



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Komati Power Station Solar Photovoltaic Facility, Battery Energy Storage Systems and Associated Infrastructure, Mpumalanga Province

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
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5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	WSP Group Africa (Pty) Ltd		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition
			135%
Specialist name:	Stephen Horak		
Specialist Qualifications:	MA, Environment and Society, 2005 University of Pretoria		
Professional affiliation/registration:	None		
Physical address:	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand,		
Postal address:	PO Box 6001, Halfway House,		
Postal code:	1685	Cell:	082 3314 993
Telephone:	+27 254 4800	Fax:	Na
E-mail:	Stephen.horak@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Stephen George Horak, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

WSP Africa

Name of Company:

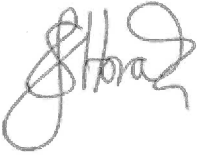
22 September 2022

Date

Details of Specialist, Declaration and Undertaking Under Oath

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Stephen George Horak, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



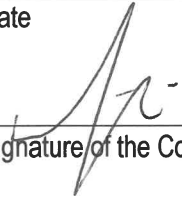
Signature of the Specialist

WSP Africa

Name of Company

22 September 2022

Date




Signature of the Commissioner of Oaths

22 Sep 2022.

Date

I certify that this document is a true representation (copy) of the original which was handed to me for authentication.
I further certify that from my observation an amendment or change was not made to the original document.

 Date 22 Sep 2022
COMMISSIONER OF OATHS REP: 9/1/8/2, Pretoria
Margerethe Johanna Kotze 2007/08/29
Facilities Manager
Building 2, Magwa Office Park, Waterfall City, Midrand



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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PROJECT TITLE

Komati Power Station Solar Photovoltaic Facility, Battery Energy Storage Systems And Associated Infrastructure, Mpumalanga Province

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Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	WSP Group (Pty) Ltd		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition
Specialist name:	Lufuno Nemakhavhani		
Specialist Qualifications:	Master. Environmental Management		
Professional affiliation/registration:	SACNSP South African Wetland Society		
Physical address:	Building 1, Golder House, Maxwell Office Park, Magwa Crescent West, Waterfall City. P.O. Box 6001, Halfway House, 1685. Midrand, South Africa, 1685.		
Postal address:	Same as above		
Postal code:	1685.	Cell:	+27 727189952
Telephone:	011 313 1121	Fax:	
E-mail:	Lufuno.nemakhavhani@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Lufuno Nemakhavhani declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Nemakh.l

Signature of the Specialist

WSP Group Africa (Pty) Ltd

Name of Company:

21 September 2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Lufuno Nemakhavhani, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Nemakh.l

Signature of the Specialist

WSP Group (Pty) Ltd.

Name of Company

21 September 2022

Date

NA
Signature of the Commissioner of Oaths

22 Sept 2022

Date

I certify that this document is a true representation (copy) of the original which was handed to me for authentication.
I further certify that from my observation, an amendment or change was not made to the original document.

NA Date *22 Sept 2022*
COMMISSIONER OF OATHS REF: 5/1/5/2 Pretoria
2037/06/29
Magistrate's Office
Building 1, Magistrate's Office, P.O. Box 111, Waterfall, 2001



environmental affairs

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Specialist Company Name:	WSP Group (Pty) Ltd		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition
Specialist name:	Lufuno Nemakhavhani		
Specialist Qualifications:	Master. Environmental Management		
Professional affiliation/registration:	SACNSP South African Wetland Society		
Physical address:	Building 1, Golder House, Maxwell Office Park, Magwa Crescent West, Waterfall City. P.O. Box 6001, Halfway House, 1685. Midrand, South Africa, 1685.		
Postal address:	Same as above		
Postal code:	1685.	Cell:	+27 727189952
Telephone:	011 313 1121	Fax:	
E-mail:	Lufuno.nemakhavhani@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Lufuno Nemakhavhani declare that –

- I act as the independent specialist in this application;
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Nemakh.l

Signature of the Specialist

WSP Group Africa (Pty) Ltd

Name of Company:

21 September 2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Lufuno Nemakhavhani, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Nemakh.l

Signature of the Specialist

WSP Group (Pty) Ltd.

Name of Company

21 September 2022

Date

[Signature]

Signature of the Commissioner of Oaths

22 Sept 2022.

Date

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[Signature] Date *22 Sept 2022*
COMMISSIONER OF OATHS REF: 5/1/5/2 Pretoria
2037/06/29
Magistrate's Office
Building 1, Magistrate's Office, P.O. Box 111, Waterfall, 2001



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1. SPECIALIST INFORMATION

Specialist Company Name:	WSP		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition
Specialist name:	Eugeshin Naidoo		
Specialist Qualifications:	BSc Civil Engineering		
Professional affiliation/registration:	ECSA Registered: 20190664		
Physical address:	223 Greenstone Crest, Stoneridge Dr, Greenstone Hill , Johannesburg		
Postal address:	223 Greenstone Crest, Stoneridge Dr, Greenstone Hill , Johannesburg		
Postal code:	1609	Cell:	082 834 8037
Telephone:	011 254 4889	Fax:	
E-mail:	Eugeshin.Naidoo@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Eugeshin Naidoo, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
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Signature of the Specialist

WSP

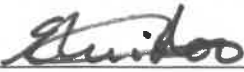
Name of Company:

12/01/2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Eugeshin Naidoo, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.


Signature of the Specialist

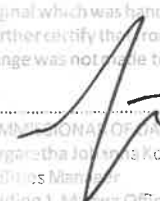
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Name of Company

12/01/2023
Date


Signature of the Commissioner of Oaths

13 | 01 | 2023.
Date

I certify that this document is a true representation (copy) of the original which was handed to me for authentication.
I further certify that from my observation an amendment or change was not made to the original document.

 Date: 13 Jan 2023.

COMMISSIONER OF OATHS REF: 9/1/8/2 Pretoria
Margaretha Johanna Kotze 2007/09/29
Facilities Manager
Building 1, Magwa Office Park, Waterfall City, Midrand



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1. SPECIALIST INFORMATION

Specialist Company Name:	WSP in Africa		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition
			135%
Specialist name:	Karen King		
Specialist Qualifications:	BSc soil science, MSc		
Professional affiliation/registration:	SACNASP Pr.Sci.Nat - 400035/11		
Physical address:	33 Sloane Street Bryanston 2191		
Postal address:	33 Sloane Street Bryanston 2191		
Postal code:	2191	Cell:	0741298488
Telephone:	011 361 1376	Fax:	
E-mail:	Karen.king@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Karen King, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
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- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

WSP in Africa

Name of Company:

14 September 2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Karen King, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

WSP in Africa

Name of Company

14 September 2022

Date

Signature of the Commissioner of Oaths

14 September 2022

Date



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1. SPECIALIST INFORMATION

Specialist Company Name:	Lourens du Plessis t/a LOGIS		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	Exempt	Percentage Procurement recognition
			0
Specialist name:	Lourens du Plessis		
Specialist Qualifications:	BA		
Professional affiliation/registration:	Professional Geo-Information Science (GISc) Practitioner registered with the SA Geomatics Council (SAGC) Reg. No. GPr GISc 0147		
Physical address:	531A Witogie Street Die Wilgers Pretoria		
Postal address:	PO Box 384 La Montagne		
Postal code:	0184	Cell:	082 922 9019
Telephone:		Fax:	
E-mail:	lourens@logis.co.za		

2. DECLARATION BY THE SPECIALIST

I, Lourens du Plessis, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
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Deviation



Signature of the Specialist

t/a LOGIS

Name of Company:

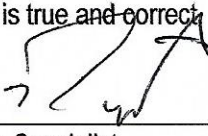
2022-09-12

Date

Details of Specialist, Declaration and Undertaking Under Oath

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Lourens du Plessis, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



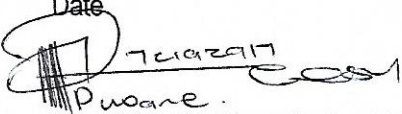
Signature of the Specialist

t/a LOGIS

Name of Company

2022-09-12

Date



P. du P. Swane

Signature of the Commissioner of Oaths

2022-09-12

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environmental affairs

Department:
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2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	INNOVATIVE TRANSPORT SOLUTIONS (PTY) LTD			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	135
Specialist name:	DR PIETER PRETORIUS			
Specialist Qualifications:	Ph.D. (Engineering), M.Eng (Transportation)(Cum Laude), B.Eng. (Hons)(Transportation) (Cum Laude), B.Eng. (Civil) (Cum Laude),			
Professional affiliation/registration:	PROFESSIONAL ENGINEER 980205			
Physical address:	29 DE HAVILLAND CRESCENT, PRO PARK, BLD 1, PERSEQUOR TECHNOPARK			
Postal address:	PO BOX 75100, LYNNWOOD RIDGE			
Postal code:	0040	Cell:	082 440 2764	
Telephone:	012 349 1664	Fax:	N/A	
E-mail:	gauteng@itsglobal.co.za			

2. DECLARATION BY THE SPECIALIST

I, DR PIETER PRETORIUS, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

INNOVATIVE TRANSPORT SOLUTIONS (PTY) LTD

Name of Company:

12-09-2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, DR PIETER PRETORIUS, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

INNOVATIVE TRANSPORT SOLUTIONS (PTY) LTD

Name of Company

12-09-2022

Date



Signature of the Commissioner of Oaths

12 September 2022

Date



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

File Reference Number:	(For official use only)
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Komati Power Station Solar Photovoltaic Facility, Battery Energy Storage Systems And Associated Infrastructure, Mpumalanga Province

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2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
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Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	WSP Group Africa (Pty) Ltd		
B-BBEE	Contribution level (Indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition
			135%
Specialist name:	Sarah Jane Wolfe Skinner		
Specialist Qualifications:	MSc (Water Utilisation, 2003), BSc Hons (Geology & Hydrogeology), 1996		
Professional affiliation/registration:	SACNASP Pr 400016/01		
Physical address:	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand		
Postal address:	P.O. Box 6001, Halfway House		
Postal code:	1685	Cell:	+27 82 600 8774
Telephone:	+27 254 4800	Fax:	n/a
E-mail:	Sarah.Skinner@wsp.com		

2. DECLARATION BY THE SPECIALIST

I, Sarah Jane Wolfe Skinner, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

WSP Group Africa (Pty) Ltd
Name of Company:

12 September 2022
Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Sarah Jane Wolfe Skinner, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Specialist

WSP Group Africa (Pty) Ltd

Name of Company

12 September 2022

Date



Signature of the Commissioner of Oaths

12 Sept 2022

Date





ZAKARIYA NAKHOODA, B.Sc.H

Consultant (Hydrologist), Environment & Energy



Years with the firm

4yrs 10 months

Years of experience

4yrs 10 months

Professional Qualification

Pr.Sci.Nat

Areas of expertise

Wetland Delineation and
Functional Assessments

Water Use Licence Applications

General Authorisation
Applications

Integrated Water and Wastewater
Management Plans (IWWMP's)

Hydrological Modelling and
Impact Assessments

Groundwater and Surface Water
Quality Monitoring and Trend
Analysis

CAREER SUMMARY

Zakariya Nakhooda is a hydrologist with over 4 years' experience in environmental consulting. His key areas of interest include Water Use License Applications, General Authorisation Applications, Wetland Delineation and Functional Assessments, Hydrological Impact Assessments and Water Quality Assessments. He has been involved in a number of projects where he has used his hydrological background and project experience to undertake Water Use License applications, environmental risk assessments and provide practical project outcomes and actions.

Zakariya has successfully attained Water Use Licences and General Authorisations on behalf of numerous clients in the industrial, mining and petroleum sectors.

EDUCATION

Bachelor of Science, Honours (Hydrology), University of KwaZulu-Natal, KwaZulu-Natal, South Africa 2013

Bachelor of Science (Hydrology and Geography / Environmental Science), University of KwaZulu-Natal, KwaZulu-Natal, South Africa 2012

ADDITIONAL TRAINING

Tools for Wetland Assessment 2020

First Aid Level 1 2020

Hazard Identification and Assessment (HIRA) 2018

Incident Investigation Training 2018

WRSM/PITMAN and WR2012 Water Resources Course 2016

PROFESSIONAL MEMBERSHIP

South African Council for Scientific Professions (SACNASP) – Registration as a Professional Scientist

PROFESSIONAL EXPERIENCE

Wetland Delineation and Functional Assessments (Selection)

- Sasol Piggings Stations Wetland Delineation and Functional Assessment, KwaZulu-Natal, South Africa (2020). Undertake a wetland delineation and functional assessment for the proposed piggings stations located in the Durban South Basin. A risk assessment was undertaken in order to determine the impact of the proposed development on the wetland systems, and provide practical mitigatory measures. Client: Sasol Oil Limited.
- Eskom Medupi Power Station Wetland Delineation and Functional Assessment, Limpopo Province, South Africa (2019). Undertake a wetland delineation and functional assessment for the proposed raw water supply pipeline at the Medupi Power Station as part of a Water Use License Application. A risk assessment was undertaken in order to determine the impact of the proposed development on the wetland systems, and provide practical mitigatory measures. Client: Eskom Limited.
- SAPREF Refinery Wetland Delineation and Functional Assessment, Wentworth, KwaZulu-Natal, South Africa (2019). Undertake a wetland delineation and functional assessment for the Refinery as part of a Water Use License Application. A risk assessment was undertaken in order to determine the impact of the Refinery

on the wetland systems, and provide practical mitigatory measures. Client: Shell and BP South African Petroleum Refineries (Pty) Ltd.

