leak Detection and Repair monitoring survey in accordance with United States Environmental Protection Agency's Method 21 – Determination of Volatile Organic Compounds Leaks. Zayd was responsible for the conducting the onsite monitoring.

AfriSam (South Africa) Limited, Mining Environmental Monitoring, South Africa

2023 – 2025

Senior Consultant

WSP was appointed to undertake environmental compliance monitoring at mining sites in accordance with the facility's atmospheric emission licence. This involved dust fallout monitoring at fenceline locations in accordance with the National Dust Control Regulations (GN827), scheduled and ad hoc surface and ground water sampling. Zayd was responsible for the conducting the onsite monitoring at the Peninsula and Rheeboek mining sites.

Transnet Port Terminals, Meteorological Network Maintenance, South Africa

2023 – 2025

Senior Consultant

WSP was appointed to manage and maintain the Transnet Port Terminals meteorological monitoring network at multiple port sites. This involved installation of new meteorological stations and maintenance and repair of stations. Zayd was responsible for the conducting the onsite installation, maintenance and repairs at Saldanha and Cape Town ports.

Stellenbosch Municipality, Devon Valley Landfill Air Quality Monitoring, South Africa

2021 – 2023

Junior Environmental Management Consultant

Passive and Active sampling of ambient air quality within the landfill site boundary to determine the atmospheric pollutant concentrations released from the landfill activities. This involved the deployment of passive samplers

Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

at fence line locations to measure potential landfill emissions of Sulphur Dioxide, Nitrogen Dioxide, Hydrogen Sulphide, Benzene, Toluene, Ethylbenzene and Xylene. Active sampling of landfill wells was conducted with a LandGas Analyzer to measure the concentrations of Methane, Carbon Monoxide, Oxygen and Hydrogen Sulphide at designated well locations within the facility boundary.

Atmospheric Emission Licencing

Renewal Applications, New Facility Applications and Compliance Reporting

Atmospheric Emission Licence Renewal, South Africa

2018 – 2023

Junior Environmental Management Consultant

Development of atmospheric emission licence and supporting documentation for new and renewal application submission to the Licencing Authority. Development of process flow diagrams, emission inventory and atmospheric impact report, including atmospheric dispersion modelling, technical and scientific report writing. Development and facilitation in submission of the Atmospheric Emission Licence (AEL) annual compliance reporting, including annual reports, AEL auditing, greenhouse gas and emission trend reporting.

National Atmospheric Emission Inventory System Reporting

Atmospheric Emission Reporting, South Africa

2021 – 2025

Development of emission inventory for and input into the National Atmospheric Emission Inventory System (NAEIS) as prescribed in related national regulations.

Overview

- **Emissions Inventory Quantification** of criteria pollutants and greenhouse gases for industrial and non-industrial activities (including, but not limited to, cement manufacturing, landfills and mining activities).
- **Model Verification** using statistical analysis to determine accuracy of model performance vs measured data.
- **Atmospheric Dispersion Modelling** using the computational models to determine the dispersion of pollutants (including knowledge in use of WRF, CALPUFF, AERMOD, ScreenView and Tanks modelling Suites).
 - o The Weather Research and Forecast Model (WRF) verified WRF against surface and upper air measurements.
 - o Dispersion modelling (CALPUFF and AERMOD) and verification:
 - Creation of inventories and modelling of data to determine the flow and direction of atmospheric particles for multiple sources.
 - Development of wind roses and pollution plots to analysis the measured data of pollutants within the atmosphere to determine the source relative to the monitoring location.
- **Technical and Scientific Report writing**, providing relevant analysis of atmospheric dispersion as well as report compiling for Air Quality Impact Assessments, Air Impact Reports and Greenhouse Gas Emissions assessment reports.

Types of projects include:

- o Landfill – Landfill particulate and gaseous emission quantification, and atmospheric dispersion modelling for current and proposed activities.

Zayd Ebrahim

Earth and Environment, Air Quality – Senior Consultant

- Mining – quantification and reporting of mining activities and supporting operations including, but not limited to, wind entrainment from vehicular movement on unpaved roads, vehicle exhaust emissions, wind erosion of exposed surfaces, point source activities and material handling activities.
- Industrial – multiple source quantification including point, area and volume sources for varying industrial activities including, but not limited to, incineration, cement manufacturing, chemical treatment, smelting, refining activities, vehicular entrainment and exhaust emissions.
- **Process Flow Diagrams**, development of process flow diagrams within Microsoft Visio, based on data of current and proposed activities.
- **Field Monitoring**, ambient air quality background and compliance monitoring. Data capturing, analysis and reporting of measured field data.
- **SAELIP**, development of atmospheric emission licence applications on the South African Atmospheric Emission Licensing & Inventory Portal, including development of inventories for facilities on the National Atmospheric Emission Inventory System. Atmospheric Emission Licence compliance reporting for industrial facilities.
- **High Performance Computing**, computational modelling on the Centre for High Performance Computing machines.
- **Atmospheric Emissions Licences**, development of annual compliance reports and facilitation in the application for renewal of existing licences and application for new licences.



herewith certifies that

Zayd Ebrahim

Registration Number: 169777

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Atmospheric Science (Certificated Natural Scientist)

Effective **7 November 2024**

Expires **31 March 2026**



A handwritten signature in black ink, appearing to read 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. Maseko'.

Chief Executive Officer



To verify this certificate scan this code

Curriculum vitae (short) - Marion Bamford PhD

May 2025

Present employment: Professor; Director of the Evolutionary Studies Institute.
Member Management Committee of the NRF/DSI Centre of Excellence Palaeosciences, University of the Witwatersrand, Johannesburg, South Africa

Telephone : +27 11 717 6690
Cell : 082 555 6937
E-mail : marion.bamford@wits.ac.za ;
marionbamford12@gmail.com

ii) Academic qualifications

Tertiary Education: All at the University of the Witwatersrand:

1980-1982: BSc, majors in Botany and Microbiology. Graduated April 1983.

1983: BSc Honours, Botany and Palaeobotany. Graduated April 1984.

1984-1986: MSc in Palaeobotany. Graduated with Distinction, November 1986.

1986-1989: PhD in Palaeobotany. Graduated in June 1990.

iii) Professional qualifications

Wood Anatomy Training (overseas as nothing was available in South Africa):

1994 - Service d'Anatomie des Bois, Musée Royal de l'Afrique Centrale, Tervuren, Belgium, by Roger Dechamps

1997 - Université Pierre et Marie Curie, Paris, France, by Dr Jean-Claude Koeniguer

1997 - Université Claude Bernard, Lyon, France by Prof Georges Barale, Dr Jean-Pierre Gros, and Dr Marc Philippe

iv) Membership of professional bodies/associations

Palaeontological Society of Southern Africa

Royal Society of Southern Africa - Fellow: 2006 onwards

Academy of Sciences of South Africa - Member: Oct 2014 onwards

International Association of Wood Anatomists - First enrolled: January 1991

International Organization of Palaeobotany – 1993+

Botanical Society of South Africa

South African Committee on Stratigraphy – Biostratigraphy - 1997 - 2016

SASQUA (South African Society for Quaternary Research) – 1997+

PAGES - 2008 –onwards: South African representative

ROCEEH / WAVE – 2008+

INQUA – PALCOMM – 2011+onwards

v) Supervision of Higher Degrees

All at Wits University

| Degree | Graduated/completed | Current |
|---------|---------------------|---------|
| Honours | 13 | 0 |
| Masters | 15 | 3 |
| PhD | 14 | 5 |

| | | |
|----------------------|----|---|
| Postdoctoral fellows | 14 | 4 |
|----------------------|----|---|

vi) **Undergraduate teaching**

Geology II – Palaeobotany GEOL2008 – average 65 students per year

Biology III – Palaeobotany APES3029 – average 25 students per year

Honours – Evolution of Terrestrial Ecosystems; African Plio-Pleistocene Palaeoecology;

Micropalaeontology – average 12 - 20 students per year.

vii) **Editing and reviewing**

Editor: *Palaeontologia africana*: 2003 to 2013; 2014 – Assistant editor

Guest Editor: *Quaternary International*: 2005 volume

Member of Board of Review: *Review of Palaeobotany and Palynology*: 2010 –

Associate Editor: *Cretaceous Research*: 2018-2020

Review of manuscripts for ISI-listed journals: 30 local and international journals

viii) **Palaeontological Impact Assessments**

28 years' experience in PIA site and desktop projects with over 350 projects completed.

Selected from recent projects only – list not complete:

- Wolf-Skilpad-Grassridge OHPL 2022 for Zutari
- Iziduli and Msenge WEFs 2022 for CTS Heritage
- Hendrina North and South WEFs & SEFs 2022 for Cabanga
- Dealesville-Springhaas SEFs 2022 for GIBB Environmental
- Vhuvhili and Mukondeleli SEFs 2022 for CSIR
- Chemwes & Stilfontein SEFs 2022 for CTS Heritage
- Equestria Exts housing 2022 for Beyond Heritage
- Zeerust Salene boreholes 2022 for Prescali
- Tsakane Sewer upgrade 2022 for Tsimba
- Transnet MPP inland and coastal 2022 for ENVASS
- Ruighoek PRA 2022 for SLR Consulting (Africa)
- Namli MRA Steinkopf 2022 for Beyond Heritage
- Adara 2 SEF 2023 for CTS Heritage
- Buffalo & Lyra SEFs 2023 for Nextec
- Camel Thorn Group Prospecting Rights 2023 for AHSA
- Dalmanutha SEFs 2023 for Beyond Heritage
- Elandsfontein Residential 2023 for Beyond Heritage
- Waterkloof Samancor 2023 for Elemental Sustainability
- Zonnebloem WTP 2023 for WSP
- Elders Irrigation 2023 for SRK
- Leghoya WEFS 2023 for Red Cap & SLR
- Aberdeen Solar 1,2,3 2024 for Beyond Heritage
- BeauNero Mining 2024 for Lwethuma
- Brakfontein 264 IR Mining 2024 for Eco-elementum
- Hugo & Khoa SEFs 2024 for TerraMare

ix) **Research Output**

Publications by M K Bamford up to July 2025 peer-reviewed journals or scholarly books: over 200 articles published; 5 submitted/in press; 15 book chapters.

Scopus h-index = 33; Google Scholar h-index = 41; -i10-index = 130 based on 8046 citations.

Conferences: numerous presentations at local and international conferences.

CURRICULUM VITAE – ANTON PELSER

2025-05-08

Mr. A.J. Pelsner

Anton Johan Pelsner
Born: 23 December 1971
Divorced, three children
Bilingual

Academic Qualifications

BA (UNISA) 1995
BA (HONS) Archaeology WITS 1997
MA Archaeology WITS 2003

Employment History

1991 – 30 September 2006

National Cultural History Museum (now Ditsong).

February 1991 to October 1994: Assistant in Collections Management Department.

1994 to 1998: Assistant Museum Scientist in the Research Department (Archaeology).

1998 to September 2006: Museum Scientist (Researcher: Archaeology) in the same department. Was the Curator of the Archaeology Collection at the Museum during this period.

Anton resigned in September 2006 to conduct Cultural Heritage Consultancy work and research on a full-time basis.

Publications

Anton Pelsner has published more than 30 articles in scientific and popular journals on archaeology and history, and has also been the author and co-author of more than 1700 unpublished reports on Heritage Impact Assessments and archaeological work. Anton contributed a chapter on Archaeology in a book on the geology and history of the Vredefort Dome, compiled by the Geology Department of WITS University. This book was published and launched in conjunction with the proclamation of the Dome as a SA World Heritage Site during July/August 2005.

A complete list of publications and reports can be supplied.

References

Dr. Johnny van Schalkwyk – 076 790 6777

Prof. Marlize Lombard – UJ Anthropology and Development Studies – (011) 559 2859

CRM Accreditations (Association of Southern African Professional Archaeologists)

Principal Investigator for graves
Principal Investigator for Iron Age and Colonial Period Archaeology

Field Director for Stone Age

Professional Member of ASAPA (Association of Southern African Professional Archaeologists)
Registered at Amafa (Kwa-Zulu Natal Heritage Authority) as CRM Practitioner

A handwritten signature in black ink, appearing to be 'J. P. ...' or similar, written in a cursive style.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

CAREER SUMMARY

Kirsten is a Principal Air Quality and Acoustic Consultant with a Master of Science (Atmospheric Sciences) degree obtained from the University of the Witwatersrand. She is currently employed at the Johannesburg branch of WSP and has worked on various air quality and acoustic impact assessments; air quality management plans; air quality and acoustic monitoring projects; and air quality and acoustic modelling projects for a variety of clients over the past twelve years. She has provided consulting support to various client industries including petrochemical, mining, metallurgical, manufacturing and local government bodies, among others. She is also a registered Professional Natural Scientist (Pr.Nat.Sci.) with the South African Council for Natural Scientific Professions (SACNASP).

