



Tournée 1 Solar (Pty) Ltd
Tournée 1 Solar PV Park
Thuthukani
Mpumalanga

Our Ref: 41104569

16 March 2023

Air Quality Compliance Statement: Tournée 1 Solar PV Park

INTRODUCTION

Tournée 1 Solar (Pty) Ltd are proposing to develop the Tournée 1 Solar PV Park, near Thuthukani in the Mpumalanga Province. The facility will include a 150 MW Solar Energy Facility (SEF). Based on the low sensitivity of the site from an air quality perspective, a full Air Quality Impact Assessment is not necessitated. This Air Quality Compliance Statement is issued for the proposed site as no significant air quality impacts are expected at any nearby receptors.

DISCUSSION

The proposed Tournée 1 SEF will be located on Portion 7 (Portion of Portion 3) of Farm Dwars-in-die-Weg 350 IS and Portion 6 of Farm Dwars-in-die-Weg 350 IS, some 10.5 km northeast of the town of Thuthukani. The site itself is surrounded by agricultural land with no receptors within the immediate vicinity of the site. Scattered farmhouse receptors are evident at distances greater than 1 km from the site.

Air quality impacts may arise from the construction phase of the proposed SEF. Heavy construction activities, including site preparation, transportation of equipment and general construction activities, are a source of dust and PM₁₀ and PM_{2.5} emissions that can have a temporary impact on the local ambient air quality at the site. Due to the erratic and transient nature of construction activities, dust and particulate emissions may vary substantially on a daily basis, depending on the level of activity, the specific operations and the prevailing meteorological conditions. It must be noted, however, with limited nearby receptors the construction-related impacts will be minimal.

During the operational phase, minimal sources of dust and PM₁₀ and PM_{2.5} will be present onsite. Emission sources will be limited to the movement of operational vehicles as well as vehicles associated with the maintenance and cleaning teams. The numbers of both vehicle types will, however, be very limited in number. Coupled with the fact that there are no direct nearby receptors, operational phase impacts will be negligible.

It is noted that air quality is not one of the environmental themes assessed/listed in the Department of Forestry, Fisheries and the Environment (DFFE) screening tool. Therefore, a comparison with the screening tool results and resultant sensitivity map cannot be conducted from an air quality perspective.

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1999/008928/07



ASSUMPTIONS

The identification of sensitive receptors is based on a desktop assessment using satellite imagery and it is assumed that all key receptors have been considered.

CONCLUSION

With reference to air quality impacts, based on the low sensitivity of the Tournée 1 SEF site due to limited surrounding receptors and minimal emission sources from the operation of a SEF, the proposed Project can be authorised with no special conditions in place.

AIR QUALITY SPECIALIST - DECLARATION OF INDEPENDENCE

This Air Quality Compliance Statement was compiled by Kirsten Collett, an air quality and acoustic consultant with a Master of Science (Atmospheric Sciences) degree obtained from the University of the Witwatersrand. She is currently employed by WSP and has worked on environmental acoustic impact assessments, monitoring and modelling for a variety of clients over the past ten years. She has provided acoustic consulting support to various client industries including petrochemical, mining and production industries among others. She is also a registered Professional Natural Scientist (Pr. Nat. Sci.) with the South African Council for Natural Scientific Professions (SACNASP). Please see **Appendix A** for a CV detailing project experience.

I hereby declare that I am fully aware of my responsibilities in terms of the National Environmental Management Act: Environmental Impact Assessment Regulations of 2014 and that I have no financial or other interest in the undertaking of the proposed activity other than the imbursement of consultant's fees.

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Contact Details: +27 11 361 1372
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Signature:

APPENDIX

A CURRICULUM VITAE





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 eleven 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.

11 years with WSP

13 years of experience

Area of Expertise

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

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 MEMBERSHIPS

SACNASP – South African Council for Natural Scientific Professions 2016
NACA – National Association for Clean Air 2016



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

SASAS – South African Society for Atmospheric Sciences

2022

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd

2011 – present

Climatology Research Group (University of the Witwatersrand)

2009 – 2011

PROFESSIONAL EXPERIENCE

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

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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.

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 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**



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Principal Consultant**

Lead Consultant

WSP was commissioned to perform an air quality impact assessment of a proposed ferrochrome production facility in Zinniaville, 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.

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

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.

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

2020

Project Manager and Lead Consultant



Kirsten Collett

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

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



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Principal Consultant**

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.

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



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Principal Consultant

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.

Evrz Highveld Steel and Vanadium Corporation Ltd, Dust Fallout Monitoring for a Steel Facility, Mpumalanga, South Africa 2012 – 2015

Project Manager

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

Evrz 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 Evraz 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 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.

Acoustics

**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



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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



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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.



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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.



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Principal Consultant

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

NOx 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.

Presentations

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