- Eskom Hlanganani Wetland Delineation and Functional Assessment, Limpopo Province, South Africa (2019). Undertake a wetland delineation and functional assessment for the proposed Customer Network Centre. The assessment was utilised to inform the need for a Water Use License Application. A risk assessment was undertaken in order to determine the impact of the proposed Centre on the wetland systems, and provide practical mitigatory measures. Client: Eskom Limited.
- Anglo American, Amandelbult Wetland Delineation and Functional Assessment, North West Province, South Africa (2019): Consultant. Undertake a wetland delineation and functional assessment for the proposed upgrades at the Amandelbult Complex as part of a Basic Assessment. A risk assessment was undertaken in order to determine the impacts of the proposed upgrades to the wetland systems, and provide practical mitigatory measures. Client: Anglo American Platinum Limited.
- Mozambique-Zambia Interconnector Pipeline (2018): Consultant. Undertake a Freshwater Habitat Impact Assessment for the Mozambique-Zambia Interconnector project. The project included the installation of a 350km long 400kV transmission line between the Matambo Substation in Mozambique and the Chipata west Substation in Zambia. The purpose of the project was to identify freshwater systems (including wetlands, perennial and non-perennial watercourses and impoundments) located along the proposed route and the potential impacts posed by the construction and operational phases of the transmission lines on these systems. Client: Southern African Power Pool.

Groundwater / Surface Water Monitoring (Selection)

- Groundwater, Effluent and Stormwater Sampling, Richards Bay, KwaZulu- Natal, South Africa (2016-2020): Consultant. Sampling of effluent, stormwater and groundwater to determine compliance against relevant guidelines. This included the development of a monthly monitoring report as well as a trend analysis. Client: Transnet Port Terminals.
- Surface water and Stormwater Sampling, King Shaka International Airport, Durban, KwaZulu-Natal, South Africa (2016): Consultant. Monthly sampling of trade effluent and stormwater at the King Shaka International Airport to determine compliance against relevant guidelines. Client: Airports Company South Africa.
- Groundwater, Effluent and Stormwater Sampling at the Eskom Ingula Power Station, KwaZulu-Natal, South Africa (2016-2017): Consultant. Monthly sampling of groundwater, surface water and effluent at the Ingula pump storage scheme. This included the development of a monthly monitoring report as well as a trend analysis. Client: Eskom Holdings Limited, South Africa.

Authorisations / Licencing (Selection)

- Transalloys IWWMP and Water Use License Application, Mpumalanga Province, South Africa (2019). Consultant. Compilation of an Integrated Water and Wastewater Management Plan (IWWMP) in support of a Water Use License Application for the proposed Transalloys Power Plant. The project included undertaking a Water Use License Application on behalf of the client. Client: Transalloys (Pty) Ltd
- SAPREF Refinery IWWMP and Water Use License Application, Wentworth, KwaZulu-Natal South Africa (2019-2020). The project included the compilation of an Integrated Water and Waste Management Plan (IWWMP) and specialist studies; and facilitate the Water Use License application process with the Department of Water and Sanitation. Client: Shell and BP South African Petroleum Refineries (Pty) Ltd.

- Silicon Technologies IWWMP and Water Use License Application, Ballengeich KwaZulu-Natal, South Africa (2018-2020): Consultant. Compilation of an Integrated Water and Waste Management Plan (IWWMP) and associated specialist studies; and facilitate the Water Use License application process with the Department of Water and Sanitation. Client: Silicon Technologies (Pty) Ltd.
- NPC South Coast Stone Crushers IWWMP, Uvongo, KwaZulu-Natal, South Africa (2017). Consultant. Development of an Integrated Water and Waste Management Plan (IWWMP), as support for a Water Use License application to the Department of Water and Sanitation. Client: NPC (Pty) Ltd.
- Eskom Mooihoek Substation, Mpumalanga Province, South Africa (2017). Consultant. Undertaking of a Wetland Delineation and Functional Assessment Report and a General Authorisation application with the Department of Water and Sanitation. Client: Eskom Limited.
- Engen Refinery IWWMP and Water Use License Application, Wentworth, KwaZulu-Natal, South Africa (2016-2019): Development of an Integrated Water and Waste Management Plan (IWWMP), undertake specialist studies; and facilitate the Water Use License application process with the Department of Water and Sanitation. Client: Engen Petroleum.

Hydrological Assessments

- Mbabane – Manzini Corridor Dam (Nondvo Dam), Hhohho Region, Eswatini (2018-2019) Consultant. Undertake a Basin Protection Impact Assessment for the proposed Nondvo Dam, located in Swaziland. This assessment aimed at determining a baseline water quality study together with an impact assessment on the river basin as a result of the proposed Dam. The water quality study consisted on the collection of surface water from the Lusushwana River and associated tributaries at points located upstream and downstream of the proposed dam in order to determine baseline conditions. Client: Government of the Kingdom of Eswatini, Ministry of Natural Resources and Energy, Department of Water Affairs.
- Eskom Medupi Power Station Flood Risk Assessment (2019). Consultant. Undertake the development a Flood Risk Assessment of a tributary adjacent to the Medupi Power Station which drains into the Sandloop River. The objective of the flood risk assessment will be to ascertain the flood risk posed by the reach of the Sandloop River tributary (here after referred to as the river reach) to the Medupi Power Station Northern Ash Dump Facility. The project included a site visit, the use of computer based modelling software (HecRas and Arc Gis) and report writing. Client: Eskom Holdings Limited.
- South 32 Bayside Stormwater Management Plan, Richards Bay, KwaZulu-Natal, South Africa (2018). Undertake the development of a Stormwater Management Plan (SWMP) for South 32 (Pty) Ltd at their Bayside facility. The purpose of the SWMP is to contain dirty stormwater and facilitate for the release of clean stormwater to the environment. The project included a site visit, the use of computer based modelling software (HydroCube v1.0a) and report writing. Client: South 32 (Pty) Ltd.
- Bell Equipment Stormwater Management Plan Richards Bay, KwaZulu-Natal, South Africa (2018). Undertake the development of a Stormwater Management Plan (SWMP) for Bell Equipment at their facility. The purpose of the SWMP is to contain dirty stormwater and facilitate for the release of clean stormwater to the environment. The project included a site visit, the use of computer based modelling software (HydroCube v1.0a) and report writing. Client: Bell Equipment (Pty) Ltd.

Presentations and Publications

- Meissner, R., Stuart Hill, S, and Nakhooda, Z 2017. The Establishment of Catchment Management Agencies in South Africa with Reference to the Flussgebietsgemeinschaft Elbe : Some Practical Considerations. Global Issues in Water Policy, Volume 6.
- Nakhooda, Zakariya. The Establishment, Operation and Evolution of Catchment Management Agencies in South Africa: A baseline for assessment. WISA, Durban, KZN, 15th – 18th May, 2016.
- Nakhooda, Zakariya. The Establishment, Operation and Evolution of Catchment Management Agencies in South Africa: Literature review. SANCIAHS, Cape Town, WC, 1st-3rd September, 2014.



herewith certifies that
Zakariya Ismail Nakhooda
Registration Number: 120549
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)
Water Resources Science (Professional Natural Scientist)

Effective **6 May 2020**

Expires **31 March 2022**



A handwritten signature in black ink, appearing to read 'Botha', is written over a horizontal line.

Chairperson

A handwritten signature in black ink, appearing to read 'M. J. ...', is written over a horizontal line.

Chief Executive Officer



APPENDIX

B SPECIALIST CVS





Education

*Master of Science (Hons)
Applied Environmental
Science , University
College Dublin, Dublin,
Ireland, 2007*

*Bachelor of Science (Hons)
Zoology, University College
Cork, Cork, Ireland, 2005*

Certifications

*Professional Natural
Scientist (South African
Council for Natural
Scientific Professions) ,
(114477/15)*

Languages

English – Fluent

French – Fluent

Golder Associates Africa (Pty.) Ltd. – Johannesburg

Biodiversity and Ecosystem Services Specialist

Aisling is an ecologist and biodiversity specialist with over 12 years consulting experience in Europe and sub-Saharan Africa. Experienced in designing, costing and conducting baseline flora and fauna surveys, ecosystem services assessments, ecological impact assessment and development of mitigation, compensation and offsetting measures for projects in the mining, O&G, waste, transport, land development and power generation sectors.

She has completed baseline biodiversity studies and ecosystem service reviews for numerous projects in Southern Africa, East Africa, and Central and West Africa, and is experienced in conducting such assessments to satisfy both national environmental regulations and international financing requirements particularly those demanded by the International Finance Corporation's 2012 Performance Standards. To date she has worked on biodiversity-related projects in Ireland, UK, Kosovo, Gabon, Guinea, Guinea-Bissau, Kenya, DRC, Mozambique and Uganda, in addition to numerous projects in South Africa, covering northern temperate, Mediterranean, tropical rainforest, desert, savanna and coastal environments.

She has specific expertise in bat survey and population assessment, having completed her MSc research on bat population correlates, carried out bat assessments for mining and wind power developments in Ireland and the UK, and conducted baseline studies of bat populations and subsequent impact assessments for both mining and power generation projects in West Africa, Central Africa, South Africa and Europe.

Employment History

Golder Associates Africa (Pty) Ltd. – Johannesburg Terrestrial Ecologist (February 2013 to Present)

Biodiversity specialist with responsibility for Project Management and implementation of baseline biodiversity studies and impact assessments for development projects in the mining, transport, land development, power and waste sectors, in both South Africa and sub-Saharan Africa. Role responsibilities include: Project management, including budget preparation and management, task allocation, and technical review of proposals and reports; Technical review of consultant's draft reports; biodiversity study design to satisfy national legislation and international financing requirements; Biodiversity baseline and impact assessment reporting; Biodiversity offset strategies; Biodiversity action/management plans; Ecosystem services review and impact assessment; Wetland delineation surveys and assessments; Large and small mammal surveys.

Golder Associates Ireland – Naas, Ireland Ecologist (April 2008 to Present)

Responsible for ecological input on a range of resource development, mining, power and transportation projects, both in Ireland and Internationally. Typical project activities were undertaking baseline ecological surveys including surveys

of bat activity, reptile population size and composition, newt presence/absence and population size, badger and otter presence/absence and territory size assessment, small mammal surveys, aquatic invertebrate species composition, vegetation surveys and habitat mapping. Authored numerous Ecological Baseline, Ecological Impact Assessment and Appropriate Assessment reports, in fulfilment of regulatory requirements.

Golder Associates UK – Oxford, UK
Ecologist (April 2010 to Present)

Responsible for the ecological input on a range of resource development, mining and transportation projects, both internationally and in the U.K. to inform planning applications and Ecological Impact Assessments (EclA), and uphold monitoring regimes. Project activities included: Route options constraints study and baseline ecological survey & mapping, statutory authority consultation and stakeholder engagement for production of baseline ecology report and ecological impact assessment chapter of ESIA for Kosovo Motorway alignment; EU-protected species survey and monitoring, including great crested newts (GCN) and bat species, for several large-scale landfill and quarry sites; Reptile, amphibian, mammal and Phase 1 habitat surveys for a suite of composting/biogas developments, subsequent baseline ecology reports and Ecological Impact Assessment; Provision of Provision of Ecological clerk of works services at development sites

NATURA Environmental Consultants – Wicklow, Ireland
Ecologist (September 2007 to March 2008)

Responsible for report writing, data interpretation and analysis, and project management. Contributed extensively to the production of the publication "The Status of EU Protected Habitats and Species in Ireland" (NPWS, 2008).

University College Dublin – Dublin, Ireland
Field Assistant (July 2007 to September 2007)

Field assistant for salmonid fish population assessment and crayfish surveys, including electrofishing, fish handling and scale sampling, sorting and ID of freshwater invertebrates and plants.

Thomson Scientific & Healthcare – Limerick, Ireland
Scientific Information Specialist (May 2005 to August 2006)

Researcher responsible for writing article abstracts, proof-reading and editing newly published scientific research papers.