Countries of work experience gained include South Africa, Botswana, Mozambique, Madagascar, Somalia, Ethiopia, Serbia, Qatar and Kuwait.

12 years with WSP

Area of Expertise

Air Quality Impact Assessments
Environmental Acoustic Impact Assessments
Air Quality Management
Ambient Air Quality and Acoustic Monitoring

14 years of experience

Language

English – Fluent

EDUCATION

| | |
|--|------|
| Master of Science, Atmospheric Sciences, University of Witwatersrand, Johannesburg, South Africa | 2009 |
| Bachelor of Science (Honours) Geography and Environmental Studies, University of the Witwatersrand, Johannesburg, South Africa | 2006 |
| Bachelor of Science, Geography and Environmental Studies, University of Witwatersrand, Johannesburg, South Africa | 2005 |

ADDITIONAL TRAINING

| | |
|--------------------------------------|------|
| CadnaA - Acoustics Training | 2022 |
| Snake Awareness Training | 2016 |
| Business-focussed Project Management | 2013 |

PROFESSIONAL REGISTRATIONS

| | |
|--|------|
| SACNASP – South African Council for Natural Scientific Professions – Registration No. 115870 | 2016 |
|--|------|

ORGANIZATION MEMBERSHIPS

| | |
|--|------|
| SASAS – South African Society for Atmospheric Sciences | 2022 |
| NACA – National Association for Clean Air | 2016 |

WSP



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd

September 2011 – present

Climatology Research Group (University of the Witwatersrand)

January 2009 – April 2011

PROFESSIONAL EXPERIENCE

Acoustics

**National Petroleum Refiners of South Africa (Pty) Ltd, Environmental Acoustic Impact Assessment for the Hybrid Clean Fuels II Project, Sasolburg, Free State, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed Hybrid CFII upgrade project at the refinery. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Tronox Mineral Sands (Pty) Ltd, Environmental Acoustic Compliance Statement for a Mining Expansion, Mtunzini, KwaZulu-Natal, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake a desktop review of a proposed expansion to an existing mineral sands mining operation and provide a noise compliance statement in order to confirm that noise from the proposed expansion was a non-issue. Kirsten was responsible for conducting the assessment and compiling the noise compliance statement.

**Red Rocket South Africa, Environmental Acoustic Compliance Statement for two Solar PV Facilities, Thuthukani, Mpumalanga, South Africa
2023**

Project Manager and Lead Consultant

WSP was appointed to undertake a desktop review of two proposed solar PV facilities and provide a noise compliance statement in order to confirm that noise from the facilities was a non-issue. Kirsten was responsible for conducting the assessments and compiling the noise compliance statements.

**ENERTRAG South Africa, Environmental Acoustic Screening Assessment for two Proposed Wind Energy Facilities, Belfast, Mpumalanga, South Africa
2022 – 2023**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for two proposed wind energy facilities near Belfast in Mpumalanga. Kirsten was responsible for conducting the assessments which determined the potential acoustic impacts of the proposed projects based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**ENERTRAG South Africa, Environmental Acoustic Screening Assessment for two Proposed Wind Energy Facilities, Camden, Mpumalanga, South Africa
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for two proposed wind energy facilities near Camden in Mpumalanga. Kirsten was responsible for conducting the assessments which



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

determined the potential acoustic impacts of the proposed projects based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**ENERTRAG South Africa, Environmental Acoustic Impact Assessment for a Proposed Green Hydrogen and Ammonia Facility, Camden, Mpumalanga, South Africa
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic Impact assessment for the proposed Camden I Green Hydrogen and Ammonia Facility. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using attenuation-over-distance acoustic calculations.

**Crossboundary Energy, Environmental Acoustic Screening Assessment for a Proposed Wind Energy Facility, Port Dauphine, Madagascar
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic screening assessment for a proposed wind energy facility in Madagascar. Kirsten was responsible for conducting the assessment which determined the potential acoustic impacts of the proposed project based on the methodology prescribed by the International Finance Corporation Environmental Health and Safety (IFC EHS) Guidelines.

**DP World, Environmental Acoustic Impact Assessment for the Port of Berbera Phase 2 Expansion, Somaliland, Somalia
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed Phase 2 expansion to the Port of Berbera. An acoustic inventory was developed to identify all potential sources of noise associated with the construction and operational phases of the Phase 2 expansion project. The construction phase impacts were assessed through attenuation-over-distance acoustic calculations, whilst acoustic impacts of the proposed port operations were assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**Loci Environmental, Environmental Acoustic Impact Assessment for a Proposed Manganese Mine, Kanye, Botswana
2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for a proposed manganese mine in Botswana. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Die Oesterreichische Entwicklungsbank Ag And Metito Utilities Ltd, Environmental Acoustic Impact Assessment for a Proposed Wastewater Treatment Plant, Zrenjanin, Serbia
2021**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the development of a proposed wastewater treatment plant (WWTP). To assess the existing noise climate in the area surrounding the proposed site, ambient noise monitoring was conducted at four receptor locations. An acoustic inventory was developed to identify all potential sources of noise associated with the construction and operational phases of the WWTP. The acoustic impacts of the operation of the proposed WWTP were then assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model, while construction phase impacts were assessed through attenuation-over-distance acoustic calculations.



**DNG Energy Ltd, Environmental Acoustic Impact Assessment for a Proposed Gas to Power Project, Komatipoort, Mpumalanga, South Africa
2021**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the development of the proposed Khensani Gas to Power Project. To assess the existing noise climate in the area surrounding the proposed site, ambient noise monitoring was conducted at five receptor locations. An acoustic inventory was developed to identify all potential sources of noise associated with the operational phase of the project. The acoustic impacts of the operation of the proposed facility during both an unmitigated and mitigated scenario were then assessed using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**Platinum Cement Industries, Environmental Acoustic Impact Assessment for a Proposed Cement Grinding Processing Facility, Umbogintwini, KwaZulu-Natal, South Africa
2020 – 2021**

Project Manager and Lead Consultant

WSP was appointed to conduct a screening-level environmental acoustic impact assessment for a proposed cement grinding processing facility. Kirsten was responsible for conducting the assessment which included a baseline assessment; development of a comprehensive acoustic inventory; and determination of the impact of the proposed project on the surrounding sensitive receptors using attenuation-over-distance acoustic calculations.

**AngloGold Ashanti, Environmental Acoustic Impact Assessment for the Expansion to a Tailings Storage Facility, Northwest, South Africa
2017 – 2020**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed extension of the Kareerand Tailings Storage Facility. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for both the construction and operational phases of the project; and determination of the impact of the proposed project on the surrounding sensitive receptors using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**BioTherm Energy, Environmental Acoustic Impact Assessment for three Wind Energy Facilities, Northern and Western Cape, South Africa
2016 – 2019 and 2021 – 2022**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for three proposed wind energy facilities located between Sutherland and Matjiesfontein in the Northern and Western Cape provinces. Kirsten was responsible for conducting the assessments which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for both the construction and operational phases of the project; and determination of the impact of the proposed wind energy facilities on the surrounding sensitive receptors (farmhouses) using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software. Various updates and expansions to the above-mentioned projects were then further assessed during 2021/2022.

**Sappi Southern Africa Limited, Environmental Acoustic Impact Assessment for the proposed Expansion to a Paper Mill, KwaZulu-Natal, South Africa
2018**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed expansion to the Sappi Saiccor Mill, near Umkomaas. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive acoustic inventory for the proposed expansion activities; and determination of the impact of the proposed expansion on the surrounding sensitive receptors through the use of attenuation-over-distance acoustic calculations.

**Sappi Southern Africa Limited, Environmental Acoustic Impact Assessment for a Proposed Timber Handling Facility, Umkomaas, KwaZulu-Natal, South Africa
2017**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for a proposed timber handling facility near Umkomaas. Kirsten was responsible for conducting the assessment which included



Kirsten Collett

**Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant**

baseline acoustic monitoring; development of a comprehensive acoustic inventory; and determination of the impact of the proposed facility on the surrounding sensitive receptors (specifically, a newly proposed retirement village) using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software.

**Loci Environmental, Environmental Acoustic Impact Assessment for the Proposed Rehabilitation of the Sekoma-Morwamosu Road Section, Botswana
2017**

Project Manager and Lead Consultant

WSP was appointed to undertake an environmental acoustic impact assessment for the proposed rehabilitation of a section of road within the southern part of Botswana. Kirsten was responsible for conducting the assessment. Current operational noise levels in the vicinity of the road section were determined using an acoustic modelling platform, with current (2017) traffic count data as input. The acoustic impacts of the proposed rehabilitation were determined using attenuation-over-distance calculations (construction phase) and acoustic modelling (operational phase). Changes in noise levels at specific receptor locations were then assessed for each phase and the resultant community responses were evaluated.

**City of Cape Town, Environmental Acoustic Impact Assessment for the Redevelopment of the Athlone Power Station, Cape Town, Western Cape, South Africa
2016 – 2017**

Lead Consultant

WSP was contracted to undertake an environmental acoustic impact assessment for redevelopment of the Athlone Power Station site to determine the noise impacts of a) the surrounding activities on the redevelopment site; and b) the proposed site activities on the surrounding communities. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive noise source inventory; and determination of the impact of the current noise climate on the Athlone site as well as the impact of the proposed redevelopment activities on the surrounding communities.

**Central Termica Da Ressano Garcia, Environmental Acoustic Monitoring for a Gas Engine Power Plant, Ressano Garcia, Mozambique
2016**

Project Manager

WSP was commissioned to undertake acoustic monitoring at the Central Termica De Ressano Garcia gas engine power plant site in order to assess the noise associated with the operation of the plant. Kirsten was responsible for project management, technical input and reporting for this project.

**Anglo American Coal SA, Community Environmental Acoustic Monitoring Survey, Vereeniging, Gauteng, South Africa
2016**

Project Manager

WSP was appointed to conduct community-based noise monitoring in a region adjacent to the New Vaal Colliery in order to assess the acoustic impacts of the colliery on the surrounding communities. Kirsten was responsible for project management, data analysis and reporting for the project.

**Anglo American Platinum Limited, Screening Level Environmental Acoustic Impact Assessment for a New Ventilation Shaft, Rustenburg, Northwest, South Africa
2016**

Lead Consultant

WSP was appointed to investigate the acoustic impacts associated with the construction and operation of an additional ventilation shaft at the Siphumelele 1 Mine near Rustenburg. Kirsten was responsible for conducting the assessment through baseline acoustic monitoring and acoustic propagation calculations.



**Industrial Development Corporation of SA (Pty) Ltd, Environmental Acoustic Impact Assessment for a Proposed Paper Mill, Frankfort, Free State, South Africa
2013 – 2015**

Lead Consultant

WSP was contracted to undertake an environmental acoustic impact assessment for a proposed paper mill in Frankfort in the Free State Province. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; development of a comprehensive noise source inventory; and determination of the impact of the proposed project on the surrounding communities using the Computer Aided Noise Abatement (CadnaA) acoustic model.

**South32 Aluminium SA Limited, Environmental Acoustic Impact Assessment for the Decommissioning of a Smelter, Richards Bay, KwaZulu-Natal, South Africa
2014 – 2015**

Lead Consultant

WSP was contracted to undertake a screening-level environmental acoustic impact assessment for the decommissioning of the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for conducting the assessment which included the development of a comprehensive noise source inventory; and determination of the impact of the proposed project on the surrounding communities using noise propagation calculations.

**Sasol New Energy Holding (Pty) Ltd, Environmental Acoustic Monitoring for a Gas Engine Power Plant, Ressano Garcia, Mozambique, Africa
2014 – 2015**

Project Manager and Lead Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake acoustic monitoring at the Central Termica De Ressano Garcia gas engine power plant site in order to assess the noise associated with the construction and operational phases of the plant. Kirsten was responsible for technical input, acoustic data analysis and reporting for this project.

**Sonae Novobord (Pty) Ltd, Environmental Noise Survey for a Wood Producer, White River, Mpumalanga, South Africa
2012 – 2015**

Consultant

WSP has been conducting environmental noise monitoring at the Sonae Novobord White River plant since 2009. The project includes day and night-time monitoring in accordance with the SANS 10103:2008 methodology, data analysis, compliance assessment and reporting. Kirsten was involved in the data analysis, interpretation and reporting for the project.