PROJECT EXPERIENCE – IFC PERFORMANCE STANDARD 6 PROJECTS

<p>SMFG Nimba Fauna Baseline (2020) Nimba Mountains, Guinea</p>	<p>Compiled baseline fauna report for the ESIA, including update of baseline information with results of various taxonomic studies done since the original 2013 baseline, and critical habitat-triggering species descriptions.</p>
<p>Large Infrastructure Barging Route - Marine Ecology Impact Assessment (2020) Vilanculos, Mozambique</p>	<p>Lead biodiversity specialist for marine baseline surveys including sea grass and coral reef extent and condition assessments, to inform microrouting of a proposed barging route in close proximity to Bazaruto Archipelago National Park.</p>
<p>Konza Techno City - Biodiversity Baseline and BMP Review (2019) Machakos, Kenya</p>	<p>Acting as biodiversity expert on behalf of the lending institution, was responsible for review of the initial biodiversity baseline study and BMP, and development of recommendations for additional work required to ensure that the baseline and BMP are of the standard necessary to satisfy the requirements of Performance Standard 6.</p>
<p>Proposed Oil Field Development (Confidential) (2014 - 2019) Turkana, Kenya</p>	<p>Screening for Critical Habitats as defined by IFC PS6 and IFC GN6, 2012. Desktop biodiversity description and remote land cover sensing to inform scoping report and fieldwork planning for biodiversity and ecosystem services baseline data gathering phase. Authored Biodiversity baseline report and impact assessment to Kenyan and IFC standards.</p>
<p>Ahafo North Mine Biodiversity Baseline and IA (2018) Brong-Ahafo, Ghana</p>	<p>Consolidated biodiversity data from previous studies with up-to-date baseline data on aquatic ecosystems and vegetation into an updated biodiversity baseline report and impact assessment for the proposed mining of Ahafo North</p>
<p>Beach Landing Sites (Confidential) - Marine and Coastal baseline and Critical Habitat Assessment (2018) Vilanculos, Mozambique</p>	<p>Authored marine and coastal baseline study report based on available reports and data. Determined species and ecosystem triggers of Critical Habitat in the study area and assessed impacts and developed bespoke mitigation measures to ensure NNL of natural habitat and NG of critical habitats.</p>
<p>Kinsevere Copper Mine (2018) Haut-Katanga, DRC</p>	<p>Consolidated biodiversity data from previous studies with up-to-date baseline data on flora and birds into an updated biodiversity baseline report and impact assessment for the proposed expansion of TSF to adjoining tenement</p>
<p>Oil Exploration Block - Biodiversity Baseline and Impact Assessment (2018) Hoima, Uganda</p>	<p>Baseline biodiversity description to inform the overall Environmental Baseline Report for that exploration block. Updated biodiversity impact assessment chapter and authored cumulative impact assessment report for the project</p>
<p>Proposed Copper Mine (Confidential) (2017) Katanga, DRC</p>	<p>Ecosystem services review and impact assessment to satisfy the requirements of IFC PS6 for a proposed copper mine development.</p>
<p>Bokpoort Solar PV & CSP Tower (2016) Northern Cape, South Africa</p>	<p>Conducted specialist bat baseline study and impact assessment for solar PV and CSP tower project. Authored ecosystem services review and impact assessment for the full project.</p>

**Kingfisher
Development Area
(2015)**

Hoima, Uganda

Ecosystems goods and services assessment to IFC PS6 standards, for a proposed oil development project on the shore of Lake Albert.

**Proposed Mine
(Confidential) (2013)**KwaZulu-Natal, South
Africa

Ecosystems goods and services assessment to IFC PS6 standards, for a proposed magnetite mine in an area of tribal lands in KZN, also known for its rich biodiversity.

**Proposed Iron Ore
Mine (2012)**

Nimba, Guinea

Led specialist bat survey of proposed mine site in Guinea. Conducted extensive wet and dry season bat presence and activity surveys and established population status of a Critically Endangered bat species within proposed site. Produced Critical Habitat mapping and reporting in accordance with requirements of IFC Performance Standard 6.

**Proposed Rare Earth
Mine (Confidential)
(2012)**

Gabon

Led specialist bat survey of proposed mine site in a remote rainforest area in Gabon. Conducted wet and dry season bat presence and activity surveys to get a baseline bat species list for the proposed site, which included new bat records for Gabon.

PROJECT EXPERIENCE – ECOSYSTEM SERVICES ASSESSMENT**Oil Development Block
(2018)**

Turkana, Kenya

Ecosystem services review and impact assessment to IFC PS6 for a proposed oil field development including proposed overland haulage route.

**Kingfisher
Development Area
(2018)**

Hoima, Uganda

Ecosystem services review and impact assessment to IFC PS6 standards, for a proposed oil development project on the shore of Lake Albert.

**Kipoi/Luputo Mine
(2016)**

Katanga, DRC

Ecosystem services review and impact assessment to IFC PS6 for a copper/cobalt mine in DRC.

Metalkol (2016)

Kolwezi, DRC

Ecosystem services review and impact assessment to IFC PS6 for a copper/cobalt mine in DRC.

**Proposed Mine,
Melmoth (2015)**KwaZulu-Natal, South
Africa

Ecosystems goods and services assessment to IFC PS6 standards, for a proposed magnetite mine in an area of tribal lands in KZN, also known for its rich biodiversity.

**Gas to Liquid Plant
(2013)**

Tashkent, Uzbekistan

Produced ecosystem goods and services assessment based on information garnered from ecology, surface water and social baseline assessments, in order to fulfil International Finance Corporation Performance Standard 6 requirements for the project funding and ESIA.

PROJECT EXPERIENCE – BATS

Proposed Iron Ore Mine - ESIA to IFC Standards

Nimba Mountains,
Guinea

Led specialist bat survey of proposed mine site in Guinea. Conducted extensive wet and dry season bat presence and activity surveys and established population status of a Critically Endangered bat species within proposed site. Produced Critical Habitat mapping and reporting in accordance with requirements of IFC Performance Standard 6.

Proposed rare earth mine - ESIA to IFC Standards

(Confidential), Gabon

Led a six-week specialist bat field survey of proposed mine site in a remote rainforest area in Gabon. Conducted wet and dry season bat presence and activity surveys to compile a baseline bat species list for the study area, which included new bat records for Gabon. Authored baseline and impact assessment reports to inform the overall ESIA.

Phalaborwa Mine - Artificial Roost Creation Guidance

Phalaborwa, Limpopo,
South Africa

Provided design guidance to our client who proposed to construct an artificial bat roost on their property using old mining vehicle tyres and overburden materials.

Kosovo Wind Farm ESIA to World Bank Standards

Kosovo

Analysed passive acoustic monitoring data for bats to compile a baseline report on bat species assemblage, diversity and spatial distribution of bat activity within the wind farm area of influence.

Varkensvlei Mine ESIA

Waterberg, Limpopo,
South Africa

Baseline study of bat species assemblage, diversity and spatial distribution of bat activity within the surface mining rights area, including identification of sensitive habitats and terrain features on site that could constitute important roosting or foraging habitat for various species. Authored baseline and impact assessment reports to inform the overall ESIA.

Rio Tinto Tete

Tete, Mozambique

Bat monitoring surveys (passive acoustic monitoring supplemented by trapping surveys) in compliance with environmental authorisation conditions and in line with the recommended mitigation measures of the ESIA.

Farim Phosphate Project ESIA

Farim, Guinea-Bissau

Ecologist on Terrestrial Ecology team. Responsible for undertaking wet and dry season field survey work to establish baseline bat diversity, including passive acoustic monitoring and identification of sensitive habitats and terrain features on site that could constitute important roosting or foraging habitat for various species. Authored baseline study report to inform the ESIA.

Bokpoort Solar PV & CSP Tower (2016)

Northern Cape, South
Africa

Conducted specialist bat baseline surveys including passive acoustic monitoring and identification of sensitive habitats and terrain features on site that could constitute important roosting or foraging habitat for various species. Authored the baseline report and the impact assessment for a solar PV and CSP tower project, to IFC PS6 standard.

PROJECT EXPERIENCE – WETLAND ECOLOGY

AGA Pipeline wetland assessment (2019)

Gauteng, South Africa

Wetland delineation, baseline PES, EIS and EcoServices scores and impact assessment for proposed water return pipeline.

Twinsaver Water Use License (2018)

Gauteng, South Africa

Wetland delineation, baseline PES, EIS and EcoServices scores and impact assessment for ESIA for water use license application

Belfast Implementation Project (2015 - 2018)

Mpumalanga, South Africa

Wetland baseline monitoring to inform environmental impact assessment, including multi-seasonal surveys and updates of PES, EIS and WET-Ecoservices scores for each HGM unit concerned.

Kangra Kuisipongo Overland Conveyor ESIA (2017)

Kwazulu Natal, South Africa

Conducted wetland delineation and baseline assessment (PES, EIS, WetEcoservices) and impact assessment of overland coal conveyor.

Mafube LifeX Project (2015 - 2017)

Mpumalanga, South Africa

Wetland mitigation strategy fieldwork and assessments. Ongoing project support during construction through monitoring and management of construction activities, and overseeing implementation of WUL conditions on the ground.

BECSA Middelburg (2015)

Mpumalanga, South Africa

Wetland delineation and assessment of proposed sludge pipeline river crossings, and wetlands lying within 500m of proposed slurry dump pits to inform Water Use Licence application and EIA.

Metmar, Steelpoort (2014)

Limpopo, South Africa

Delineation and assessment of floodplains of the Steelpoort River, upstream, within and downstream of the proposed site of an open cast pit.

Mooifontein, Arnot (2014)

Mpumalanga, South Africa

Bird and amphibian surveys of pans and wetlands within mining rights area to update PES and EIS, for use in determining wetland reserve.

Interwaste Amadwala (2014)

Gauteng, South Africa

Delineated wetlands and assessed Present Ecological Status, Ecological Importance and Sensitivity, and Ecosystem services provided by each wetland within project area of influence. Conducted impact assessment and devised mitigation measures and monitoring regimes.

PROJECT EXPERIENCE – MINING**Bankable Feasibility Study (confidential) (2019)**

Mpumalanga, South Africa

Responsible for authoring environment chapter of BFS.

Belfast Implementation Project (2015-2018)

Mpumalanga, South Africa

Led three years of pre-construction wetland monitoring including assessment of PES, EIS and EcoServices for mining right area

**Phalaborwa Mine -
Biomonitoring (2015)**
Limpopo, South Africa

Biological monitoring of the Oliphants and Selati Rivers, including assessment of fish populations, aquatic macroinvertebrates and riparian vegetation to monitor the condition of habitat in the vicinity of the mine, observing any significant changes and providing advice to PMC on biodiversity management. This ongoing project continues to be conducted in compliance with the most rigorous health and safety standards, due to the frequent presence of dangerous large mammal fauna including elephant, buffalo and lion in and around the mine site.

**Tshikondeni Mine
(2014)**
Limpopo, South Africa

Ecologist on Terrestrial Ecology team. Responsible for undertaking wet and dry season field survey work to determine baseline large and small mammal, bat and bird diversity and vegetation community mapping for development of a rehabilitation plan for mined areas.

**Bat Baseline Study to
IFC Standards (2012)**
Gabon

Led specialist bat survey of proposed mine site in a remote rainforest area in Gabon. Conducted wet and dry season bat presence and activity surveys to get a baseline bat species list for the proposed site, which included new bat records for Gabon.

**Bat Baseline Study to
IFC Standards (2012)**
Nimba, Guinea

Led specialist bat survey of proposed mine site in an upland region of Guinea. Conducted extensive wet and dry season bat presence and activity surveys and established population status of a Critically Endangered bat species within proposed site. Produced Critical Habitat mapping and reporting in accordance with requirements of IFC Performance Standard 6.

**Farim Phosphate
Project ESIA (2011)**
Farim, Guinea Bissau

Ecologist on Terrestrial Ecology team. Responsible for undertaking wet and dry season field survey work to establish baseline bat, mammal and bird diversity, and vegetation mapping for subsequent ecological impact assessment.

**Rio Tinto Tete Project
(2013 - 2015)**
Tete, Mozambique

Ecologist on Terrestrial Ecology team. Responsible for undertaking wet and dry season field survey work to determine baseline small mammal and bird diversity and vegetation community mapping for subsequent ecological impact assessment.

PROJECT EXPERIENCE – POWER

**Bokpoort CSV and PV
developments (2017)**
Northern Cape, South
Africa

Biodiversity and ecosystem services baseline and impact assessment as part of overall ESIA for two PV and one CSV development on adjoining properties.