**Atha-Africa Ventures (Pty) Ltd, Environmental Acoustic Impact Assessment for a Proposed Mine, Wakkerstroom, Mpumalanga, South Africa
2012 – 2014**

Lead Consultant

WSP Environmental was commissioned to undertake an environmental acoustic impact assessment for a proposed underground coal mine near Wakkerstroom, Mpumalanga as part of a comprehensive environmental and social impact assessment for the mine. Kirsten was responsible for conducting the environmental acoustic assessment. The assessment comprised on-site environmental noise monitoring in order to obtain a baseline noise climate for the region as well as acoustic modelling to determine the predicted impacts that the proposed mine will have on the existing noise climate. An inventory of all noise sources during the construction and operational phases was compiled with associated sound power levels for each source. These sources were then input into the Computer Aided Noise Abatement (CadnaA) acoustic model. Results were compared with the monitored (existing) noise levels as well as the SANS day and night-time guidelines to assess compliance.

**Sonae Novobord (Pty) Ltd, Environmental Noise Survey for a Wood Producer, Panbult, Mpumalanga, South Africa
2013**

Project Manager

WSP was commissioned to do a once-off environmental acoustic compliance monitoring survey at the Sonae Novobord Panbult site in Mpumalanga. Kirsten was responsible for project management and reporting for the project.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

**Rustenburg Platinum Mines Limited, Environmental Noise Impact Assessment for the Amandelbult Mine, Limpopo, South Africa
2013**

Lead Consultant

As part of an environmental impact assessment, WSP was commissioned to conduct an environmental noise assessment for the sinking of a new shaft at the Tumela mine in the Limpopo Province. Kirsten conducted this environmental noise impact assessment through a baseline review of the site; compilation of a detailed site-specific noise inventory; determination of the impact of the proposed project on the surrounding communities using the CadnaA acoustic model; interpretation of modelled results; compliance assessment; and reporting.

**Shell and BP South Africa Petroleum Refineries (SAPREF), Environmental Noise Impact Assessment for SAPREF Cleaner Fuels Phase Two, Durban, KwaZulu-Natal, South Africa
2013**

Lead Consultant

WSP was contracted to perform the environmental noise impact assessment of the Cleaner Fuels Phase Two Project for the SAPREF Refinery in South Durban. The project investigated the noise associated with undertaking the required modifications to the refinery in order to meet the pending fuel specifications published by the South African Department of Energy. Kirsten was responsible for analysis and interpretation of on-site acoustic monitoring; compilation of a detailed site-specific noise inventory; determination of the impact of the proposed project on the surrounding communities through the use of the CadnaA acoustic model; interpretation of modelled results; compliance assessment; and reporting.

**Assmang Black Rock Mine Operations, Environmental Monitoring Assessment for a Manganese Mine, Hotazel, Northern Cape, South Africa
2012 – 2013**

Consultant

WSP was commissioned to conduct environmental monitoring for their underground manganese mining venture at Black Rock in the Northern Cape Province. The environmental monitoring consisted of both environmental noise monitoring and particulate monitoring. Vehicle noise and emissions testing was also performed on various Assmang owned vehicles onsite. Kirsten was responsible for analysis of all monitored data, interpretation, compliance assessment and reporting.

**AngloGold Ashanti (Pty) Ltd, Environmental Noise Surveys, Vaal River and West Wits Operations, Northwest, South Africa
2012**

Consultant

WSP was commissioned by Anglo Gold Ashanti to perform environmental noise surveys of their Vaal River and West Wits mining operations in the Northwest Province, as part of their commitment to minimise negative impacts on the environment. The project included day and night-time monitoring in accordance with the SANS 10103:2008 methodology, data analysis, compliance assessment and reporting. Kirsten was responsible for assisting with data analysis, interpretation and reporting.

**Sasol New Energy Holding (Pty) Ltd, Environmental Acoustic Impact Assessment for a proposed Power Plant, Ressano Garcia, Mozambique
2011**

Field Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake an integrated environmental and social impact assessment (ESIA) and bankable environmental, social and health impact assessment (ESHIA) for the proposed gas engine power plant that is to be constructed in Ressano Garcia, Mozambique. As part of this assessment, a specialist environmental acoustic study was conducted to assess what impacts the proposed plant may have on the noise climate of the region. Kirsten was responsible in assisting with on-site acoustic monitoring for the project.



Air Quality Impact Assessments (AQIAs)

Transnet Port Terminals - Saldanha, AQIA for a Proposed Expansion to an Iron Ore Loading Terminal, Saldanha, Western Cape, South Africa

2020 – 2022

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment in the form of an atmospheric impact report (AIR) to determine the impacts of a proposed increase in iron ore storage and handling capacity at the Saldanha Port. The project was part of an Atmospheric Emission Licence (AEL) variation application, with an AIR specifically requested by the authorities. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the CALPUFF dispersion model to assess the impacts of emissions on the surrounding communities. The project also included the AEL component, with authority liaison, advertisement placement and submission of the AEL variation application on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

Cast Products South Africa, AQIA for a Section 22A AEL Renewal for a Foundry, Boksburg, Gauteng, South Africa

2022

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment in the form of an atmospheric impact report (AIR) for the Boksburg Foundry. The Client failed to renew their current AEL timeously and as such a Section 22A rectification process was triggered. As part of the Section 22A process, an AIR was specifically requested by the authorities. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on the surrounding communities. The project also included the AEL component, with authority liaison, advertisement placement and submission of the AEL renewal application on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

Orion Engineered Carbons, AQIA for a Bulk Liquid Cargo Facility, Port of Gqeberha, Eastern Cape, South Africa

2020 – 2021

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of the licencing of the operational tanks at the port. This formed part of a Noxious Use Permit application, as per the Port Elizabeth Zoning Scheme. The assessment consisted of quantification of emissions from the tanks using the US EPA's Tanks 4.0.9 model as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

Platinum Cement Industries, AQIA for a Proposed Cement Grinding Processing Facility, Umbogintwini, KwaZulu-Natal, South Africa

2020 – 2021

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of an Atmospheric Emission Licence (AEL) application for a proposed cement grinding processing facility. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the facility as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

Protea Chemicals, AQIA for a Revised Production Rate for a Chemical Producer, Cape Town, Western Cape, South Africa

2020

Project Manager and Lead Consultant

WSP was appointed to conduct an AQIA in the form of an Atmospheric Impact Report as part of an Atmospheric Emission Licence (AEL) amendment application for a production rate change at the facility. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the facility as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

WSP Middle East, AQIA for a Proposed Independent Power Project, Qatar 2020

Project Manager and Lead Consultant

WSP was contracted to undertake a screening-level air quality impact assessment to determine the suitability of the proposed stack heights in dispersing emission away from sensitive receptors. The project included a baseline assessment, emissions inventory, dispersion modelling using SCREEN3 and comparison of the predicted concentrations against the Qatar ambient air quality standards.

Transnet Port Terminals - Saldanha, AQIA for a Proposed Expansion to an Iron Ore Loading Port, Saldanha, Western Cape, South Africa 2019

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of a proposed increase in iron ore storage and handling capacity at the Saldanha Port. The project included a baseline assessment, compilation of a comprehensive emissions inventory and dispersion modelling using the CALPUFF dispersion model to assess the impacts of emissions on the surrounding communities.

Anglo American Coal SA, AQIA for a proposed coal stockpile at an underground mine, Ogies, Mpumalanga, South Africa 2018

Project Manager and Lead Consultant

WSP was appointed to conduct an Air Pollution Assessment in the form of an Atmospheric Impact Report for a proposed coal stockpile at the underground section of the Zibulo Colliery. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from the proposed stockpile as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on any surrounding receptors.

WSP Middle East, AQIA for a Proposed Waste to Energy Facility, Kuwait 2017 – 2018

Project Manager and Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of a proposed waste to energy facility in Kuwait. The project included assessment of baseline monitoring data (conducted by a local partner), a baseline assessment, emissions inventory, dispersion modelling using CALPUFF and comparison of the predicted concentrations against the Kuwait and International ambient air quality guidelines/standards. A preliminary screening assessment was undertaken using SCREEN3 to determine the monitoring locations for the baseline monitoring campaign.

The Dow Chemical Company (Rohm and Haas) - Advanced Materials, AQIA for a Chemical Manufacturer, New Germany, KwaZulu-Natal, South Africa 2015

Project Manager and Lead Consultant

WSP was appointed to conduct an Air Pollution Assessment in the form of an Atmospheric Impact Report for the proposed Polyol Blending Plant at the Dow Advanced Materials site in New Germany. The assessment consisted of the compilation of a comprehensive emissions inventory to account for emissions from both the existing and proposed operations as well as dispersion modelling using the AERMOD dispersion model to assess the impacts of emissions on the surrounding communities.

South32 Aluminium SA Limited, AQIA for Remediation of a Smelter, Richards Bay, KwaZulu-Natal, South Africa 2015 – 2016

Lead Consultant

WSP was contracted to undertake an air quality impact assessment to determine the impacts of remediating the legacy landfill sites at the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for the



Kirsten Collett

**Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant**

development of a comprehensive emissions inventory; and determination of the impact of the proposed project on the surrounding communities using the AERMOD dispersion modelling software.

**South32 Aluminium SA Limited, AQIA for a Smelter Decommissioning, Richards Bay, KwaZulu-Natal, South Africa
2014 – 2015**

Lead Consultant

WSP was contracted to undertake a screening-level air quality impact assessment for the decommissioning of the Bayside Aluminium Smelter in Richards Bay. Kirsten was responsible for the development of a comprehensive emissions inventory; and determination of the impact of the proposed project on the surrounding communities using the AERSCREEN Tier 1 dispersion modelling software.

**First in Spec Biofuels Ltd, AQIA for a Biodiesel Plant, Coega IDZ, Eastern Cape, South Africa
2011 – 2015**

Lead Consultant

As part of a larger Environmental Impact Assessment for a proposed biodiesel production plant in Coega, WSP was commissioned to conduct a specialist air quality impact assessment for the facility. Kirsten was responsible for compiling the air quality impact assessment which was initially a screening-level assessment and later upgraded to a Tier 2 full air quality impact assessment. The project involved a baseline review of the area; baseline meteorological and pollutant data analysis; emission inventory compilation; dispersion modelling; reporting; and atmospheric emission licence (AEL) compilation.

**Atha-Africa Ventures (Pty) Ltd, AQIA for a Proposed Mine, Wakkerstroom, Mpumalanga, South Africa
2012 – 2014**

Lead Consultant

WSP was commissioned to undertake an air quality impact assessment for a proposed underground coal mine near Wakkerstroom, Mpumalanga as part of a comprehensive environmental and social impact assessment for the mine. Kirsten was responsible for conducting the air quality assessment. The assessment comprised on-site ambient air quality monitoring in order to assess the existing air quality in the region as well as dispersion modelling (using the ADMS (v5) software) to determine the predicted impacts that the proposed mine will have on the existing air quality.

**Apollo Tyres South Africa (Pty) Ltd, AQIA for a Tyre Manufacturer, Durban, KwaZulu-Natal, South Africa
2012 – 2013**

Consultant

WSP was commissioned to perform an air quality impact assessment for a tyre manufacturer to determine the changes in emissions should they replace their existing heavy fuel oil fired boiler with two coal fired boiler equipped with bag filters. Kirsten was responsible for conducting this screening-level air quality assessment through a baseline review of the site; emissions inventory compilation; and determination of the impact of the boiler emissions on the surrounding communities using the SCREEN3 screening-level dispersion modelling software.

**Ferrochrome Furnaces (Pty) Ltd, AQIA for Ferrochrome Production Facility, Rustenburg, North West, South Africa
2012**

Lead Consultant

WSP was commissioned to perform an air quality impact assessment of a proposed ferrochrome production facility in Zinziaville, Rustenburg as part of a larger environmental impact assessment. Kirsten was responsible for conducting the air quality assessment through a baseline review of the site; compilation of a detailed site-specific emissions inventory; determination of the impact of the proposed facility on the surrounding communities using the ADMS dispersion modelling software; and compilation of the atmospheric emission licence (AEL) application.



Kirsten Collett

**Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant**

SIVEST SA (Pty) Ltd, AQIA for a Fuel Depot Recommissioning, Western Cape, South Africa 2012

Consultant

WSP was commissioned as part of a broader environmental impact assessment, to conduct an air quality impact assessment of the recommissioning of the Total Paarden Island fuel storage and distribution terminal near Cape Town. The air quality impact assessment investigated emissions generated as a result of both the construction phase and operational phase of the facility. Kirsten was responsible for the assessment which comprised a baseline review of the site; compilation of a detailed site-specific emissions inventory; estimation of emissions generated from each of the onsite storage tanks through the use of the TANKS 4.0.9 model; and determination of the impact of the proposed facility on the surrounding communities using the SCREEN3 dispersion modelling software.

Noble Resources Ltd, AQIA for a Proposed Oilseeds Processing Plant, Standerton, Mpumalanga, South Africa

2011-2012

Consultant

Noble Resources proposed to construct an oilseeds processing plant in Standerton and required an air quality assessment to determine what impacts the activity would have in the region. Kirsten performed this assessment through a baseline assessment of the site; development of a comprehensive emissions inventory; and determination of the proposed impacts through the use of a Tier 2 atmospheric dispersion model (ADMS)

City of Johannesburg, Ambient Air Quality Assessment during Car Free Day, Johannesburg, South Africa

2007 – 2008

Consultant

This project monitored vehicular emissions from a mobile monitoring station placed alongside the M1 highway in Johannesburg. This was done to evaluate the effectiveness of car free day and to assess whether there was a reduction in emissions on the day. Kirsten was involved in the assessment, analysis and reporting in this specific project.

Air Quality Management

Strandfoam Group (Pty) Ltd, NAEIS submission for a Polyurethane Foam Manufacturer, Strand, Western Cape

2023

Project Manager and Lead Consultant

WSP was appointed to undertake the required National Atmospheric Emissions Inventory System (NAEIS) reporting for the facility. Kirsten was responsible for compiling the emissions inventory for the facility and uploading the necessary information to the NAEIS.

Weir Minerals, Atmospheric Emission Licence (AEL) Audit, Annual Reporting and NAEIS submission for a Foundry, Isando, Gauteng

2021

Project Manager and Lead Consultant

WSP was appointed to undertake an audit of the facility's current AEL to assess the accuracy of what was represented in the AEL as well as to evaluate compliance with the conditions stipulated in the AEL. Additionally, the scope of work included compilation of their Annual Report as well as reporting of emissions onto the National Atmospheric Emissions Inventory System (NAEIS). Kirsten was responsible for conducting the audit, compiling the audit report and annual report and submitting all information onto NAEIS.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

**Sasol Satellite Operations Ekandustria, Atmospheric Emission Licence (AEL) Audit for an Explosives Manufacturer, Ekandustria, Mpumalanga, South Africa
2020**

Project Manager and Lead Consultant

WSP was appointed to undertake an audit of the facility's current AEL to assess the accuracy of what was represented in the AEL as well as to evaluate compliance with the conditions stipulated in the AEL. Kirsten was responsible for conducting the audit and compiling the audit report.

**Anglo American Coal SA, Isibonelo Colliery Air Quality Management Plan, Mpumalanga, South Africa
2019 – 2020**

Project Manager and Lead Consultant

Anglo American Coal SA requested the compilation of an Air Quality Management Plan (AQMP) for the Isibonelo Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the AERMOD dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Transnet Port Terminals Saldanha Bay, Atmospheric Emission Licence (AEL) Audit for a Manganese Multipurpose Terminal, Saldanha, Western Cape, South Africa
2019**

Lead Consultant

WSP was contracted to undertake an audit of the current provisional AEL (PAEL) for the terminal and assist with conversion of the PAEL to a final AEL. The project included a site visit and audit, Client and Authority liaison and assistance with submission of the AEL on the South African Atmospheric Emission Licencing and Inventory Portal (SAAELIP).

**Anglo American Coal SA, Mafube Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2015 – 2016**

Project Manager and Lead Consultant

WSP was appointed for the compilation of an integrated Air Quality Management Plan (AQMP) for the Mafube Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the AERMOD dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Sonae Novobord (Pty) Ltd, Air Quality Management Reports, White River, Mpumalanga, South Africa
2011 – 2015**

Consultant

WSP has been continuously monitoring formaldehyde, suspended particulate matter (PM₁₀) and dust deposition (fallout) concentrations in and around the Sonae Novobord White River plant since 2008. Kirsten was responsible for analysing and assessing the ambient monitoring data and drafting the air quality management reports.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

**Anglo American Coal SA, Combined Integrated Air Quality Management Plan for the Greenside, Kleinkoppje and Landau Collieries, Mpumalanga, South Africa
2013 – 2014**

Lead Consultant

Anglo American Coal SA requested the compilation of a combined integrated Air Quality Management Plan (AQMP) for the Greenside, Kleinkoppje and Landau Collieries in the Mpumalanga province. The AQMP was aimed at becoming a management tool for the collieries going forward. Kirsten was responsible for the compilation of the combined AQMP which was performed through a baseline assessment of activities at each colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory for each colliery; determination of the impact of emissions from each colliery (as well as the combined impact) on surrounding communities using the CALPUFF dispersion modelling software; review of current management and mitigation techniques at each colliery; and development of strategies to minimise any impacts of emissions going forward.

**Columbus Stainless (Pty) Ltd, Fugitive Dust Suppression Plan for a Steel Producer, Middelburg, Mpumalanga, South Africa
2013**

Lead Consultant

WSP was commissioned to compile a fugitive dust suppression plan in order to assess the fugitive dust emanating from a stainless-steel plant in Middelburg. Kirsten was responsible for compiling the fugitive dust suppression plan through on-site dust fallout monitoring; analysis of all historical particulate matter, dust fallout and meteorological data for the site; identification of key emission sources; and provision of mitigation and management measures to limit the impact of fugitive dust going forward.

**Anglo American Coal SA, Greenside Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2012 – 2013**

Lead Consultant

Anglo American Coal SA requested the compilation of an integrated Air Quality Management Plan (AQMP) for the Greenside Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the ADMS dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.

**Anglo American Coal SA, Landau Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa
2012**

Lead Consultant

Anglo American Coal SA requested the compilation of an integrated Air Quality Management Plan (AQMP) for the Landau Colliery in the Mpumalanga province. The AQMP was aimed at improving air quality at the colliery through the identification of main sources of emissions and recommendations to reduce emissions from these sources. Kirsten was responsible for the compilation of the AQMP which was performed through a baseline assessment of activities at the colliery; identification of key emission sources; compilation of a detailed site specific emissions inventory; determination of the impact of emissions from the colliery on surrounding communities using the ADMS dispersion modelling software; review of current management and mitigation techniques at the colliery; and development of strategies to minimise any impacts of emissions from the colliery going forward.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

Sonae Novobord (Pty) Ltd, Strategic Overview of Air Quality Conditions at the Sonae Novobord Plant, White River, Mpumalanga, South Africa

2008 – 2011

Consultant

WSP has been monitoring various air quality aspects in and around the Sonae Novobord White River plant since 2008. Concentrations of formaldehyde, suspended particulate matter (PM₁₀) and dust deposition (fallout) have been continually monitored in terms of the requirements of the NEMA Section 24G Environmental Management Plan. Kirsten was involved in performing a strategic assessment of conditions at the plant, to ascertain whether the air quality has improved over time and whether the conditions set out in the Record of Decision and the Air Quality Management Plan are being met.

Ambient Monitoring

Anglo American Coal SA, Dust Fallout and Particulate Matter Monitoring for nine Collieries, Mpumalanga, South Africa

2016 – 2022

Project Manager

WSP was appointed to manage Anglo American Coal SA's air quality monitoring requirements at nine of their collieries. The contract includes dust fallout monitoring at all nine collieries, while continuous particulate matter (PM₁₀ and PM_{2.5}) monitoring is conducted at seven collieries using mobile custom-designed solar system trailers. Kirsten was responsible for project management and quality control for the project.

Foskor (Pty) Ltd, Dust Fallout and Particulate Matter Monitoring for a Phosphate Mine, Phalaborwa, Limpopo, South Africa

2016 – 2019

Project Manager

WSP was commissioned to manage and maintain a dust monitoring network for Foskor Phalaborwa's phosphate rock operations in the Limpopo Province. The monitoring network comprises 37 dust fallout samplers, and a real-time particulate matter (PM₁₀) monitor. Kirsten was responsible for project management and quality control for the project.

Total South Africa (Pty) Ltd, Leak Detection and Repair Programs for Ten Fuel Depots, South Africa

2016 – 2017

Project Manager

WSP was appointed to conduct leak detection and repair programs at ten of Total South Africa's bulk fuel storage depots as part of their atmospheric emission licence conditions. Kirsten was responsible for project management, data analysis and reporting for the project.

Eskom Holdings SOC Limited, Dust Fallout Monitoring for Kendal Power Station, Kendal, Mpumalanga, South Africa

2016

Project Manager

WSP was commissioned to monitor dust fallout at the Kendal Power Station in Mpumalanga for a six month period. Kirsten was responsible for project management, data analysis and reporting for the project.

Evrast Highveld Steel and Vanadium Corporation Ltd, Dust Fallout Monitoring for a Steel Facility, Mpumalanga, South Africa

2012 – 2015

Project Manager

As part of Evrast Highveld Steel's on-going monitoring program for the assessment of dust generated by the steelworks and associated activities, WSP was commissioned to conduct dust fallout monitoring both on and off site. Monitoring has been performed over time at the site on a monthly basis in accordance with the ASTM D1739 reference method. Kirsten was responsible for data analysis, interpretation and reporting during the



Kirsten Collett

**Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant**

2012 monitoring period. Most recently, Kirsten was responsible for project management during the 2014 and 2015 campaign.

**Evrax Highveld Steel & Vanadium Corporation Ltd, Particulate Matter Monitoring for a Steel Facility,
Mpumalanga, South Africa
2014 – 2015**

Project Manager

WSP was commissioned to monitor particulate matter concentrations at three locations in and around the Evrax Highveld Steel facility using E-sampler monitoring equipment. Kirsten was responsible for project management and reporting for the project.

**Eskom Holdings SOC Limited, Dust Fallout Monitoring for Majuba Power Station, Volksrust,
Mpumalanga, South Africa
2013 – 2015**

Project Manager

WSP was commissioned to monitor dust fallout at the Majuba Power Station in Mpumalanga for a two-year period. Kirsten was responsible for project management, data analysis and reporting for the project.

**Tubular Holdings (Pty) Ltd, Dust Fallout Monitoring, Kendal, Mpumalanga, South Africa
2013 – 2014**

Project Manager

WSP was commissioned to monitor dust fallout and meteorological conditions at the Tubular Holdings workers' living quarters near Kendal, Mpumalanga. The project was initiated to determine the source of dust at this location. Kirsten was responsible for project management; data analysis; and reporting for the project.

**Atlantis Foundries (Pty) Ltd, Dust Monitoring Program for a Foundry, Atlantis, Western Cape, South
Africa
2011**

Data Analyst

WSP was commissioned to provide specialist air quality support and monitoring services to Atlantis Foundries (Pty) Ltd, situated within Atlantis near Cape Town. The project included: dust deposition monitoring, the compilation of an Atmospheric Emission Licence (AEL) for the facility and the development of site-specific dust mitigation and management strategies. Kirsten was involved in assisting with data analysis and interpretation of the results obtained from the monthly monitoring campaigns at the site.

**Sasol New Energy Holding (Pty) Ltd, Air Quality Monitoring for a Proposed Power Plant, Ressano
Garcia, Mozambique
2011**

Field Consultant

WSP was commissioned by Sasol New Energy Holding (Pty) Ltd to undertake an integrated environmental and social impact assessment (ESIA) and bankable environmental, social and health impact assessment (ESHIA) for the proposed gas engine power plant that is to be constructed in Ressano Garcia, Mozambique. As part of this assessment, a specialist air quality study was conducted to assess what impacts the proposed plant may have on air quality in the region. Kirsten was responsible in assisting with the set-up of passive monitoring equipment, dust buckets and a meteorological station at the site.

**Eskom Holdings SOC Limited, European Integrated Project on Aerosol, Cloud, Climate and Air Quality
Interactions, Mpumalanga, South Africa
2007 – 2010**

Technical Consultant

This was an international aerosol project focusing on four developing countries, namely South Africa, India, Brazil and China. It was initiated to provide a comparative set of aerosol emission data between the four countries. Kirsten was involved in the setup and maintenance of the monitoring instrumentation at the South

Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

African site. For this, Kirsten was also involved in an aerosol training course in Hyytiälä, Finland as well as technical training in Leipzig, Germany for the SMPS (Scanning Mobility Particle Sizer) instrument.

Eskom Holdings SOC Limited, Ambient Air Monitoring at the Point of Highest Impact Resulting from Kriel and Matla Power Stations, Mpumalanga, South Africa 2009

Consultant

This study was conducted on the Mpumalanga Highveld in order to increase our understanding of the sources and diurnal variations of various atmospheric species as well as the effects of local meteorology on the concentration of these species. The study included ambient monitoring using a mobile monitoring station. Kirsten was involved in the data analysis, statistical manipulation and reporting.

MSC Thesis

The Atmospheric Nitrogen Budget over the South African Highveld, Mpumalanga, South Africa 2007 – 2009

This project was Kirsten's MSc thesis and was performed in collaboration with Eskom. The project aimed to assess the atmospheric nitrogen cycle in the industrialised Highveld region. The project investigated the various atmospheric nitrogen compounds on the South African Highveld and looked at the dominant sources, the transport and conversion of the species in the atmosphere and in what form they are deposited to the ground. From this it was confirmed that the majority of emitted nitrogen remains in the atmosphere, confirming the trends depicted by satellite technology. Client: Eskom Holdings SOC Limited.