**Solar Park - Gordonia
Park substation
powerline (2016)**
Northern Cape, South
Africa

Conducted survey of powerline route to identify cluster of protected trees, other plants of conservation importance, and areas potentially important to bird species of concern to inform the final routing and placement of pylons and bird deterrents

**Kendal Power Plant
(2013)**
Mpumalanga, South
Africa

Terrestrial vegetation, bird and mammal monitoring to assess impacts of existing ash dump, and compile baseline data for proposed new ash dump.

**Ndumo-Gezisa
Powerline Route
Corridor - Impact
Assessment (2013)**

KwaZulu-Natal, South
Africa

Terrestrial flora and fauna assessment of route corridor options for proposed powerline approx. 30 km long. Studies included small and large mammals, birds, reptiles and vegetation mapping.

**Vaalbank 88 Kv
Powerline - Basic
Assessment (2014)**

Gauteng, South Africa

Terrestrial and wetland baseline study and impact assessment reports to assess the impacts of a proposed powerline corridor and switching station footprint.

**Begg Farm Wind
Cluster EIA (2012)**

Fife, Scotland

Responsible for production of Environmental Impact Statement for a 3MW wind farm at Begg Farm, Kirkcaldy, Fife. Authored chapters including Project Description, Scoping, Existing Environment, Summary of Effects and Non-Technical Summary. Also responsible for authoring baseline chapter on Local Land Use and Recreational Access.

**Barrel Law Wind Farm
EIA (2012)**

Scottish Borders,
Scotland

Responsible for co-ordinating front-end production of Environmental Impact Statement for a 21MW wind farm at Barrel Law, Hawick. Authored chapters including Project Description, Scoping, Policy Framework and Existing Environment.

PROJECT EXPERIENCE – TRANSPORTATION

**Kosovo Motorway
ESHIA (2010)**

Prizren-Pristine, Kosovo

Golder was commissioned by Bechtel/Enka to prepare Route Corridor Selection Study and Environmental and Social Impact Assessment for approx. 70 km of proposed motorway. As Project Ecologist, role included undertaking ecological constraints mapping for three route options, and multi-disciplinary walkover survey of selected route - coordinating a team of local zoological and botanical experts. Produced Ecological Impact Assessment chapter and devised design mitigation recommendations. Developed tool-box talk regarding dealing with protected species on site during construction.

PROJECT EXPERIENCE – EU HABITATS DIRECTIVE - APPROPRIATE ASSESSMENT

**Report on Cumulative
Impacts of Proposed
Gold Mine (2010)**

Krumovgrad, Bulgaria

Golder were commissioned to technically review a report outlining an Assessment of the compatibility of Natura 2000 site conservation objectives with an investment proposal for the extraction and processing of gold-bearing ore from the Krumovgrad Exploration Area. Role on this project included technical review of the report, identification of information gaps in the cumulative impact assessment, and recommendations for addressing these issues within the report.

**Stage 2 Appropriate
Assessment of WWTP
(2011)**

Kildare, Ireland

Undertook Stage 2 Appropriate Assessments of the discharges from a number of waste water treatment plants (WWTP) on Pollardstown Fen SAC, a groundwater-fed fen habitat which is the largest of its type in Ireland. WWTP that discharged to both surface water systems and groundwater systems were examined for their potential to impact on groundwater quality of the fen and subsequent impacts on the vegetation community composition of the fen, and other water-dependent protected species including the rare, EU-protected whorl snails *Vertigo* spp. Cumulative impact assessment reports regarding Pollardstown Fen SAC and Mouds Bog SAC were also subsequently prepared

Stage 2 Appropriate Assessment - Lidl Supermarket Extension (2011)
Tipperary, Ireland

Project Ecologist for Stage II Appropriate Assessment of proposed upgrade works to retail unit in Clonmel, Co. Tipperary, which is situated adjacent to the River Suir SAC. Role included desktop research and consultations with statutory authorities, Phase I habitat survey of lands between the retail unit and the river, Ecological Impact Assessment and subsequently Stage II Appropriate Assessment report production.

Appropriate Assessment of Quarry discharge to SAC (2011)
Carlow, Ireland

Project Ecologist responsible for undertaking an Appropriate Assessment screening of the potential impacts of a treated quarry wash-water discharge to the River Slaney, which is an SAC protected under the EU Habitats Directive. Surveys included an Extended Phase I habitat survey of the quarry site, and aquatic invertebrate sampling of the River Slaney upstream and downstream of the discharge point to assess any potential impacts of the discharge on the river water biological quality. Consultation with the regional Fisheries Board and the National Parks and Wildlife Service was undertaken and mitigation measures regarding the reduction of silt load in the discharge were recommended.

Proposed Leisure Facility Adjacent to Blessington Lake SPA
Wicklow, Ireland

Undertook Appropriate Assessment Stage 1 (Screening) and subsequent Stage 2 Appropriate Assessment of proposed leisure facility. Acquisition of additional ornithological data in consultation with local NPWS ranger and local birders in progress and final report to be submitted to NPWS for comment.

Appropriate Assessment Screening of Local Area Development Plans (2011)
Kildare, Ireland

Undertook Appropriate Assessment Stage 1 (Screening) for a number of local area plans that could potentially impact significantly on nearby protected sites including SACs and SPAs. Surveys considered features for which these sites are designed including Annex I habitats, wintering bird populations, otter, kingfisher and aquatic species such as brook lamprey.

PROJECT EXPERIENCE – UK & IRELAND: ECOLOGICAL BASELINE STUDIES AND IMPACT ASSESSMENT

Future Biogas - Various sites (2010)
Norfolk, UK

Project Ecologist responsible for undertaking Extended Phase I habitat surveys of three sites in Norfolk for which the construction of biogas plants is proposed. Each site (including a 250m buffer area surrounding the sites) was surveyed and the habitats mapped. Other features considered included hedgerow assessments, bat foraging/commuting/roosting potential assessment, and great crested newt habitat suitability assessments. During this project I was also responsible for training a third-level summer student in botanical identification and habitat mapping techniques; and desk top research and baseline data acquisition

Biffa Landfill Extension (2010)
Cambridgeshire, UK

Project Ecologist responsible for undertaking great crested newt surveys, including presence/absence, evidence of breeding, and population size, age and sex distribution enumeration.

British Sugar Site Extension (2010, 2011)
Norfolk, UK

Project Ecologist responsible for undertaking baseline ecological surveys of three large areas of arable cropland, intersected by numerous drainage ditches, where British Sugar intends to expand their processing plant. Surveys undertaken included Phase I habitat surveys, reptile surveys, and aquatic vegetation assessment and water vole surveys of approximately 3km of drainage ditches.

**Proposed Bioenergy
and Composting
Facility (2011)**
Essex, UK

Project Ecologist responsible for coordinating and undertaking baseline ecological surveys of a former army airbase site, which is to be developed as a quarry and subsequently a bioenergy and composting facility. Surveys included bat roost emergence and re-entry surveys in a number of abandoned farmyard and army base buildings undertaken by 6 surveyors, and great crested newt population presence/absence, evidence of breeding and population assessment surveys undertaken by 5 surveyors within 250m of the site to inform European Protected Species Licence Application; and Extended Phase I Ecology survey of the site including badger surveys to inform the Ecological Impact Assessment of the EIS.

**Otter Survey -
Johnstown Flood
Relief Works (2011)**
Kildare, Ireland

Project ecologist responsible for carrying out an intensive otter survey along the banks of a river channel which is within the range of the local otter population, and which is to be dredged and widened for flood relief works. Otter usage of the site was assessed by sprainting frequency, and spraints were examined for evidence of seasonal dietary habits.

**Ornithological Surveys
for Proposed Wind
Farm (2009)**
Mayo, Ireland

Undertook monthly vantage point and walkover bird surveys on an upland site in the west of Ireland for 6 months, to gather bird site usage data in order to ultimately assess collision risks and other impacts of the construction of a wind farm across the mountainside. Surveys included walkover surveys and vantage point watches; where species, flight height and direction, and behaviour was noted for 3 hour periods at each vantage point on each survey occasion.

**Leixlip Hot Springs/
Spa and Toll House
(2009)**
Kildare, Ireland

Project ecologist responsible for assessing common newt presence/absence in hot spring, and provision of advice to Parks Department on most appropriate season for works, and requirements for Appropriate Assessment in line with the EU Habitats Directive. Also undertook bat roost dusk emergence and dawn re-entry surveys of a derelict toll-house structure adjacent to the Royal Canal to assess the presence/absence of roosting bats.

**Sallins Flood Relief
Works (2010)**
Kildare, Ireland

Undertook Extended Phase 1 Habitat Survey and ecological constraints mapping for proposed flood relief works. Surveys included river habitat assessment, fisheries potential assessment, and survey of trees and structures for potential bat roosts.

**Coastal Habitats
Survey and Mapping
(2009)**
Dublin, Ireland

Golder Associates were retained by Dún Laoghaire-Rathdown County Council to collect, collate and review all available biodiversity data relating to coastal and marine habitats of the 17km coastline of Dún Laoghaire Rathdown. Preliminary habitat maps were derived from aerial photography and in-house Level II habitat classification data holdings, and were ground-truthed by field survey of all accessible areas of the coastline to produce Level III classification habitat mapping. Role included desk top study and collation of available biodiversity data on the locality, and preparation and ground truthing of preliminary habitat maps to refine the habitat mapping of the coastline to Level III habitat classifications.

**Geotextile Assisted
Dewatering of Lakes,
Naas Town Council
(2008)**
Kildare, Ireland

Golder was commissioned by Naas Town Council to prepare a Feasibility Study for the removal of silt from Naas Lakes, Naas, Co. Kildare, and subsequently assisted Naas Town Council in the production of tender documents for the required works. Project Ecologist responsible for undertaking a survey of nesting waterfowl on the lake and provision of recommendations regarding optimum timing of the works, in order to avoid the main bird breeding season and any significant negative impacts on local bird populations; and consulted with the Regional Fisheries Board as to their requirements for the preservation of crayfish and brook/river lamprey populations within the lakes, in order to inform the tendering process.

TRAINING***Tools for Wetland Assessment (WET-Health, WET-Ecoservices)***

Rhodes University, August 2016

Mainstreaming Biodiversity into Business

National Business and Biodiversity Network, South Africa, November, 2014

First Aid Level 1

Action Training Academy, July, 2014

Wetland Management: Introduction and Delineation

University of the Free State, November. 2013

Flora of Witwatersrand

Botany Dept, University of Witwatersrand, October, 2013

Mammal Identification

The Mammal Society, May 2009

Bat Detector Workshop

Bat Conservation Ireland, June 2007, June 2008

Irish Botany

National Botanic Gardens, Glasnevin, Dublin, 2008

Outdoor Safety & First Aid

Mountain Rescue Trainer, November 2007

PROFESSIONAL AFFILIATIONS

Professional Natural Scientist (Pr. Sc. Nat. 114477/15)

Member of South African Bat Assessment Association

Member of South African Wetland Society

PUBLICATIONS**Journal Articles**

Monadjem, A., L. Richards, P. J. Taylor, C. Denys, A. Dower and S. Stoffberg. Diversity of Hipposideridae in the Mount Nimba massif, West Africa, and the taxonomic status of *Hipposideros lamottei*. *Acta Chiropterologica*, 15(2) (2013), 341-352.

Other

The Status of EU Protected Habitats and Species in Ireland. National Parks & Wildlife Service, 2008.

Education

Matric Senior Certificate with Exemption, Kearsney College, KwaZulu Natal, 2000

Batchelor of Science Environmental Management Stream Majoring in Geographical Science, UKZN, KwaZulu Natal, 2004

Batchelor of Science Honours Environmental Management Stream Majoring in Geographical Science, UKZN, KwaZulu Natal, 2005

Grass Identification Workshop - Frits van Outshoorn Grassland Science, Ukulinga Research Farm, KwaZulu Natal, 2009

Tools for Wetland Assessment Short Course Wetland Ecology, Rhodes University, Grahamstown, 2011

Wet-Health training workshop Wetland Ecology, Mondi Wetlands Programme, KwaZulu Natal, 2011

Scientific Writing Course - Sharon Rees Environmental Science, University of KwaZulu Natal, Pietermaritzburg, 2014

Soil Classification and Land Capability Course Soil Science, Cedara College, KwaZulu Natal, 2015

Certifications

SACNASP - Pr.Sci.Nat. - Ecological Science, 2017

Midrand**Employment History****WSP Environmental – Westville**

Intern (2004 to 2005)

Part time intern performing general administrative and EIA related office tasks, and assisting with fieldwork at the harbour ferromanganese site, and NMI Umhlanga Ridge.

SRK Consulting – Pietermaritzburg

Intern (2005 to 2005)

Part time intern performing general administrative and EIA related office tasks and assisting with wetland delineation and assessment fieldwork at the Cool-Air cemetery.

Land Resources International (LRI) – Pietermaritzburg

Junior Wetland Ecologist (2005 to 2010)

Member of the environmental division within LRI as a wetland specialist, providing practical solutions and services to local and international industries, consultants, developers, non-government organisations, and regional and national government departments/programmes.