Honours Project

NO_x or Not: Nitrogen Oxide Levels over the South African Highveld, Mpumalanga, South Africa 2006

This was Kirsten's honours project and was performed in collaboration with Eskom. This project aimed to validate the nitrogen dioxide hotspot over the South African Highveld as identified by satellite technology. The prevalent sources of nitrogen dioxide were investigated as well as the diurnal and seasonal distributions. Client: Eskom Holdings SOC Limited.

AWARDS

2009 - MSc Distinction

2008 - Best presentation for paper entitled "The Atmospheric Nitrogen Budget over the South African Highveld".

National Association for Clean Air (NACA) conference

PUBLICATIONS AND PRESENTATIONS

Publications

Collett, K.S., Piketh, S.J. and Ross, K.E. "An assessment of the atmospheric nitrogen budget on the South African Highveld." South African Journal of Science, 2010, pp. #106, 5/6, Article# 220.

Laakso, L., Vakkari, V., Laakso, H., Virkkula, A., Kulmala, M., Beukes, J.P., van Zyl, P.G., Pienaar, J.J., Chiloane, K., Gilardoni, S., Vignati, E., Wiedensohler, A., Tuch, T., Birmili, W., Piketh, S., Collett, K., Fourie, G.D., Komppula, M., Lihavainen, H., de Leeuw, G. and Kerminen, V.-M. "South African EUCAARI – measurements: a site with high atmospheric variability," Atmospheric Chemistry and Physics Discussion. Month 2010, 10, 30691 – 30729.

Ross, K., Broccardo, S., Heue, K-P., Collett (nee Ferguson), K. and Piketh, S. "Nitrogen oxides on the South African Highveld." Clean Air Journal, Month 2007. 16, 2, 6 – 15.



Kirsten Collett

Earth & Environment, Air Quality & Acoustics – Environment & Energy,
Principal Consultant

Presentations

Collett, Kirsten. "The Atmospheric Nitrogen Budget over the South African Highveld." National Association for Clean Air Conference, Nelspruit, Mpumalanga, 2009.

Lee Ann Boyd

Mine Water Management, Water Resource Scientist

CAREER SUMMARY

Lee Boyd is a Water Resource Scientist in the Water Use and Resource Management Team, Mine Water Division of WSP Group Africa (Pty) Ltd with over 25 years of experience. She is a registered Professional Scientist (SACNASP), registration number: 400070/95, and a Water Institute of Southern Africa (WISA) Senior fellow (Membership Number 22180). She gained her professional experience in the fields of water quality management, catchment management and Integrated Water Resources Management. She is responsible for water resource management related projects with emphasis on the water quality management and water resource protection related disciplines and is involved in surface water impact assessments, as well as having been involved in several research projects funded by the Water Research Commission. She also provides specialist water policy and regulatory input where required and has strong skills in project management and co-ordination



Lee has been the project manager or a specialist team member on more than 10 catchment management projects in the past 16 years. These have included project manager for the development of an Integrated Water Quality Management Plan for the Olifants Water Management Area, the development of a Catchment Management Strategy for the Breede-Gouritz Water Management Area and the Determination of water resource classes and Resource Quality Objectives for the Thukela River catchments. She is currently the project manager for the study related to the classification of water resources in the Upper Orange River catchment and the associated Resource Quality Objectives

She has worked closely with stakeholders from various sectors in these catchment studies, as well as being the project manager for the piloting of the waste discharge charge system in the Inkomati-Usuthu Catchment Management Agency (current).

Country of work experience gained is predominantly South Africa, however she has done work in Ghana, where she was part of a team undertaking a water basin assessment in the Tano River catchment, and as the surface water specialist on teams undertaking Environmental Impact Assessments for mines in the Democratic Republic of the Congo, Zambia and Mozambique.

1.5 years with WSP

Area of expertise

Catchment Assessments
Water Quality Management Plans
Project Management
Surface Water Impact Assessments
Integrated Water and Wastewater Management Plans
Water Use Authorisations

25+ years of experience

Language

English – Fluent
Afrikaans – Fluent

EDUCATION

| | |
|--|------|
| MSc. Water Utilisation, University of Pretoria | 1994 |
| BSc. Honours, University of the Witwatersrand Johannesburg | 1990 |



Lee Ann Boyd

Mine Water Management, Water Resource Scientist

BSc. Biological Sciences, University of the Witwatersrand Johannesburg 1987

ADDITIONAL TRAINING

| | |
|--|------|
| Golder Associates Certificate (Internal) – Centre of Excellence | 2014 |
| Golder Associates Certificate (Internal) – Manager Excellence | 2011 |
| Advanced course in Groundwater – (USEPA / UNLV) | 2003 |
| Water Quality Management – Advanced Course, University of Pretoria | 2000 |
| Certificate in Project Management, Intec College | 1997 |

PROFESSIONAL MEMBERSHIPS

| | |
|--|------|
| Registered Scientist (Prof. Sci. Nat, 400070/95) | 1995 |
| Senior Fellow of the Water Institute of Southern Africa No 22180 | 2016 |

PROFESSIONAL HISTORY

| | |
|--|-------------------------|
| WSP Group Africa (Pty) Ltd | July 2021 – present |
| Golder Associates Africa (Pty) Ltd | August 2006 – June 2021 |
| Department: Water Affairs and Forestry – Pretoria | 1998 – 2006 |
| Cydna Laboratories (Jhb City Council) – Johannesburg | 1996 – 1998 |
| Northern Works STW (Jhb City Council) – Johannesburg | 1993 – 1996 |
| Cydna Laboratories (Jhb City Council) – Johannesburg | 1988 – 1992 |

PROFESSIONAL EXPERIENCE

Water Resources

Glencore FerroAlloys, Determination of catchment-based water stewardship targets, South Africa 2022

Project Manager and Technical inputs

Setting of catchment-based water stewardship targets for the 14 Glencore FerroAlloys operations in the Crocodile (West), Upper Olifants and Steelpoort catchments.

Department of Water and Sanitation, Determination of water resource classes and Resource Quality Objectives for catchments of the Thukela River, South Africa 2019 to 2022

Project Manager and technical inputs

Determination of water resource classes and Resource Quality Objectives for catchments of the Thukela River in the Pongola Mtamvuna Water Management Area

Water Research Commission, Domestic Water Quality Guidelines, Gauteng, South Africa 2016 to 2017

Technical specialist inputs

Involved in the development of a decision support tool for risk-based Water Quality Guidelines for Domestic Use



Lee Ann Boyd

Mine Water Management, Water Resource Scientist

**Department of Water and Sanitation, Development of the Integrated Water Quality Management Plan for the Olifants Water Management Area, South Africa
2016 to 2018**

Project Manager and technical inputs

Development of the Integrated Water Quality Management Plan for the Olifants Water Management Area. Baseline water quality assessment, setting of water quality planning limits, waste load determination and a management strategy was developed for the catchment.

**Breede-Gouritz Catchment Management Agency, Catchment Management Strategy update, Western Cape, South Africa
2016 to 2018**

Project Manager and Technical inputs

Update of the Catchment Management Strategy for the Breede and Gourits catchments of the Breede-Gouritz Water Management Area

**Newmont, Watershed studies for the Tano River, Ghana
2016**

Specialist inputs and review

Watershed studies for the Tano River, including stakeholder engagement

**Department of Water and Sanitation, Test implementation of the Waste Discharge Charge System, South Africa
2013**

Technical Inputs and Project Coordinator

Involvement of the test implementation of the Waste Discharge Charge System in the Upper Olifants and Upper Vaal catchments

**Department of Water and Sanitation, Determination of the management classes for significant water resources in the Crocodile (West)/ Marico WMA and Mokolo and Matlabas catchments of the Limpopo WMA, South Africa
2012 to 2014**

Project Manager and Technical Inputs

Classification of significant water resources in the Crocodile (West)/Marico WMA and the Mokolo and Matlabas catchments of the Limpopo WMA

Joint Forum (Anglo/BHP/Exxaro), Highveld coalfields water resources, water supply and water requirements assessment, South Africa

Project Coordinator and Technical Inputs

2006 and 2013

A water resources, water supply and water requirements assessment of the Highveld Coalfields area of the Upper Olifants catchment

PROFFESIONAL EXPERIENCE

Various

**Various mines and industries, Surface Water Impact Assessments, South Africa/Ghana/ Mozambique, Zambia, Democratic Republic of the Congo
Ongoing**

Project Manager, Technical Inputs and Review

Surface water impact assessments including assimilative capacity assessments for various mines and industries in South Africa, Ghana, Mozambique, Zambia and Democratic Republic of the Congo.

**Various mines and industries, Integrated Water and Waste Management Plans, South Africa
Ongoing**

Lee Ann Boyd

Mine Water Management, Water Resource Scientist

Project Manager, Technical Inputs and Review

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

Various mines and industries, Integrated Water and Waste Management Plans, South Africa Ongoing

Project Manager, Technical Inputs and Review

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

Water Research Commission, Management Options for EDCs in Catchments, South Africa 2008

Project Coordinator and Technical Inputs

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

PUBLICATIONS / PRESENTATIONS / CONFERENCES

Publications

Moodley P and Boyd L (2017) Integrated Water Resources Management: Regulatory Aspects in the South African context. Poster presentation at the 14th International Water Association Specialist Conference on Watershed and River Basin Management

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

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

Conferences

Boyd, L and Mosoa M (2017) An Integrated Water Quality Management Plan for the Olifants River System, 14th International Water Association Specialist Conference on Watershed and River Basin Management

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

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

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

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

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

Boyd L.A. "Diffuse Pollution in an Urban Context and its Management under the National Water Act" IWA/WISA Specialist Conference, August 2005, South Africa.

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



Lee Ann Boyd

Mine Water Management, Water Resource Scientist

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

Journal

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



herewith certifies that

Lee Ann Boyd

Registration Number: 400070/95

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Microbiological Science (Professional Natural Scientist)

Effective **16 August 1995**

Expires **31 March 2026**



Chairperson

Chief Executive Officer





Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

CAREER SUMMARY

Priya is a water resource scientist, with a diverse technical portfolio in catchment management, water quality management, water stewardship, water resource protection and integrated water resource management. Working on a broad spectrum of water related projects – site and catchment related technical studies, basin studies, research and knowledge-based products and advisory services both in the public and private sector. She has a sound knowledge of integrated water management and application of technical solutions with both a water resource and site-based focus. She also provides water policy and regulatory guidance as required and has strong skills in project management and co-ordination. She has worked on a number of basin wide studies, catchment area based and baseline assessments, impact assessments, guidelines development, water resource system analyses and has an in-depth understanding of water resource systems and the interaction of source/site-based aspects in the management of water resources.

Priya has a strong understanding of the institutional environment governing water resource management in South Africa and has worked with various stakeholders, research bodies and national government. In recent years, Ms Moodley has been involved in the development of water resource protection measures for a number of basins in South Africa (currently the Orange River), as well projects related to catchment-based water stewardship and advisory services related to water resource impact assessments. She is a fellow of the Water Institute of South Africa.

3 years with WSP

Area of expertise

Water Quality Management
Surface Water Assessments
Catchment Management
Water Resource Protection
Integrated Water Resource Management
Water Stewardship
Water Policy & Regulatory Guidance
Project Management & Co-ordination

25 years of experience

Language

English – Fluent
Afrikaans – Fluent

EDUCATION

| | |
|--|------|
| MSc Water and Environmental Management, University of Durban Westville, Durban | 1998 |
| BSc (Hons Microbiology), University of Durban Westville, Durban | 1996 |
| BSc (Microbiology and Biochemistry), University of Durban Westville, Durban | 1995 |

PROFESSIONAL MEMBERSHIPS

| | |
|---|-----------------|
| WISA – Fellow Member, Water industry of South Africa - Member No. 23270 | 2005 to present |
|---|-----------------|



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

PROFESSIONAL HISTORY

| | |
|---|------------------------------|
| WSP Group Africa (Pty) Ltd | July 2021 – present |
| Golder Associates Africa (Pty) Ltd | March 2009 – June 2021 |
| Zitholele Consulting (Pty) Ltd – Johannesburg | April 2005 – February 2009 |
| Department of Water Affairs and Forestry – Pretoria | August 1999 – March 2005 |
| Department of Microbiology – University of Durban | January 1997 – December 1997 |

PROFESSIONAL EXPERIENCE

Integrated Water Resource Management

Water Research Commission, Updating the Present Ecological Status (PES)/Ecological importance and Sensitivity (EIS) Database, Pretoria, South Africa
2023 – 2026

Project Manager: Updating of the 2011 PES/EIS Database for Primary, Secondary Catchments on a Sub-Quaternary Reach Scale in the Mzimvubu and Tsitsikamma Water Management Area (Eastern Cape Region)

Water Research Commission, Updating the Present Ecological Status (PES)/Ecological importance and Sensitivity (EIS) Database, Pretoria, South Africa
2023 – 2026

Technical Team Member: Water Quality

Updating of the 2011 PES/EIS Database for Primary, Secondary Catchments on a Sub-Quaternary Reach Scale in the Vaal-Orange Water Management Area (Central Region)

Department of Water and Sanitation, System Operation Analysis, Pretoria, South Africa
2020 – 2023

Project Manager

Development of drought operating rules development of operating rules for water supply and drought management of stand-alone dams, schemes and integrated systems in the northern planning area of South Africa.