GroundTruth – Water, Wetlands and Environmental Engineering. – Hilton

Senior Wetland Ecologist (2010 to 2018)

Managing member of the wetland division within GroundTruth, providing specialist solutions and services to local and international industries, consultants, developers, non-government organisations, and regional and national government departments/programmes.

Languages

English – Fluent

Afrikaans – Fluent

Zulu – Fluent

PROFESSIONAL AFFILIATIONS

Founding Member - South African Wetland Society (SAWS)

Registered Scientist - South African Council of Natural Scientific Professionals (SACNASP)

Mentor within the Candidate Mentorship Phase (CMP) programme of the South African Council for Natural Scientific Professions (SACNASP)



KIRSTEN COLLETT, M.Sc. (Pr.Sci.Nat)

Principal Consultant (Air Quality & Acoustics), Environment & Energy



CAREER SUMMARY

Kirsten is a Senior 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 Environmental 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 ten 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).

Years with the firm

10

Years of experience

12

Professional qualification

Pri.Sci.Nat

Areas of expertise

Air Quality Impact Assessments

Air Quality Management

Ambient Air Quality and Acoustic Monitoring

Environmental Acoustic Assessments

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

Business-focussed Project Management	2013
Snake Awareness Training	2016

PROFESSIONAL MEMBERSHIPS

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

PROFESSIONAL EXPERIENCE

Air Quality Impact Assessments (AQIAs)

- AQIA for a Proposed Cement Grinding Processing Facility, Umbogintwini, KwaZulu-Natal (2021): 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. Client: Platinum Cement Industries.
- AQIA for a Revised Production Rate for a Chemical Producer, Cape Town (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. Client: Protea Chemicals.
- 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. Client: WSP Middle East.

- AQIA for a Proposed Expansion to an Iron Ore Loading Port, Saldanha (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. Client: Transnet Port Terminals Saldanha Bay.
- 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. Client: Anglo American Coal SA.
- 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. Client: WSP Middle East.
- 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. Client: The Dow Chemical Company (Rohm and Haas) - Advanced Materials.
- 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. Client: 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. Client: South32 Aluminium SA Limited.
- 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 Environmental 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. Client: First in Spec Biofuels Ltd.
 - AQIA for a Proposed Mine, Wakkerstroom, Mpumalanga, South Africa (2012-2014): Lead Consultant. WSP Environmental 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. Client: Atha-Africa Ventures (Pty) Ltd.
 - AQIA for a Tyre Manufacturer, Durban, KwaZulu-Natal, South Africa (2012-2013): Consultant. WSP Environmental 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. Client: Apollo Tyres South Africa (Pty) Ltd.
 - AQIA for Ferrochrome Production Facility, Rustenburg, North West, South Africa (2012): Lead Consultant. WSP Environmental 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. Client: Ferrochrome Furnaces (Pty) Ltd.
 - AQIA for a Fuel Depot Recommissioning, Western Cape, South Africa (2012): Consultant. WSP Environmental 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. Client: SIVEST SA (Pty) 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) Client: Noble Resources Ltd.

- 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. Client: City of Johannesburg.

Air Quality Management

- 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. Client: Weir Minerals.
- Atmospheric Emission Licence (AEL) Audit for an Explosives Manufacturer, Ekandustria, Mpumalanga (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. Client: Sasol Satellite Operations Ekandustria.
- 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. Client: Anglo American Coal SA.
- Atmospheric Emission Licence (AEL) Audit for a Manganese Multipurpose Terminal, Saldanha (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). Client: Transnet Port Terminals Saldanha Bay.
- Mafube Colliery Integrated Air Quality Management Plan, Mpumalanga, South Africa (2015-2016): Project Manager and Lead Consultant. Anglo American Coal SA requested 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. Client: Anglo American Coal SA.

- Air Quality Management Reports, White River, Mpumalanga, South Africa (2011-2015): Consultant. WSP Environmental 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. Client: Sonae Novobord (Pty) Ltd.
- Combined Integrated Air Quality Management Plan for the Greenside, Kleinkopje 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, Kleinkopje 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. Client: Anglo American Coal SA.
- Fugitive Dust Suppression Plan for a Steel Producer, Middelburg, Mpumalanga, South Africa (2013): Lead Consultant. WSP Environmental 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 in order to limit the impact of fugitive dust going forward. Client: Columbus Stainless (Pty) Ltd.
- 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. Client: 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. Client: Anglo American Coal SA.

- Strategic Overview of Air Quality Conditions at the Sonae Novobord Plant, White River, Province, South Africa (2008-2011): Consultant. WSP Environmental 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. Client: Sonae Novobord (Pty) Ltd.

Ambient Monitoring

- Dust Fallout and Particulate Matter Monitoring for nine Collieries, Mpumalanga, South Africa (2016-present): 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 is responsible for project management and quality control for the project. Client: Anglo American Coal SA.
- 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. Client: Foskor (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. Client: Total South Africa (Pty) Ltd.
- 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. Client: Eskom Holdings SOC Limited.
- 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 Environmental 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. Client: Evraz Highveld Steel and Vanadium.

- Particulate Matter Monitoring for a Steel Facility, Mpumalanga, South Africa (2014-2015): Project Manager. WSP Environmental 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. Client: Evraz Highveld Steel & Vanadium Corporation Ltd.
- Dust Fallout Monitoring for Majuba Power Station, Volksrust, Mpumalanga, South Africa (2013-2015): Project Manager. WSP Environmental 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. Client: Eskom Holdings SOC Limited.
- Dust Fallout Monitoring, Kendal, Mpumalanga, South Africa (2013-2014): Project Manager. WSP Environmental 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. Client: Tubular Holdings (Pty) Ltd.
- Dust Monitoring Program for a Foundry, Atlantis, Western Cape, South Africa (2011): Data Analyst. WSP Environmental has been 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 has been involved in assisting with data analysis and interpretation of the results obtained from the monthly monitoring campaigns at the site. Client: Atlantis Foundries (Pty) Ltd.
- Air Quality Monitoring for a Proposed Power Plant, Ressano Garcia, Mozambique, Africa (2011): Field Consultant. WSP Environmental 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. Client: Sasol New Energy Holding (Pty) Ltd.
- 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 Hyttialä, Finland as well as technical training in Leipzig, Germany for the SMPS (Scanning Mobility Particle Sizer) instrument.
- 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. Client: Eskom Holdings SOC Limited.

Acoustics

- Environmental Acoustic Impact Assessment for a Proposed Manganese Mine, Kanye, Botswana (2021): 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. Client: Loci Environmental.
- Environmental Acoustic Screening Assessment for a Proposed Wind Energy Facility, Port Dauphine, Madagascar (2021): 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. Client: Crossboundary Energy.
- Environmental Acoustic Impact Assessment for the expansion to a refuse transfer station, Cape Town, South Africa (2020): Project Manager and Lead Consultant. WSP was appointed to undertake an environmental acoustic impact assessment for the proposed expansion to the Athlone Refuse Transfer Station in the city of Cape Town. Kirsten was responsible for conducting the assessment which included baseline acoustic monitoring; 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. Client: Resource Management Services.
- Environmental Acoustic Impact Assessment for the expansion to a tailings storage facility, North West Province, 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. Client: AngloGold Ashanti.
- Environmental Acoustic Impact Assessment for three wind energy facilities, Northern and Western Cape, South Africa (2016-2019): 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 (farm houses) using the Computer Aided Noise Abatement (CadnaA) acoustic modelling software. Client: BioTherm Energy.
- 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. Client: 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 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. Client: Sappi Southern Africa Limited.
 - 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. Client: Loci Environmental.
 - 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. Client: City of Cape Town.
 - 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. Client: Central Termica Da Ressano Garcia.
 - 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. Client: Anglo American Coal SA.
 - Screening Level Environmental Acoustic Impact Assessment for a New Ventilation Shaft, Rustenburg, North West, 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. Client: Anglo American Platinum Limited.
 - 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. Client: Industrial Development Corporation of SA (Pty) Ltd.

- 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. Client: South32 Aluminium SA Limited.
- Environmental Acoustic Monitoring for a Gas Engine Power Plant, Ressano Garcia, Mozambique, Africa (2014-2015): Project Manager and Lead Consultant. 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. Kirsten was responsible for technical input, acoustic data analysis and reporting for this project. Client: Sasol New Energy Holding (Pty) Ltd.
- Environmental Noise Survey for a Wood Producer, White River, Mpumalanga, South Africa (2012-2015): Consultant. WSP Environmental 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. Client: Sonae Novobord (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. Client: Atha-Africa Ventures (Pty) Ltd.
- Environmental Noise Survey for a Wood Producer, Panbult, Mpumalanga, South Africa (2013): Project Manager. WSP Environmental was commissioned to do a once of environmental acoustic compliance monitoring survey at the Sonae Novobord Panbult site in Mpumalanga. Kirsten was responsible for project management and reporting for the project. Client: Sonae Novobord (Pty) Ltd.
- Environmental Noise Impact Assessment for the Amandelbult Mine, Limpopo, South Africa (2013): Lead Consultant. 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. 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. Client: Rustenburg Platinum Mines Limited.

- Environmental Noise Impact Assessment for SAPREF Cleaner Fuels Phase Two, Durban, KwaZulu-Natal, South Africa (2013): Lead Consultant. WSP Environmental 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. Client: Shell and BP South Africa Petroleum Refineries (SAPREF).
- Environmental Monitoring Assessment for a Manganese Mine, Hotazel, Northern Cape, South Africa (2012-2013): Consultant. 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. Kirsten was responsible for analysis of all monitored data, interpretation, compliance assessment and reporting. Client: Assmang Black Rock Mine Operations.
- Environmental Noise Surveys, Vaal River and West Wits Operations, North West, South Africa (2012): Consultant. WSP Environmental was commissioned by Anglo Gold Ashanti to perform environmental noise surveys of their Vaal River and West Wits mining operations in the North West 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. Client: AngloGold Ashanti (Pty) Ltd.
- Environmental Acoustic Impact Assessment for a proposed Power Plant, Ressano Garcia, Mozambique (2011): Field Consultant. WSP Environmental 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. Client: Sasol New Energy Holding (Pty) Ltd.

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.

Third Year Project

- The Monitoring of Aerosol Concentrations over the South African East Coast, Natal, South Africa (2015). This project formed part of Kirsten’s BSc degree and investigated aerosol concentrations along the east coast of South Africa using a research aircraft equipped with various aerosol and condensation nuclei instruments. It aimed to investigate whether the high aerosol concentrations were a direct result of industries in the south Durban area and also investigated transport of aerosols in the region.

AWARDS

- | | |
|---|------|
| Best presentation for paper entitled “The Atmospheric Nitrogen Budget over the South African Highveld”. | 2008 |
| National Association for Clean Air (NACA) conference | |
| MSc Distinction | 2009 |

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.



herewith certifies that
Kirsten Sheena Collett
Registration Number: 115870
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 (Professional Natural Scientist)

Effective 20 July 2016

Expires 31 March 2021



A handwritten signature in black ink, appearing to read 'Botha', written over a horizontal line.

Chairperson

A handwritten signature in black ink, appearing to read 'M. ...', written over a horizontal line.

Chief Executive Officer





KAREN KING, M.Sc., Pr.Sci.Nat.

Senior Associate (Hydrologist & Soil Scientist), Environment & Energy



Years with the firm

5

Years of experience

16

Professional qualifications

Pri.Sci.Nat (Earth Science)

Areas of expertise

Soil Science

Hydrology

Languages

English

Afrikaans

Italian (learning)

CAREER SUMMARY

Ms King is a professional soil scientist and hydrologist (Pr.Sci.Nat, M.Sc.) with WSP Consultants in Johannesburg. She has 16 years' work experience and specialises in local and international soil classification systems, soil capability and suitability assessments, land use assessments and associated risk and mitigation assessments and monitoring plans, as well as agricultural studies. She also specialises in mining/development hydrology, water resources planning, catchment-scale hydrological modelling, flood studies, storm water management planning, wetland delineation, water research, and related risk assessments and management plans. She has been primarily involved in the environmental and engineering hydrology and soil science fields, initially as a soil science lecturer at UKZN for 3 years, and then as a soil scientist and hydrologist in various engineering and environmental consultancies both in South Africa and in the United Kingdom.