Department of Water and Sanitation, Reconciliation Strategies, Pretoria, South Africa
2021 – 2023

Technical Team Member: Water Quality

Provision of Support on the Development, Updating and Review of Strategies to reconcile Water Availability and Requirements in the East Planning Area.

Joint Water Forum, Olifants River Development Project, Pretoria, South Africa
2019

Technical Team Member

Further Yield Analyses of the Olifants System (North): Water Quality Assessment and Mine Water Discharges.

Water Research Commission, Mining Best Practices & Case Studies, Pretoria, South Africa
2019 – 2020

Technical Team Member: Regulatory/Water Resources and Mining Perspective in South Africa

Water Conservation / Water Demand Management in the South African Mining Industry: A Compendium of Best Practices and Case Studies.



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

Water Research Commission, Mine Water Atlas, Pretoria, South Africa

2015 – 2016

Technical Team Member: Water Quality/Ecological Status

Development of a Mine Water Atlas: Surface water risk assessment.

Department of Water Affairs, Reconciliation Strategies, Pretoria, South Africa

2013

Technical Team member

Development of Reconciliation strategies for Bulk Water Supply Systems: Orange River - Water Quality assessment and reporting.

ORASECOM (Orange-Senqu River Commission), Water Resource Management, Pretoria, South Africa

2013

Technical Team member

Support to the Phase 3 of the Orange-Senqu Basin-Wide Integrated Water Resources Management Plan.

Department of Water Affairs and Forestry, Water Resources Planning, Pretoria, South Africa

2012 – 2013

Project Co-ordinator/Key Support

Water quality TDS modelling and Water Resource Planning Model setup for the Orange River System.

Department of Water Affairs and Forestry, Development of Reconciliation Strategies, Upper Vaal, South Africa

2012

Technical Team Member

Development of Water Reconciliation Strategies for small towns in the Central Region.

Department of Water Affairs and Forestry, Water Reconciliation Strategy for Kwazulu-Natal Coastal Metropolitan Areas, Pretoria, South Africa

2011 – 2012

Project Co-ordinator

Provision of support to Strategy Implementation and Maintenance.

ORASECOM (Orange-Senqu River Commission), Water Resource Management, Pretoria, South Africa

2011

Technical Team member

Support to the Phase 2 of the Orange-Senqu Basin-Wide Integrated Water Resources Management Plan.

Department of Water Affairs and Forestry, Catchment Studies, Pretoria, South Africa

2006 – 2007

Assistant Project Manager and Catchment Assessment

Water quality situation assessment of the Leeuspruit and Taaiboschspruit catchment.

Catchment Management/Water Stewardship

Glencore Feralloys, Catchment Water Targets, Rustenburg, South Africa

2022

Technical Team Member

Development of catchment water targets in the Olifants and Crocodile (West) catchment areas (water stewardship).

South32, SA Coal Holdings, Water Stewardship, Witbank, South Africa

2020 – 2022

Project Manager and Technical Resource

Establishment of Environmental Management Committees within Khutala, Wolwekrans and Ifalethu Collieries' Catchment Areas (ongoing).

Department of Water Affairs and Forestry, Catchment Studies, Pretoria, South Africa



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

2006 – 2007

Assistant Project Manager and Catchment Assessment

Water quality situation assessment of the Leeuspruit and Taaiboschspruit catchment.

Water Research Commission, Pretoria, South Africa

2007

Project Manager/Legal Review

Development of the South African Sludge Guidelines Series.

Water Quality Management/Surface Water Assessments

Water Research Commission, Waste Discharge Charge System, Pretoria, South Africa

2022 – 2025

Key Researcher

Piloting the Implementation of the Waste Discharge Charge System in The Crocodile (East) Catchment.

uMngeni- uThukela Water, Waste Discharge Charge System, Pietermaritzburg South Africa

2024

Project Manager: Water Quality, Load assessments, Options Analysis

Undertaking studies to determine whether the WDCCS would be an appropriate instrument for addressing water quality issues in catchments of the Greater uMngeni and investigate alternative financial instruments and /or models for improving water quality.

Lebalele Water User Association, Environmental Flows Consequences Assessment, Pretoria South Africa

May-June 2024

Project Manager

Consequence Assessment of Flag Boshelo operating rules on Environmental Flows in Middle Olifants

Nkomati Joint Venture - African Rainbow Minerals, Short-term Wastewater Discharge Assessment Mpumalanga, South Africa

2023-2024

Project Manager & Technical Team Member

Assessment of the potential for short-term discharge of mine impacted water into the Gladdespruit

Barrick Lumwana Mining Company, Solwezi, Zambia

2022

Technical Reviewer

Baseline Water Quality Assessment.

ERG Africa, Metalkol RTR Operations, Surface Water Assessment Kolwezi, Democratic Republic of Congo

2017 and 2022 Update

Key Technical Team Member

Environmental and Social Impact Assessment: Surface Water Assessment.

Water Research Commission, South African Water Quality Guidelines, Pretoria

2020 – 2022

Project Manager

Development of Risk-based Water quality guidelines for the Industrial Water User.



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

South32 SA Coal Holdings (Pty) Ltd, Johannesburg, South Africa

2019

Technical Team

Duty of Care requirements: Compliance at of each of South32's coal operations in Mpumalanga, South Africa – Surface Water Component.

Water Research Commission, South African Water Quality Guidelines, Pretoria, South Africa

2018 – 2020

Project Manager

Development of Risk Based Water quality guidelines: Livestock Watering and Aquaculture Water Users.

Water Research Commission, South African Water Quality Guidelines, Pretoria, South Africa

2016 – 2018

Project Manager

Development of Risk Based Water quality guidelines: Domestic Water User.

Chamber of Mines, Project title, Pretoria, South Africa

2012

Technical Team

Water Quality status assessment of key mining catchments in South Africa.

Department of Water Affairs and Forestry, Reconciliation Studies for the Integrated Vaal River System, Pretoria, South Africa

2009 – 2011

Assistant Project Manager and Technical Team

Development of Integrated Water Quality Management Plan for the Vaal River System.

Department of Water Affairs and Forestry, Water Quality Planning Systems, City, South Africa

2011

Technical Team Member Business Support

Development of Water Quality Status Maps - Technical analysis and map development.

Department of Water Affairs and Forestry, Water Quality in South Africa - Planning Level Review Pretoria, South Africa

2011

Technical Lead

Technical analysis and report compilation on National Water Quality Status of South Africa surface water resources.

Department of Water Affairs and Forestry, Water Quality Assessment, City, South Africa

2008 – 2010

Project Manager

Orange River System Assessment of water quality data requirements for planning purposes.

Department of Water Affairs and Forestry, Revision of the South African Water Quality Guidelines, City, South Africa

2007 – 2008

Project Co-ordinator and Assistant Manager

Development of the South African Risk based Water Quality Guidelines: Philosophy development.

Department of Water Affairs and Forestry, Olifants River Water Resource Management Plan Development, Pretoria, South Africa

2006 – 2008

Technical Team Member: Water Quality

Water quality input to the development of an Integrated Water Resource Management Plan for the Upper and Middle Olifants River.



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

Water Research Commission, Methodology for Helminth Ova, Pretoria, South Africa

2007 - 2008

Project Manager

Development of the methodology for the extraction, identification and enumeration of Helminth ova.

Water Resource Protection

Department of Water and Sanitation, Water Ecosystems Management, Pretoria, South Africa

2023 – 2026

Project Manager

Water Resource Classification and Determination of Resource Quality Objectives in the Lower Orange catchment.

Department of Water and Sanitation, Resource Directed Measures, Pretoria, South Africa

2019 – 2022

Assistant Project Manager

Water Resource Classification and Determination of Resource Quality Objectives in the Thukela catchment.

Department of Water and Sanitation, Reserve Determination Studies, Pretoria, South Africa

2017 – 2018

Project Manager

Gazetting of the Reserve for the Vaal River Catchment.

Department of Water and Sanitation, Water Resource Protection, Pretoria, South Africa

2015 – 2017

Project Manager

Development of Resource Quality Objectives for the Mokolo, Matlabas, Crocodile West and Marico Catchments.

Department of Water and Sanitation, Reserve Determination Studies, Pretoria, South Africa

2015 – 2017

Project Manager

Gazetting of the Reserve for Olifants Letaba.

Department of Water Affairs, Water Resource Protection, Pretoria, South Africa

2013 – 2014

Project Manager

Determination of Resource Quality Objectives for the Middle Vaal Water Management Area.

Department of Water Affairs, Reserve Determination Studies, Pretoria, South Africa

2010 – 2012

Assistant Project Manager

Comprehensive Reserve Determination for the Integrated Vaal River System: Middle, Lower Vaal and Water Quality.

Department of Water Affairs, Water Resource Classification Studies, Witbank, South Africa

2011 – 2013

Project manager, Co-ordinator and Key Support.

Water Resource Classification of the significant Water Resources in the Olifants Water Management Area.

PUBLICATIONS & PRESENTATIONS

Publications



Priya Moodley

Earth & Environment, Water Management – Water Resource Scientist

Water Research Commission, TT 874/1/21. Revision of the 1996 South African Water Quality Guidelines: Volume 3 – Industrial Water Use: Development of a Risk-based Approach (WRC Project No. C2020/2021-00144).

Water Research Commission, Development of a risk-based approach for assessing livestock watering and aquaculture water use (WRC Project No. K5/2817//4)

Moodley P and Boyd L (2017) Integrated Water Resources Management: Regulatory Aspects in the South African context. Poster presentation at the 14th International Water Association Specialist Conference on Watershed and River Basin Management

Standards Methods for the Recovery and Enumeration of Helminth Ova in Wastewater, Sludge, Compost and Urine–Diversion Waste in South Africa, Report TT322/08. March 2008

Towards Balancing Water Resource Protection with Water Resource Use and Development: Integrated Water Quality Management in South Africa J.J. Van Wyk, P Moodley, and P. Viljoen 2nd International Symposium on IWRM, Stellenbosch, South Africa, 2003.

Water Quality Management in The New Millennium: Towards a National Water Quality Management Framework Policy for South Africa

J.J. Van Wyk, P Moodley, SAP Brown and P. Viljoen
Water Institute for South Africa, Durban, South Africa, 2002



Shavaughn Davis

Earth and Environment – Ecologist

CAREER SUMMARY

Shavaughn Davis has 17 years working experience as an ecologist, with a specialisation in wetland ecology. She has experience conducting wetland delineation and assessment studies as part of scoping assessments, environmental impact assessments, wetland offset projects and reserve determination studies for a diversity of projects ranging from urban and linear infrastructure developments to coal and platinum group mining projects. Shavaughn has also been involved in the development of wetland rehabilitation, management and monitoring plans, and the execution of ongoing wetland monitoring. In addition to her work as a wetland specialist, she is a qualified zoologist and has undertaken numerous faunal surveys, both as part of wetland ecology assessments, and as part of larger biodiversity assessments for both urban and mining projects.

Her experience is focussed on the wetlands of the Highveld region of South Africa but extends to include peat lands of Lesotho and Mozambique and wetlands of the Northern Cape, Eastern Cape and Limpopo Provinces of South Africa, the Okavango Delta in Botswana, and the Copperbelt of northern Zambia. SACNASP registered Professional Natural Scientist (Zoological & Ecological Science).

Countries of work experience include South Africa, Mozambique, Botswana, Lesotho, Zambia.

17 years of experience

Areas of expertise

Wetland Ecology
Wetland Delineation & Assessment
Wetland Risk Assessment
Environmental Impact Assessment
Wetland Monitoring, Management and Rehabilitation Planning
Wetland Offset Development and Evaluation
Terrestrial Ecology

Language

English – Fluent
Afrikaans – Basic

EDUCATION

Master of Science, Zoology, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa 2006
Bachelor of Science (Hons), Zoology, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa 2004
Bachelor of Science, Zoology & Botany, University of Port Elizabeth, Port Elizabeth, South Africa 2003

ADDITIONAL TRAINING

Google Project Management: Professional Certificate 2024



Shavaughn Davis

Earth and Environment – Ecologist

Introduction to WET-health Version 2 training workshop, Western Cape Wetlands Forum in partnership with

the SANBI, DEA, FRC and SAEON 2019

Introduction to environmental law and policy, University of North Carolina at Chapel Hill 2019

Official DWS section 21 (c) and (i) water use authorisation course, Department of Water and Sanitation 2018

Wetland plant identification training course, Water Research Commission 2017

Matlabas mire: stratigraphy and flows: mire typology, Marakele allwet summer school programme 2014

Advanced wetland delineation course, University of Pretoria 2010

PROFESSIONAL MEMBERSHIPS

SACNASP - Pri.Sci.Nat South African Council for Natural Scientific Professions, Professional Natural Scientist No: 115025 2016

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd, South Africa December 2024 - present

WCS Scientific (Pty) Ltd, South Africa 2017 – 2024

Wetland Consulting Services (Pty) Ltd, South Africa 2010 – 2024

Okavango Buffalo Research Project, Botswana 2008

Wetland Consulting Services, South Africa 2007 – 2008

PROFESSIONAL EXPERIENCE

Wetland Habitat Assessment

**Sibanye-Stillwater SA Platinum Operations, Ecologically Sensitive Areas Delineation Project, Northwest and Limpopo Provinces, South Africa
2021-2024**

Wetland Ecologist/Project Manager

Identification, delineation and baseline assessment of wetlands, rivers and other watercourses with the Sibanye-Stillwater Rustenburg and Blue Ridge Operational Areas. Management of specialists responsible for other ecological studies.

**Jones & Wagener (Pty) Ltd on Behalf of Sasol, Subsidence Risk Assessment Project, Mpumalanga and Free State Provinces, South Africa
2018**

Wetland Ecologist

Wetland delineation and baseline assessment in the Secunda and Sasolburg areas to inform surface subsidence risk assessments.



Shavaughn Davis

Earth and Environment – Ecologist

**Sasol Petroleum Mozambique Limitada and Sasol Petroleum Temane Limitada, Critical Habitat Biodiversity Assessment, Mozambique
2015**

Wetland Ecologist

Undertook a coastal stream habitat assessment as part of a Critical Habitat Biodiversity Assessment of the Nhangonzo Coastal Stream. Included sampling and describing peat profiles across sections of the wetland as well as a determination of the health and ecological importance of the wetland.

**EIMS (Pty) Ltd, Algoa Basin Oil and Gas Production Project, Eastern Cape, South Africa
2015**

Wetland Ecologist/Project Manager

Specialist wetland assessment as part of the scoping phase for a proposed crude oil production project north of the Alexandria Dunefield.

Wetland GN4167 Risk Assessments

**Seriti, Kriel Colliery, Mpumalanga Province, South Africa
2025**

Wetland Ecologist

GN4167 wetland and water use risk assessment for proposed drilling of boreholes at the Seriti Kriel Colliery.

**Eskom, Komati Power Station, Mpumalanga Province, South Africa
2025**

Wetland Ecologist

GN4167 wetland and water use risk assessment for the proposed Eskom Komati Solar PV and BESS project.

**Zyntha Consulting (Pty) Ltd on behalf of Glencore Operations South Africa, Sudor Mine Project, Mpumalanga Province, South Africa
2022-2023**

Wetland Ecologist

Wetland and water use risk assessment for proposed drilling of geological and groundwater monitoring boreholes within the proposed Sudor Opencast Mine Area.

Wetland Impact Assessments - Coal and Platinum Group Mining

**WSP on Behalf of Seriti, Khutala KLX Pit 1 Project, Mpumalanga Province, South Africa
2024**

Wetland Ecologist

Wetland delineation, baseline assessment and impact assessment for proposed surface infrastructures and activities at the Khutala Colliery.

**SRK Consulting on Behalf of Thungela, Elders Irrigation Project, Mpumalanga Province, South Africa
2023-2024**

Wetland Ecologist/Project Manager



Shavaughn Davis

Earth and Environment – Ecologist

Undertook the baseline wetland assessment and impact assessment needed to inform a proposed irrigation project being planned by the Thungela Elders Colliery.

**Coastal & Environmental Services (Pty) Ltd on behalf of Kenmare Moma Mining (Mauritius) Limited, Nataka Mine Project, Mozambique
2022-2024**

Wetland Ecologist

Wetland assessment and impact assessment for a proposed Titanium minerals mining project and tailings storage facility. Included identification and delineation of wetlands likely to be impacted, identification and profiling of peat, and assessment of potential impacts.

**Alta van Dyk Environmental Consultants on Behalf of Stillwater SA Platinum Operations, Various mine surface infrastructure projects, Northwest Province, South Africa
2021-2024**

Wetland Ecologist

Undertaking wetland risk (GN509/GN4167) and impact assessments of various mine surface infrastructures (pipelines, TSF's, stormwater infrastructure, etc.) to inform and support the required authorisation process.

**JMA Consulting (Pty) Ltd on Behalf of Sasol, Sasol Shondoni, Block 8 & Middelbult Project, Mpumalanga Province, South Africa
2020-2021**

Wetland Ecologist

Specialist wetland assessment as part of the EIA for proposed coal mining, including field assessment of wetlands, impact assessment, development of mitigation measures.

**Golder Associates Africa on Behalf of Anglo-American Thermal Coal, Metsimaholo (Coalbrook) Mining Project, Free State Province, South Africa
2018**

Wetland Ecologist

Specialist wetland assessment as part of the EIA for proposed expansion of an existing coal mine, including field assessment of wetlands, impact assessment, development of mitigation measures.

**SRK Consulting on Behalf of Anglo-American Thermal Coal, Setlabotsha Project, Mpumalanga Province, South Africa
2016**

Wetland Ecologist/Project Manager

Wetland delineation and impact assessment of various conveyor routes, surface infrastructure and underground mining areas for the Setlabotsha Project near Standerton.

**Anglo American Thermal Coal, New Largo Mining Project, Mpumalanga Province, South Africa
2013**

Wetland Ecologist

Wetland delineation and ecological assessment of specific wetland systems along the Saaibospruit targeted for potential inclusion in the wetland offset strategy.



Shavaughn Davis

Earth and Environment – Ecologist

**Jones & Wagener (Pty) Ltd on Behalf of Xstrata Coal South Africa, ATCOM Dragline Relocation Project, Mpumalanga Province
2013**

Wetland Ecologist

Wetland baseline and environmental impact assessment for a proposed mine infrastructure relocation project.

**Jones & Wagener (Pty) Ltd on Behalf of BHP Bilton, Wolwekrans Colliery - Boschmanskrans Section Extension Project, Mpumalanga Province, South Africa
2012**

Wetland Ecologist

Specialist wetland delineation and assessment of identified EWR sites as part of the Wetland Reserve Study.

**GCS (Pty.) Ltd., Golden Valley Mining Project, Gauteng Province, South Africa
2011**

Wetland Ecologist

Undertook wetland and riparian delineation and Screening and Risk Assessment of areas identified for proposed tailings facilities.

Wetland Impact Assessments - Linear and Urban/Rural Infrastructure Development

**Clean Stream Environmental Consultants on Behalf of Seriti Coal, New Denmark Water Reticulation Circuit Project, , Mpumalanga Province, South Africa
2022-2024**

Wetland Ecologist/Project Manager

Undertook a wetland delineation, assessment, and impact/risk assessment of the proposed development to support environmental authorisation applications required.

**Mills and Otten Environmental Consultants, Copperleaf Residential Estate Development Project, Gauteng Province
2016 & 2018**

Wetland Ecologist

Wetland delineation, assessment and impact assessment for the addition of new areas to an existing residential estate.

**Mills and Otten Environmental Consultants, Copperleaf Residential Estate Development Project, Gauteng Province
2013**

Wetland Ecologist

Wetland delineation, assessment and impact assessment for the development of a new residential estate.

**Seaton Thomson & Associates, Wits Rural Facility Expansion Project, Limpopo Province, South Africa
2013**



Shavaughn Davis

Earth and Environment – Ecologist

Wetland Ecologist

Specialist baseline wetland and riparian assessment and impact assessment for a proposed facilities expansion.

Mills and Otten Environmental Consultants, Highveld Mushroom Farm Project, Gauteng Province, South Africa

2012

Wetland Ecologist

Wetland delineation and impact assessment for the proposed establishment of a new mushroom farm development.

TGM Environmental Services cc, Mamelodi Road and Stormwater System Project, Gauteng Province, South Africa

2012

Wetland Ecologist

Wetland delineation, impact assessment and compilation of a conceptual wetland rehabilitation plan for the proposed upgrading of roads and stormwater systems in a residential area.

Clean Stream Environmental Services: Coalfields cc, Botshabelo Game Reserve Residential Development Project, Mpumalanga Province, South Africa

2011

Wetland Ecologist

Wetland delineation, functional assessment and impact assessment for the proposed establishment of a rural residential development.

Nzumbululo Heritage Solutions, Burgersfort Eskom Powerlines Project, Limpopo Province, South Africa

2010

Wetland Ecologist

Riparian delineation and impact assessment for the proposed establishment of Eskom powerlines near Burgersfort.

Wetland Rehabilitation & Management Planning and Monitoring

Kenmare Moma Mining (Mauritius) Limited, Nataka Mine Project, Mozambique

2024

Wetland Ecologist/Project Manager

Collection of baseline wetland monitoring data, compilation of the baseline monitoring report and development of a construction monitoring plan.

Lesotho Highlands Development Authority, LHWP Phase II Baseline Wetlands Survey and the Development of the Conservation Action and Monitoring Plan, Lesotho

2023-2024

Wetland Ecologist

Detailed assessments of the baseline condition of the Polihali wetlands to inform their conservation and rehabilitation needs, and to develop a comprehensive Lesotho Highlands Water project wetlands conservation and monitoring plan that is inclusive of all the phases of the project.



Shavaughn Davis

Earth and Environment – Ecologist

**Glencore Operations South Africa, South Witbank Pipeline Monitoring, Mpumalanga Province, South Africa
2023**

Wetland Ecologist

Undertook annual operational monitoring of wetlands affected by pipeline infrastructure and assessment against water use licence conditions.

**Zyntha Consulting (Pty) Ltd on behalf of Glencore Operations South Africa, Sudor Mine Project, Mpumalanga Province, South Africa
2022-2023**

Wetland Ecologist

Post construction wetland monitoring of geological and groundwater monitoring boreholes drilled within the proposed Sudor Opencast Mine Area.

**Glencore Operations South Africa, Tweefontein and Tweefontein South Wetland Management Plan Project, Mpumalanga Province, South Africa
2022-2024**

Wetland Ecologist/Project Manager

Development of management plans for prioritised wetland units with the Tweefontein and Tweefontein South areas. Included assessment of wetland PES, IS, eco-services, vegetation composition and identification of necessary management measures.

**Alta van Dyk Environmental Consultants cc, Longlake Ext 34 Development Project, Gauteng Province, South Africa
2021-2022**

Wetland Ecologist

Compilation of a wetland rehabilitation and management plan for a site proposed for residential and commercial development.

**GreenGab, Isibonelo Colliery Wetland Offset Detailed Design Project, Mpumalanga Province, South Africa
2019-2020**

Wetland Ecologist/Project Manager

Baseline wetland monitoring, development of a wetland vegetation rehabilitation and management plan, and application of the GN509 Risk Assessment in support of the detailed engineering design of wetland interventions.

**Clean Stream Biological Services on Behalf of Universal Coal, Glisa and Eerstelingsfontein Coal Mine Biomonitoring Project, Mpumalanga Province, South Africa
2019-2020**

Wetland Ecologist/Project Manager

Repeat wetland monitoring of wetlands present within the Glisa and Eerstelingsfontein Coal Mines in the Mpumalanga Province in order to comply with the conditions of Section 21c and 21i water uses as included in the approved Water Use Licences (WUL) issued to each of the two mines



Shavaughn Davis

Earth and Environment – Ecologist

Clean Stream Biological Services on Behalf of Exxaro NBC, Eerstelingsfontein Coal Mine Project, Mpumalanga Province, South Africa

2018

Wetland Ecologist/Project Manager

Establishment and implementation of a wetland monitoring programme for the Eerstelingsfontein Coal Mine.

Clean Stream Biological Services on Behalf of Exxaro NBC, Glisa Coal Mine Project, Mpumalanga Province, South Africa

2017-2018

Wetland Ecologist/Project Manager

Establishment and implementation of a wetland monitoring programme for the Glisa Coal Mine, and development of a wetland management and rehabilitation plan.

Wetland Offset Strategy Development and Evaluation

Thungela Thermal Coal, Isibonelo Colliery Wetland Offset Evaluation, Mpumalanga Province, South Africa

2023

Wetland Ecologist

Review of the implemented rehabilitation interventions within targeted wetlands at Isibonelo Colliery and determination of the functional gains achieved through rehabilitation to date.