EDUCATION

Master of Science, University of KwaZulu-Natal, South Africa	2004
Bachelor of Science (Honours), University of Natal, South Africa	2002
Bachelor of Science, Hydrology and Soil Science, University of Natal, South Africa	2001

PROFESSIONAL MEMBERSHIPS

South African Council for Scientific Professions – Professional Natural Scientist (Earth Scientist) (Reg. No. 400035/11)	SACNASP
Water Institute of South Africa (member 23404)	WISA
The Golden Key Honour Society (member 1264480)	-
International Water Association (member 01053990)	IWA

SOILS PROFESSIONAL EXPERIENCE

- Richbay Chemicals South Africa Extension Project – Soils Study (2021-2022). Project Director. Client: Richbay Chemicals.
Assessment of any potential agricultural and social uses of an area of land earmarked for industry extension in a light industrial/residential area of KwaZulu-Natal.
- Ghana Genser Power Project – Soils Study (2021-2022). Project Soils Specialist. Client: Genser Power.
Agricultural Soils Classification, Capability and Impacts Assessment, and Mitigation Measures Recommendations for a Power Plant and Pipeline in Ghana.
- Liberia Gold Mine Biomass Project – Soils Study (2021-2022). Project Soils Specialist. Client: MNG Lebetse Gold Mine.
Agricultural Soils Classification, Capability and Impacts Assessment, and Mitigation Measures Recommendations for a proposed biomass project in Liberia.
- Guinea Project – Interdisciplinary Soils Study (2021-2022). Project Soils Specialist. Client: Confidential.
Multidisciplinary Potential Impacts and Mitigation Measures Assessment under very difficult conditions

- Lebombo Cape Soils Study. Soils Compliance Study for Fruit Export – Physical and Chemical Assessments (2021-2022). Project Director. Client: Lebombo Cape.
Classification of soil forms according to the South African taxonomic system, soil capability and impact assessment, and mitigation recommendations.
- DRC Kamao Copper Mine ESIA – Soils Study (2021). Project Soils Specialist. Client: Ivanhoe Mines.
Agricultural soils study according to IFC standards that involved World Resource Base classification of lateritic and non-lateritic soils across developed and undeveloped areas of Kamao Copper Mine. The soil agricultural capability and suitability were assessed and management plans for top- and sub-soil stripping and for soil erosion were developed.
- Etihad Rail Saudi Arabia to Oman Rail - Desert Soils Study (2020-2021). Project Director. Client: Etihad Rail.
Soils study centred on the establishment of soil properties and thus Curve Numbers to inform desert soil hydrological processes.
- Swaziland Nondvo Dam Morphodynamic and River Basin Specialist Studies – (2018-2021): Project Director and Reviewer. Client: Swaziland DWS
Soil-centred studies that assessed the potential for landscape changes due to soil erosion and sedimentation associated with the development and raising of dam walls in Swaziland.
- Calodex Soils and Hydrological Assessments (2021). Project Director. Client: Calodex.
Soils study centred on the agricultural classification of a number of local soils. Potential effects of soil-water movement on local wetlands was established.
- Jet Park Soils and Hydrological Assessment (2021). Project Director. Client: Abbeydale Construction.
Soils study centred on the agricultural classification of a number of local soils. Potential effects of soil-water movement on local wetlands was established.
- Sasol Soils and Hydrological Study (2021). Project Director. Client: Sasol.
Soils study centred on the agricultural classification of a number of local soils. Potential effects of soil-water movement on local wetlands was established.
- Sapref Soils and Hydrological Study (2019-2020). Project Manager. Client: Sapref.
Soils study centred on the agricultural classification of a number of local soils. Potential effects of soil-water movement on local wetlands was established.
- Ethiopia Agri-Industrial Zone ESIA. Soils Classification, Land Use, Land Capability, Risk Assessment and Management Plan Study (2017-2018). Client: UNOPS.
Agricultural soils study according to IFC standards that involved World Resource Base classification of a wide range of soil forms. Agricultural soil capability and suitability was established, an impact assessment was undertaken and mitigation and management plans recommended.
- Richards Bay Minerals Sokhulu Remediation Plan, South Africa (2017). Soil Assessment. Client: Rio Tinto
Soils were classified by form according to a local agricultural taxonomic system.
- Zambia Olam Soils Study (2016): Project Manager. Soil Classification, Land Use and Land Capability Study. Client: NCCL.

- Agricultural soils study according to IFC standards that involved World Resource Base classification of a range of soil forms. Land capabilities were established.
- Glisa Soils Study, Gauteng, South Africa (2015): Project Manager. Soil Classification, Land Use and Land Capability and Suitability Study. Client: Exxaro Resources.
- Philippi Sand Mine Soils Study, Western Cape, South Africa (2015): Project Manager. Hydrology, Storm Water Management Plan, Risk Assessment, Reporting and Project Management. Client: Consol Glass.
- Madagascar Molo Graphite Mine Soils Study. (2014): Project Manager. Soil Classification, Land Use and Land Capability Study with Management Plan and Staff Capability Outputs. Client: Energiser Resources.
- Wits Gold Mine Soils Study, Gauteng, South Africa (2014): Project Manager. Soil Classification, Land Use and Land Capability Study. Client: Wits Gold.
- Soil Monitoring Study, Gauteng, South Africa (2013-2014). Project Manager. Client: Total Coal South Africa.
- Kangra Coal specialist input – soils. (2013). Project Manager. Soil Classification, Land Use and Land Capability and Suitability Study. Client: Kangra Coal.
- Two Rivers Platinum EIA specialist input – soils. (2012). Project Manager. Soil Classification, Land Use and Land Capability and Suitability Study. Client: Two Rivers Platinum.
- Witkop EIA specialist input – soils. Witkop Exploration and Mining (2012). Project Manager. Soil Classification, Land Use and Land Capability and Suitability Study. Client: Witkop Mine.
- Matimba EIA specialist input – soils. (2012). Project Manager. Soil Classification, Land Use and Land Capability and Suitability Study. Client: SiVest.
- Sasol Fuel Department Due Diligence (2011). Project Manager. Establishing whether the soil in one of Sasol's tank farms was contaminated. This required soil sampling and analysis, as well as report writing. Client: Exxaro Coal.

Hydrology

- Lebombo Cape Water Study. Surface Water Fruit Export Compliance Assessment (2021-2022). Project Director. Client: Lebombo Cape.
- Etihad Rail Saudi Arabia to Oman Railway Line - Desert Hydrology Study (2020-2021). Project Director. Client: Etihad Rail.
- De Wittekrans WULA, IWWMP and specialist studies (2019). Project Director. Client: Canyon Coal.
- Trans-Alloys WULA, IWWMP and specialist studies (2019). Project Director and Reviewer. Client: Eskom.
- Eskom Lethabo WULA and IWWMP Amendment (2019). Project Director and Reviewer. Client: Eskom.
- Kimberly Clark WULA (2019). Project Director. Kimberly Clark.
- Sappi Ngodwana WULA Advisory Services (2019). Project Director. Client: Sappi.
- Sapref WULA, IWWMP and specialist studies including Storm Water Management Plan, Groundwater and wetland studies (2019). Project Director and Reviewer. Client: Sapref.

- Southern Cross Foundry WULA, IWWMP and specialist studies including a Storm Water Management Plan and Groundwater Study (2018-2019). Project Director and Reviewer. Client: Southern Cross.
- Nondvo Dam Morphodynamic and River Basin Specialist Studies – Swaziland (2018-2019): Project Director and Reviewer. Client: Swaziland DWS
- Transnet Monthly Surface Water Monitoring (2018-2019). Project Director and Reviewer. Client: TPT
- AMSA Stormwater Dam Complex Assessment (2018-2019). Report Reviewer. Client: Arcelor Mittal SA
- Alliance Mining Commodities Guinea Mine Water Study (2018-2019): Report Reviewer. Client: AMC.
- Yanfolila Mali Gold Mine Water Study (2018-2019): Project Reviewer. Client: Hummingbird Resources.
- Thabametsi Coal-fired power station water study (2017-2019). Water Use License Application and Storm Water Management Planning specialist advisors. Client: Marubeni.
- Turfontein Underground Mine WULA and IWWMP (2017-2019). Project Manager and Reviewer. Client: Samancor Chrome.
- Kalgold Mine Surface Water Assessment (2018): Project Director. Client: EIMS
- Tau Lekoa Gold Mine Surface Water Assessment (2018): Project Director. Client: EIMS
- Sappi Ngodwana WUL and IWWMP study (2018). Project Reviewer. Client: Sappi.
- Agriprotein Storm Water Management Plan (2018): Project Reviewer. Client: Agriprotein Industries.
- Sundumbili Wastewater Treatment Works upgrade potential water quality changes calculations (2018). Project Reviewer. Client: RHDHV.
- Glendale Distillery Water Use License Application study (2017 - 2018). Project Reviewer. Client: Illovo.
- GDC Wastewater Treatment Works Water Use License Application study (2017). Project Reviewer. Client: Illovo.
- Hwange District Plant Drain System Study, Zimbabwe (2017): Project Manager. Water Balance and Storm Water Management Plan review and recommendations. Client: ZimPower and the African Development Bank.
- Ethiopia Agri-Industrial Zone ESIA (2017): Project Manager, reviewer and soil scientist. Surface and groundwater, wetlands and soils assessment and risk and mitigation assessment. Client: UNOPS.
- Zambia Coal-fired power station Water Assessment (2017): Project Reviewer. Water Availability Assessment. Client: Black Rhino.
- Richards Bay Water Quality Monitoring Study (2017): Report reviewer. Compliance assessment. Client: Transnet Port Terminals.
- Oranjemund Mine Conjunctive Water Use Study (2016): Project Manager. Strategic Surface Water and Groundwater Assessment, Desalination, Project Management. Client: Freedthinkers.
- SKA Antennae Extensive Flood Lines Assessment (2016): Project Reviewer. Client: SKA.
- Avondale Housing Estate Hydrology and Flood Lines (2016): Project Reviewer. Client: Triplo4.

- Avon Power Plant Surface Water Assessment (2016): Project Reviewer. Client: Triplo4.
- Molopo Gas Study (2016): Project Reviewer. Sensitivity Assessment, Risk Assessment, Surface Water Assessment and Project Management. Client: EIMS.
- City of Johannesburg Open Spaces Study (2016): Project Reviewer. An assessment of any potential risks to and from surface water and offering general advice about maintenance of Johannesburg's open spaces. Client: CoJ.
- Open Spaces Study, Johannesburg, Gauteng, South Africa (2015): Project Manager. General Hydrological Risks Assessment. Client: CoJ.
- Philippi Sand Mine Surface Water Study, Western Cape, South Africa (2015): Project Manager. Hydrology, Storm Water Management Plan, Risk Assessment, Reporting and Project Management. Client: Consol Glass.
- Glisa Mine Surface Water Study, Gauteng, South Africa (2015): Project Manager. Hydrology, Storm Water Management Plan, Risk Assessment, Water and Salt Balance, Reporting and Project Management. Client: Exxaro Resources.
- Surface Water Assessment, Richards Bay, KwaZulu-Natal, South Africa (2015): Project Manager. Flood Lines and Project Management. Client: GIBB.
- Unconventional Gas Study, Gauteng, South Africa (2015). Flood Lines, Storm Water Management Plan, Water Balance, Review, Project Management. Client: RHDHV.
- Pumpi Mine Integrated Water Management Study, Mozambique (2015): Project Manager: Flood Lines, Storm Water Management Plan, Review, Project Management. Client: Lamikal.
- Molo Graphite Mine Surface Water Study, Madagascar (2014). Project Manager. Hydrology, Yield Analysis, Storm Water Management Plan, Water Quality Assessment, Risk Assessment, Water and Salt Balance, Reporting and Project Management with Management Plan and Staff Capability Outputs. Client: Energizer Resources.
- De Wittekrans Surface Water Study, Mpumalanga, South Africa, (2014): Project Manager. Hydrology, Storm Water Management Plan, Risk Assessment, Reporting and Project Management. Client: EIMS.
- Wits Gold Mine Surface Water Study, Gauteng, South Africa (2014): Project Manager. Hydrology, SWMP, Water Balance, Reporting, Project Management. Client: Wits Gold.
- Olam Zambia Surface Water Study, Zambia. (2014): Project Manager. Hydrology, Water Availability Assessment, Water Quality, Water resource Planning, Reporting, Project Management. Client: NCCL.
- Angola AEMR Area 5 Surface Water Study, Angola. (2014): Project Manager. Hydrology, Yield Analysis, Storm Water Management Plan, Water Balance, Reporting and Project Management. Client: Tenova Bateman.
- EnviroServ Water Facility Integrated Water Resources Study (2013). Project Manager. Hydrology, Water Balance, Salt Dilution Recommendations, Project Management. Client: EnviroServ.
- Surface Water Quantity and Quality Management Planning Study, King Shaka Airport, Durban, South Africa (2013-2016). Project Manager: Hydrology, SWMP, Water Quality Assessment, Bio-monitoring, Water Quality Monitoring Planning, Reporting, Project Management. Client: ACSA.
- Kangra Coal specialist input – hydrology. (2013). Project Manager. Hydrology, Storm Water Management Plan, Flood Lines, Water Quality Assessment, Water Balance, Monitoring Programme, Reporting and Project Management. Client: Kangra Coal.

- Angola AEMR Areas 2 and 3 Surface Water Study, Angola (2013). Project Manager. Hydrology, Yield Analysis, Storm Water Management Plan, Water Balance, Reporting and Project Management. Client: SMP.
- Kakanda-Luita Mine Project (2012). Project Manager. Hydrological modelling of mine areas to determine peak flows at various points, preparation of water balances for the respective mines and a flood line report. Client: ENRC Management South Africa (Pty) Ltd.
- Marikana Water Balance (2012). Hydrologist. An Excel-based process flow diagram and water balance was set up and verified for the mine. Client: Marikana Platinum Mine.
- Volspruit Platinum Mine Flood line calculations and berm design (2012). Project Manager. 1:50- and 1:100-year flood lines were calculated using Hec-RAS software for the watercourses running through the mine and flood protection berms were designed for these return periods. Client: Pan Palladium (Pty) Ltd.
- Marula Platinum Mine Flood Lines Project. (2012). Project Manager. 1:50- and 1:100-year flood lines were calculated using Hec-RAS software for the watercourses running through the mine and the risks associated with flooding identified. Client: Marula Platinum Mine.
- Marampa Iron Ore Flood Line Project (2012). Project Manager. 1:50- and 1:100-year flood lines were calculated using Hec-RAS software for the watercourses running through the mine and the risks associated with flooding identified. Client: Marula Platinum Mine.
- Two Rivers Platinum EIA specialist input – hydrology (2012). Project Manager. Hydrology, Storm Water Management Plan, Flood Lines, Water Quality Assessment, Risk Assessment, Water and Salt Balance, Monitoring Programme, Reporting and Project Management. Client: Two Rivers Platinum.
- Witkop EIA specialist input – hydrology. (2012). Project Manager. Hydrology, Storm Water Management Plan, Flood Lines, Water Quality Assessment, Risk Assessment, Water and Salt Balance, Monitoring Programme, Reporting and Project Management. Client: Witkop Exploration and Mining.
- Matimba EIA specialist input – hydrology (2012). Project Manager. Hydrology, Storm Water Management Plan, Flood Lines, Water Quality Assessment, Risk Assessment, Water and Salt Balance, Monitoring Programme, Reporting and Project Management. Client: SiVest.
- Mulepe Diamond Mine Project (2011). Project Manager. Flood Lines Calculation and reporting study. Client: De Beers Anglo Prospecting.
- Impala Tailings Dam Weirs (2011). Project Manager. PH and EC monitoring equipment were investigated and the best of these was recommended to the client. Client: Impala Platinum.
- New Clydesdale Coal Water Balance Study (2011). Project Manager. An Excel-based process flow diagram and water and salt balance was calculated for the mine. Client: Exxaro Coal.
- Nkomati Integrated Water and Waste Management Plan. (2012). Hydrologist. Client: African Rainbow Minerals Limited.
- Rus Ter Vaal Residential Development (2012). Project Manager. Water resources Availability Study, Water Balance and Project Management. Client: Arengo 6.
- Progressive Realisation of the IncoMaputo Agreement (PRIMA) Study. Tripartite Permanent Technical Committee (TPTC) between Mozambique, Swaziland and South Africa (2011). Developing and running a model to determine the water availability in the Maputo and Incomati catchments and their sub-catchments for

- a range of scenarios. Writing reports and giving presentations based on these findings at international meetings. Hydrologist. Client: PRIMA.
- Development of a Reconciliation Strategy for the Olifants River Water Supply System. (2011). Hydrologist. Client: DWA.
 - Projected Impacts of Climate Change on water quality and quantity in the Mngeni Catchment (2011). Hydrologist. Client: The Water Research Commission.
 - CSIR Regional Water infrastructure Project (2011). Hydrologist. Client: CSIR.
 - uMgungundlovu Municipality Integrated Waste Management Plan (2010). Collection and analysis of solid waste collection, removal and disposal data for the 7 local municipalities making up uMgungundlovu District Municipality, and writing an integrated waste management plan for the area, based on this data. Client: uMgungundlovu District Municipality.
 - Ugu District Municipality Disaster Management Plan. (2010). Hydrologist. Writing methodologies for air, soil and water pollution disaster mitigation and calculating preliminary timeframes and budgets for overall disaster management in the district. Client: Ugu District Municipality.
 - eThekweni District Municipality Sandton Sanitation Project (2010). Hydrologist. Writing reports at various stages explaining what work has been done and what was still due to be done, on an area-by-area basis. Client: eThekweni District Municipality.
 - SADC Climate Change Study. (2009). Hydrologist. Setting up the HEC-HMS modeling system to run various hydrological scenarios. Client: Pegasus.
 - Bitou Stormwater and Flood Study. (2009). Hydrologist. Hydrological and hydraulic model development, flood hazard mapping and dam break analysis. Client: Bitou Local Municipality.
 - SANRAL Bridge Study. (2009). Running the HDYP01 and HEC-HMS models and reporting on the findings. Client: Pegasus.
 - EA Toddbrook Reservoir Rapid Impact Assessment. (2008). Hydrologist. Reports based on Toddbrook Reservoir were used in conjunction with a risk assessment modelling tool to produce a rapid impact assessment of the potential damage caused by a dam break at Toddbrook Reservoir. Client: The Environment Agency.
 - SEW Ouse Cuckmere Control Lines. (2008). Flood control lines were produced using 1996 and 2005 simulation results and these were compared to identify how and why they differ. Client: South East Water.
 - SEW NR09 Northern Region Development Options. (2007-2008). Hydrologist. The potential yield at these sites was assessed at various storage and pumping levels, and the sites were evaluated based on their potential yields and positions. Client: South East Water.
 - West Sussex Strategic Flood Risk Assessment. (2006-2007). Hydrologist. Flood Risk mapping according to local climatic conditions, soils and populations, as well as surface water flood risk report writing. Client: The Environment Agency.
 - Water Resources of South Africa, 2005 Study (2005). Hydrologist. The Water Research Commission. Setting up, simulating and calibrating water resources networks, including climatic, soils and vegetation data, and running scenarios for the whole of the Orange catchment, plus testing of the WRSM2005 model used for this exercise. Client: WRC.
 - Assessment of Water Availability in the Olifants Catchments, South Africa. (2005). Hydrologist. Water resources Modelling. Client: SATAC.

- Development of a Reconciliation Strategy for the Amatole Bulk Water Supply Systems, South Africa. (2005). Hydrologist. Climate change and desalination studies made up a part of the project. Client: DWAF.
- Feasibility Study of Utilisation of the Low Level Storage at Vanderkloof Dam. (2005). Hydrologist. A feasibility study into utilisation of low level dam storage, accounting for the hydrological, economic, sociological, soils and environmental aspects thereof. Client: DWAF.

AWARDS

WSP Environmental United Award	2019
WSP Africa Collaboration Award	2018
National Research Foundation Scarce Skills full scholarship – Masters	2002
National Research Foundation Scarce Skills full scholarship – Honours	2001

PUBLICATIONS AND PRESENTATIONS

Publications

- Engineering News – Crisis Proofing Water Preservation a SA Priority. January 2019. King, KN and A. Groves.
- SA Mining – Proactive, Long-Term Solutions for AMD Remain Critical. King, KN.
- Crown Publications – Women in STEM Share Career Advice. August 2018. King, KN, J Nhlapo, F A’Bear and H Manthose.
- Facing the Acid Mine Water Menace Squarely. African Mining. March 2018. King, KN.
- Sustainable Solutions Possible for AMD Treatment. Mining Weekly May 4 2018. King, KN.
- Shared Accountability Needed to Solve SA’s Water Issues. News24. May 2017.
- Understanding Climate Effects. Mail and Guardian February 10-16 2017. King, KN, F Engelbrecht and J Weir.
- Water Management Crucial for Ensuring Economic Viability. Engineering News March 3 2017. King, KN and G Matthews.
- Effects of Land Use Changes on the Cape Flats. Environmental Sciences. King, KN and Janse van Rensburg, RT. 2016.
- Storm Water Management Involving the ‘First Flush’ Principle. Environmental Management November/December 2015. King, KN and E Naidoo.
- Exploring Water Resources Sustainability in a Trans-Boundary Context. Water and Sanitation Africa. May/June 2012. King, KN and Dr K Winter. 2012.
- Study Shows Not all Answers in Science. Published in the January/February 2006 Water Wheel. Volume 5. No.1. WRC, Pretoria, South Africa. King, KN. 2006.
- The analysis of 74 years of rainfall recorded by the Irwins on two farms south of Potchefstroom. SD Lynch, JT Zulu, KN King, DM Knoesen. WaterSA Vol.27 (4) 2001: 559-564. 2001.

Presentations

- Yanfolila Gold Mine Open Pit Slope Depressurisation. ICARD IMWA 2018. CSIR International Conference Centre in Pretoria. September 2018. Lottreaux, G, King, KN and J McStay.
- Effects of Land Use Changes on the Cape Flats. The Combined Congress. 18-21 January 2016. University of the Free State, Bloemfontein. King, KN and Janse van Rensburg, RT
- A Combined Water Quality–Water Quantity Assessment for King Shaka International Airport. WISA Biennial Conference – Durban ICC – May 2016 – Paper Accepted August 2015. King, KN and Pickering, C
- Soil and Mine Water Assessment for Proposed Community Agricultural Projects. The Combined Congress. 20-23 January 2014. Rhodes University, Grahamstown. King, KN and Wuite, M. 2014
- Assessment of Water Resources Sustainability in a Trans-Boundary Context. WISA Youth Conference. July 2013. King, KN and Dr. K Winter. 2013
- Approaches to Sustainability Assessment in Trans-Boundary Basins. The International Conference on Water Security, Risk and Society. Oxford University, England. 16-18 April, 2012. King, KN. 2012
- Exploring Water Resources Sustainability in a Trans-Boundary Context. 15th South African National Hydrology Symposium (SANCIAHS), 2011. King, KN. And K. Winter. 2011
- Characteristics of Gravity Waves presentation at the Faculty of Science and Agriculture Post-Graduate Research Symposium, UKZN. 20th September, 2005. Durban, Howard College. 2005
- SANCIAHS (South African National Hydrological Symposia). 12th set of Proceedings – Pietermaritzburg, 2001. Floods and Droughts. Lynch, SD, Knoesen, DM and King, KN. 2001



THE SOUTH AFRICAN COUNCIL
FOR
NATURAL SCIENTIFIC PROFESSIONS

herewith certifies that

Karen Nicole King

Registration number: 400035/11

is registered as a

Professional Natural 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 I of the Act)

Earth Science

02 March 2011

2 March 2011

Pretoria


President


Chief Executive Officer



Education

*Master of Science (MSc)
Biodiversity &
Conservation, University of
Johannesburg,
Johannesburg, South
Africa, 2018*

*Bachelor of Science (Hons)
Zoology, University of
Johannesburg,
Johannesburg, South
Africa, 2015*

*Bachelor of Science (BSc)
Biochemistry & Zoology,
University of
Johannesburg,
Johannesburg, South
Africa, 2014*

Certifications

*Candidate Natural Scientist
(South African Council for
Natural Scientific
Professions),
(119651)*

*South African Scoring
System version 5 (SASS5)
practitioner, DWA, 2019-
2022; 2022-2025*

Languages

English – Fluent

IsiZulu – Fluent

Sesotho – Fluent

Setswana – Intermediate

Xitsonga – Intermediate

Sepedi – Intermediate

Golder Associates Africa (Pty.) Ltd. – Johannesburg

Aquatic Ecologist

Tebogo is a SASS-accredited Aquatic Ecologist with a M.Sc. in Biodiversity and Conservation and has over 4 years' worth of experience in the environmental management field. He has spent 3 years within the consulting industry with focus on various aquatic-related studies thereby establishing himself as an aquatic ecologist. Tebogo has been involved in numerous Aquatic Ecology projects across various sectors including mining (e.g., coal, gold, platinum, diamond, titanium etc.), industrial (e.g., smelters, special economic zones, etc.), transport infrastructure upgrades (e.g., roads, airports, rapid transport systems, etc.), public utility services infrastructure (e.g., powerline installations, bulk water pipelines, etc.), as well as mixed-use, residential and commercial developments. He has undertaken aquatic ecology surveys across the Gauteng, Mpumalanga, Free-State, KwaZulu Natal and Limpopo provinces of South Africa and other African countries including Swaziland, Lesotho, Tanzania, Mali as well as along the Zambezi and Chobe rivers in Botswana, Zambia and Namibia. He has acted as lead Aquatic Ecologist for numerous projects, responsible for completion of the aquatic biodiversity and impact assessment surveys, report compilation and amendment to the report queries. He has been involved at various levels of Specialist Input required for the nationally legislated environmental processes throughout South Africa, especially in the form of Environmental Impact Assessments (EIA's) or Environmental and Social Impact Assessments (ESIA's), Mining Right Applications (MRA's), Water Use License Applications (WULA's), as well as in fulfilment of Biodiversity Management Plans (BMP's).