Zutari (Pty.) Ltd., Union Colliery, Mpumalanga Province, South Africa

2021

Wetland Ecologist

Undertook wetland delineation, baseline assessment and development of a wetland rehabilitation/offset strategy.

Jaco-K Consulting, Middelkraal Colliery Project, Mpumalanga Province, South Africa.

2019

Wetland Ecologist/Project Manager

Specialist wetland assessment and development of a wetland offset strategy to address wetland losses associated with opencast coal mining at the Middelkraal Colliery.

Glencore Operations South Africa, Glencore Impunzi East Opencast Coal Mining Project, Mpumalanga Province, South Africa

2017

Wetland Ecologist

Development of a wetland mitigation and offset strategy to address calculated residual impacts associated with the proposed iMpunzi East Project.

African Exploration Mining and Finance Corporation (SOC) LTD, Vlakfontein Extension Project, Mpumalanga Province, South Africa

2016-2017

Wetland Ecologist



Shavaughn Davis

Earth and Environment – Ecologist

Undertook wetland delineation, baseline assessment and development of a wetland mitigation/offset strategy to address calculated residual impacts associated with the proposed Vlakfontein extension project.

South32 SA Coal Holdings, Khutala Life Extension Project, Mpumalanga Province, South Africa

2016-2017

Wetland Ecologist

Undertook wetland delineation, baseline assessment and development of an onsite and offsite wetland mitigation/offset strategy to address calculated residual impacts associated with the proposed Khutala Life Extension Project.

Golder Associates Africa on Behalf of The Mafube Coal Mining (Pty) Ltd company, Mafube Life Extension Project, Mpumalanga Province, South Africa

2015

Wetland Ecologist

Undertook wetland delineation, baseline assessment and development of a wetland mitigation/offset strategy to address calculated residual impacts associated with the proposed Mafube Life Extension Project.

Terrestrial Ecology and Faunal Assessments – Mining

EScience & EcoPartners, Volspruit Mine Project, Mokopane, Limpopo Province

2012, 2022-2024

Ecologist/Project Manager

Specialist terrestrial biodiversity assessment for a proposed mine located on the banks of the Nyl River floodplain. Responsible for integration of all specialist reports into the final biodiversity report.

Jones & Wagener (Pty) Ltd on Behalf of Xstrata Coal South Africa, ATCOM Dragline Relocation Project, Mpumalanga Province, South Africa

2013

Ecologist

Faunal assessment and environmental impact assessment for a proposed mine infrastructure relocation project. Undertook targeted surveys of available habitats to determine species presence, habitat suitability and relative habitat sensitivity. Identified and assessed likely impacts to fauna and recommending suitable mitigation and management measures.

JMA Consulting (Pty) Ltd, Lustoff Opencast Mine Project, Mpumalanga Province, South Africa

2012

Ecologist

Faunal baseline survey of mammals, avifauna and herpetofauna for the proposed development of an opencast coal mine in the Chrissiesmeer area.

JMA Consulting (Pty.) Ltd., Sasol Shondoni Mine Project, Mpumalanga Province, South Africa

2011



Shavaughn Davis

Earth and Environment – Ecologist

Ecologist

Terrestrial fauna survey and impact assessment for a proposed underground mine and supporting surface infrastructure.

Terrestrial Ecology and Faunal Assessments - Linear and Urban/Rural Infrastructure Development

**Magalela & Associates, Ilembe Pipeline Project, KwaZulu-Natal Province, South Africa
2019**

Ecologist

Compilation of a desktop biodiversity assessment for several water pipeline routes proposed in the Ekunqobeni-Umphumulo area, as part of the projects scoping phase - Collation of available desktop terrestrial and aquatic ecology data for the relevant project area, including detailing the regional environmental characteristics, identifying faunal and floral species of conservation importance, and identifying any important or sensitive habitats.

**Seaton Thomson & Associates, Wits Rural Facility Expansion Project, Limpopo Province, South Africa
2013**

Ecologist

Baseline faunal assessment and environmental impact assessment for a proposed facilities expansion north of Acornhoek. Undertook targeted surveys of available habitats to determine species presence, habitat suitability and relative habitat sensitivity. Identified and assessed likely impacts to fauna and recommending suitable mitigation and management measures.

**Seaton Thompson & Associates, Waterfall Junction Pipeline Project, Gauteng Province, South Africa
2011**

Ecologist

Specialist faunal survey and assessment of the potential wetland species assemblage along a proposed pipeline route in Midrand as part of a wetland delineation and assessment.

**David Hoare Consulting cc., Nelspruit Ring Route Project, Nelspruit, Mpumalanga Province, South Africa
2008**

Ecologist

Assessment of mammals and herpetofauna as part of the terrestrial ecology assessment.

**Clean Stream Environmental Services, Kriel Extension 6 Development Project, Mpumalanga Province, South Africa
2007**

Ecologist

Small mammal survey as part of the wetland assessment for a proposed residential development.



**Nelson Mandela
Metropolitan
University**

This is to certify that, all the requirements having been met, the degree

Magister Scientiae

ZOOLOGY

with all the associated rights and privileges, was conferred upon

Shavaughn Davis

(ID No.: 8205290085080)

at a congregation of the Nelson Mandela Metropolitan University on

24-APRIL-2007

Certificate No.: 20070777



R. H. Atampf
Vice-Chancellor

Christine K.
Registrar



herewith certifies that

Shavaughn Davis

Registration Number: 115025

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)
Zoological Science (Professional Natural Scientist)

Effective **20 July 2016**

Expires **31 March 2026**



A handwritten signature in black ink, appearing to be 'S. Neph'.

Chairperson

A handwritten signature in black ink, appearing to be 'N. Maseko'.

Chief Executive Officer



Sandhya Moodley

Earth and Environment–Lead Terrestrial Ecologist

CAREER SUMMARY

Sandhya is a passionate Terrestrial Ecologist with 3+ years biodiversity consulting experience. She holds a postgraduate degree in Animal, Plant and Environmental Science focusing on fauna and floral biodiversity in relation to ecosystem health. She aims to further specialize in avifauna. Her key expertise includes conducting terrestrial and animal species specialist assessments inclusive of habitat mapping, animal and terrestrial impact assessment, baseline ecological assessments, avifauna specialist studies, invasive plant management plans as well as ecological control officer duties. She thrives at field work and has conducted biodiversity studies extensively in South Africa. Additionally, she is well versed with municipal and national legislature.

Sandhya has been involved in a number of environmental permitting projects such as basic assessments, Protected Species Permitting as well as environmental impact assessments relating to environmental authorizations during the construction and/or operation phases of a project.



Area of expertise

Terrestrial and Aquatic Biodiversity Assessments
Fauna/Animal Species Assessments
Vegetation Assessments and habitat delineation
Field Studies and Report Writing
Environmental Rehabilitation and compliance
Site Closure audits and remediation
ECO Duties
Avifauna specialist assessments
Project Management
Environmental Team Lead
Stakeholder Engagement

Languages

English -Advanced
Afrikaans-Proficient

EDUCATION

| | |
|---|------|
| BSc (Hons) Animal, Plant and Environmental Science- University of the Witwatersrand | 2019 |
| BSc (Biological Sciences)- University of the Witwatersrand | 2018 |

Sandhya Moodley

Earth and Environment—Lead Terrestrial Ecologist

ADDITIONAL TRAINING/SHORT COURSES

| | |
|--|------|
| Scientific Report Writing for Consultants | 2024 |
| Copernicus- Marine Data processing for Africa | 2023 |
| Copernicus-Assessing Ecosystem Health | 2023 |
| PADI-Open Water Diver | 2022 |
| Data processing and Statistical Methods with MATLAB – MathWorks Africa | 2019 |

PROFESSIONAL MEMBERSHIPS

| | |
|---|--------------|
| SACNASP- Cand.Sci.Nat (156165) | 2023-present |
| SWS- Society of Wetland Scientists (302491) | 2023-present |
| ZSSA- Zoological Society of Southern Africa | 2023-present |

PROFESSIONAL HISTORY

| | |
|--|---------------|
| WSP Group Africa (Pty) Ltd, Lead Terrestrial Ecologist | 2024 –present |
| Information Decision Systems (Pty) Ltd, Lead Terrestrial Ecologist | 2022- 2023 |
| 9ZeroSeven Environmental, Ecology Intern | 2021- 2022 |
| University of Pretoria, Assistant Lecturer Environmental Sciences | 2020-2021 |

PROJECT EXPERIENCE

- Terrestrial Ecologist responsible for conducting specialist assessment and habitat condition mapping as part of EIA for proposed MTS Agriculture in Gauteng, South Africa.
- Terrestrial Ecologist responsible for conducting specialist assessment as part of EIA for proposed Sieggy Holdings Agriculture in North-West, South Africa.
- Terrestrial Ecologist responsible for conducting terrestrial and animal species assessment for the Gamsberg phase 2 underground project, Gamsberg Zinc Mine, Northern Cape, South Africa.
- Animal Species Specialist responsible for faunal biodiversity assessment as part of EIA for proposed Source Smart Poultry farm in Koster, North-West, South Africa.
- Terrestrial Ecologist responsible for conducting specialist assessment as part of EIA for proposed Lowveld Abattoirs in Mogwase, North-West, South Africa.
- Terrestrial Ecologist responsible for conducting specialist assessment as part of EIA for proposed Isiqalo Poultry Farm in Eastern Cape, South Africa.
- Animal Species Specialist responsible for conducting Animal Species Compliance statement as part of EIA for proposed Lowveld Abattoir in Mogwase, North-West, South Africa.
- Terrestrial Ecologist responsible for conducting specialist assessment as part of EIA for proposed Prime Meat Abattoirs in UMzimkhulu, KwaZulu-Natal, South Africa.
- Aquatic Ecologist responsible for conducting aquatic assessment as part of EIA for proposed Omega Fisheries aquaculture facility in Gauteng, South Africa.

Sandhya Moodley

Earth and Environment—Lead Terrestrial Ecologist

- Terrestrial Ecologist responsible for compiling a Terrestrial Compliance Assessment as part of EIA for proposed Green Diversity agriculture facility in Free State, South Africa.
- Animal Species Specialist responsible for conducting specialist assessment as part of EIA for proposed Lwamondo Aquaculture in Venda, Limpopo, South Africa.
- Terrestrial Specialist responsible for the species assessment and data input for the South African Wildlife Population System (SAWPS) for SANBI, South Africa.
- Aquatic Ecologist responsible for population assessment of Humpback Dolphin in Richards Bay, KwaZulu-Natal for the SouSA Consortium.
- Flora specialist responsible for vegetation assessment and invasive plant management plan for Melville Koppies Nature Reserve in Gauteng, South Africa.
- Terrestrial Ecologist responsible for creation of an Environmental Rehabilitation plan as part of EIA for the Emalahleni Municipality Landfill Sites, South Africa.
- Environmental Assessment Practitioner responsible for S24G application as part of EIA for Manini Poultry in Jane Furse, Limpopo.
- Ecologist responsible for conducting Terrestrial and Aquatic Scoping assessment as part of EIA for proposed Verkykerskop Wind Energy Facility Cluster in Free State, South Africa.
- Terrestrial Ecologist responsible for conducting Terrestrial Biodiversity Assessment as apart of Mine Closure Operations for Estancia Colliery in Mpumalanga, South Africa.
- Wetland Ecologist responsible for conducting Wetland Impact Assessment as part of Basic Assesment for Sasol Secunda Industrial Complex, South Africa.
- Aquatic Ecologist responsible for Site Sensitivity Screening assessment as part of EIA for proposed Solar PV Plant in Secunda, South Africa.
- Terrestrial Ecologists responsible for development of Alien and Invasive Plant Species Management Plan as part of an EMPr for Zibulo Colliery Northern Shaft in Emalahleni, Mpumalanga, South Africa.
- Terrestrial Ecologist responsible for terrestrial biodiversity scoping assessment as part of EIA for the proposed container terminal at Port of Durban, Kwa-Zulu Natal, South Africa.
- Team Lead/Environmental Manger responsible for protected plant species assessment and relocation as part of EMPr for the proposed Camden II Wind Energy Farm at Ermelo, Mpumalanga, South Africa.

*A more extensive list of project experience is available on request

PERSONAL INFORMATION/CONTACT DETAILS

Cell number: +27 82 302 8612

Email Adress: Sandhya.Moodley96@gmail.com

Linkedin: www.linkedin.com/in/sandhya-moodley-terrestrial-ecology-scientist

Driver's License: Code B



herewith certifies that

Sandhya Moodley

Registration Number: 156165

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)

in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Candidate Natural Scientist)

Effective **12 June 2024**

Expires **31 March 2026**



A handwritten signature in black ink, appearing to read 'S. Mapho'.

Chairperson

A handwritten signature in black ink, appearing to read 'N. Maseko'.

Chief Executive Officer



To verify this certificate scan this code