Employment History

WSP Golder – Johannesburg

Aquatic Ecologist (June 2022 to Present)

Lead aquatic ecologist managing biomonitoring, baseline biodiversity and impact assessment projects in fulfilment of regulatory requirements including International Finance Corporation (IFC) Performance Standards.

Digby Wells Environmental – Johannesburg

Aquatic Ecologist (November 2019 – May 2022)

Aquatic ecologist managing biomonitoring, baseline biodiversity and impact assessment projects in fulfilment of regulatory requirements including IFC Performance Standards. Field assistant for local and international noise monitoring assessments.

GCS Water & Environmental (Pty) Ltd.

Junior Aquatic Ecologist (March 2019 to November 2019)

Responsible for executing aquatic biomonitoring assessments from preparation to undertaking field surveys, data collation and report writeup. for various ecological surveys including aquatic biomonitoring; aquatic, fauna and flora baseline biodiversity assessments.

	<p><i>The Biodiversity Company (Pty) Ltd.</i> <i>Junior Natural Scientist (September 2018 to March 2019)</i></p> <p>Field assistant and data collation for various ecological surveys including aquatic biomonitoring; aquatic, fauna and flora baseline biodiversity assessments.</p> <p><i>Gauteng Department of Agriculture & Rural Development.</i> <i>Biodiversity Unit Intern (March 2018 to August 2018)</i></p> <p>Field assistant for various surveys including the River Eco-status Monitoring Programme (fish and aquatic macroinvertebrates); grass owl monitoring; Game management (Game counts; CUDA); veld condition assessments; conservation and rescuing of medicinal and horticultural plants. Reviewing and providing inputs for Environmental Impact Assessment reports; and the removal of alien invasive plants.</p>
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PROJECT EXPERIENCE – INTERNATIONAL PROJECTS

Karo Platinum ESIA (2022) Chegutu, Zimbabwe	Environmental and Social Impact Assessment (ESIA) for the proposed powerline. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.
KBP-JV (2021-2022) Kasane, Botswana	Environmental Monitoring for the Kazungula Bridge Project. Responsible for undertaking quarterly aquatic biomonitoring surveys and data collation.
Barrick Gold (NMG) ESIA (2022) Nyamongo, Tanzania	Environmental and Social Impact Assessment for the proposed Gena-Gokona Expansion Project. Responsible for assisting with field surveys and data collation.
Barrick Gold (2021) Loulo, Mali	Aquatic Biomonitoring at the Loulo & Goukoto Gold Mining Complex. Responsible for assisting with field surveys and data collation.

PROJECT EXPERIENCE – SOUTH AFRICA PROJECTS

Exxaro Resources (2019-2022) Mpumalanga	Aquatic Biomonitoring at the Matla Colliery. Responsible for undertaking quarterly aquatic biomonitoring surveys, data collation and report writeup.
Mafube Coal (2020-2022) Mpumalanga	Aquatic Biomonitoring at the Mafube Colliery. Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.
Sasol mining (2020-2022) Free State	Aquatic Biomonitoring for the proposed Ash Backfilling Project at Defunct Sigma Colliery. Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.
Sasol mining (2020-2022) Free State	Aquatic Biomonitoring for the Mooikraal Colliery. Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.
Ivanplats (2021) Limpopo	Aquatic Biomonitoring for the Ivanplats complex. Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.
Universal Coal (2021) Limpopo	Aquatic Biodiversity and Impact Assessment Update for the Proposed Environmental Regulatory Process for the New Clydesdale Colliery Mining Right Area. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.
Far West Gold Recoveries (2021) Gauteng	Aquatic Ecology and Impact Assessment for the Far West Gold Recoveries Kloof Application. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.
Harmony Gold Mining (2021-2022) Gauteng	Aquatic Biomonitoring for the Kusasaletu Operations. Responsible for undertaking biannual aquatic biomonitoring surveys, data collation and report writeup.
Pan African Resources (2021) Gauteng	Aquatic Biodiversity & Impact Assessment for the Pan African Resources PLC Environmental Application Process. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.
Copper Sunset Sand Mine (2021) Gauteng	Aquatic Ecology and Impact Assessment for the Proposed Sand Mine Expansion. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

Universal Coal (2020) Limpopo	Aquatic Ecology and Impact Assessment for the Proposed Dalyshope Coal Mining Project. Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.
Fetakgomo-Tubatse Municipality (2020) Limpopo	Aquatic Ecology and Impact Assessment for the Proposed Fetakgomo-Tubatse Special Economic Zone (FTSEZ). Responsible for the aquatic biodiversity and impact assessment including field surveys and report compilation.

TRAINING

Environmental Impact Assessment for reviewers' certificate

(North-West University; 2018)

Basic First Aid

(All Risk Management, 2021)

Defensive Driving Course

(Topgear Driving Academy, 2020)

Advanced Driving Skills

(Quattro Training, 2015)

PROFESSIONAL AFFILIATIONS

South African Council for Natural Scientific Professions: *Candidate Natural Scientist*. (Reg. No. 119651).



Personal Information:

- Date of Birth: 1969-11-13
- Marital Status: Married
- Nationality: South African
- Contact no: 082 922 9019
- Email: lourens@logis.co.za
- Web: logis.co.za

Years of Industry Experience

- 31 years'

Countries of Experience

- South Africa; Lesotho; Swaziland; Mozambique; Botswana; Zimbabwe; Namibia; Angola; Guinea; Ghana; Uganda; Madagascar

Qualifications and Memberships

- BA (University of Pretoria) Geography and Anthropology (Majors), 1993
- Professional Geo-Information Sciences (GISc) Practitioner registered with the South African Geomatics Council (SAGC). Membership no. PGPO147
- Member: Geo-Information Society of South Africa (GISSA)

Key Skills and Competencies

- Arc/Info and ArcGIS
- Arcview
- QGIS
- Postflight Terra 3D
- PlanetGIS
- Vistapro
- Various GIS support applications
- Microsoft (Word/Excel/Access)

Professional Overview

Lourens provides professional **Geographical Information Systems (GIS)** services to a wide range of clients that require the processing, analysis and presentation of geospatial data. His overarching function is the application of GIS in environmental management and planning, impact assessments and spatial modelling, but his services often extend to a much broader range of business sectors. These include the application of GIS in:

- Agriculture
- Bulk service providers and utilities
- The renewable energy sector
- Electricity generation and distribution
- Mining and exploration
- Urban and rural development planning
- Conservation and tourism
- Strategic integrated planning
- Environmental education and social awareness
- Engineering, transport and infrastructure development

He is an accomplished **Visual Impact Assessment (VIA)** specialist who has successfully undertaken over a 100 visual impact assessments for a wide variety of developments, ranging from mining, renewable energy facilities, power lines to roads and lodges.

Lourens has a multi-disciplinary approach to projects and therefore specialises in creating synergy between planning professionals and project specialists (regardless of the type of project) in order to provide uniform, quality spatial data products, solutions and services.

Experience and Expertise

- Data sourcing and acquisition
- Data capture and processing
- Data evaluation, conversion and transfer
- Geodatabase development/implementation/maintenance
- System design and development
- Spatial analysis/modelling (visibility, slope, aspect, etc.)
- Digital terrain modeling
- Terrain evaluation and site screening
- Image processing and analysis
- Impact assessment and impact management
- Environmental management
- GIS-based decision support systems development
- Project management and report writing
- Map production, display, queries and reporting
- Environmental sciences expertise
- Process development
- Visual impact assessment
- GPS fieldwork and aerial surveys
- Drone data processing

Project Experience

Miscellaneous projects *(A brief description of some prominent and relevant projects)*

GIS mapping and database for Black Eagle habitats and flight patterns in the Karoo National Park

Environmental planning and development control schemes for the Drakensberg Babangibone, Cathkin Peak and Garden Castle development nodes

Goukou River (Stilbaai) Environmental Structure Plan

Conservation and open space proposals for the Umhlanga Forest

Grootvlei mine water pumping operation (Blesbokspruit sub-catchment)

GIS services for the Saldanha steel plant

ENPAT Provincial (1:250,000 scale GIS decision support systems) based on an inventory of environmental and socio-economic geographical data

- ENPAT Northern Province (Limpopo Province)
- ENPAT Mpumalanga
- ENPAT North-West

ENPAT Metropolitan (1:50,000 scale GIS decision support systems) containing environmental and socio-economic geographical data that were evaluated for conservation opportunities, development constraints and agricultural constraints

- ENPAT Gauteng
- ENPAT Cape Town
- ENPAT Durban Functional Region (DFR)
- ENPAT Bloemfontein/Botshabello
- ENPAT Port Elizabeth

ENPAT National (1:1,000,000 scale GIS decision support system) and ENPAT publication

Environmental Management Frameworks (EMF). Frameworks of spatially represented information connected to environmental management parameters designed to aid in the pro-active identification of potential conflict between development proposals and critical and/or sensitive environments

- EMF Northern Province (Limpopo Province)
- EMF Mpumalanga
- EMF North-West

Spatial Development Initiatives (SDI). The fast tracking of the EMF concept for priority SDI's

- Lubombo Corridor SDI
- Coega Industrial Development Zone (IDZ)
- Wild Coast SDI
- West Coast Investment Initiative

Sigma colliery: North-West strip operation

Development masterplan for the Tswaing Crater Museum

Conservation plan for the Rietvlei Nature Reserve

GIS services for the planning and management of the Chobe National Park (Botswana)

GIS services for an environmental overview of South Africa

Demarcation/delineation of regions in South Africa

Orange-Vaal (ORVAAL) transfer scheme - Caledon cascades scheme

ENPAT Provincial (1:250,000 scale GIS decision support systems) based on an inventory of environmental and socio-economic geographical data

- ENPAT Eastern Cape
- ENPAT Free State
- ENPAT Kwa-Zulu Natal

Environmental Management Frameworks (EMF). Frameworks of spatially represented information connected to environmental management parameters designed to aid in the pro-active identification of potential conflict between development proposals and critical and/or sensitive environments

- EMF Eastern Cape
- EMF Free State
- EMF Kwa-Zulu Natal

Hennops River EMF (environmental inventory and management proposals in Centurion)

The Important Bird Areas (IBA) of South Africa map and database

Centurion Metropolitan Substructure Environmental Management Framework (EMF)

Alexandra renewal project EMF

Carbon Sinks and Sequestration - Eastern Cape Wild Coast. Information maps for the "Carbon Sinks - A Rehabilitation Option for South Africa's Natural Environment" report

Prince Edward and Marion Islands. Maps for the World Heritage Site (WHS) bid document

Theewaterskloof and Genadendal - Integrated spatial data management system

Gauteng Communication Network Strategy (GAUCONS). Environmental zones for the control of the construction of telecommunication structures

Gauteng Industries Buffer Zones. The mapping of industrial and mining activities, the creation of buffer control zones and the development of a GIS-based decision support system for the Gauteng Province

Limpopo National Park (LNP) Mozambique. Base maps for fieldwork and planning

Schmidtsdrift Environmental Management Program Report (EMPR)

Loch Vaal Environmental Management Framework (EMF)

Rustenburg - Strategic Environmental Assessment (SEA). The creation of environmental control zones, a GIS-based decision support system and information poster

Faerie Glen Nature Reserve Strategic Environmental Assessment (SEA)

Willow Quarries - Environmental Impact Assessment (EIA). Modeling of mining expansion plan and the potential impact on Golden Mole habitats

Ekurhuleni Metropolitan Municipality (EMM) Environmental Management Framework (EMF)

Limpopo - State of the Environment Report (SoER)

Windhoek (Namibia) - Environmental Structure Plan (ESP)

Gauteng Supplementation and Implementation of EIA Regulations Project (EIA SIP)

Siyanda District Municipality Environmental Management Framework (EMF)

Olifants and Letaba River Catchments Environmental Management Framework (EMF)

Barberton Nature Reserve environmental sensitivity mapping and land use zoning plan

Kapama Private Game Reserve map

Gauteng EMF and landscape character assessment

Majuba CCGT environmental screening

MTPA Nature Reserves (Manyeleti, Mthethomusha, Mkombo, Mdala, Mabusa and Loskop) Integrated Management Planning (IMP)

Ugu District Municipality EMF and landscape character assessment

Greater Lakenvlei Protected Environment resource mapping

North West (Coetzersdam, Pomfret, Buxton, Taung Station, Pudimoe, Lotlhakane Village and Delareyville) environmental sensitivity mapping for PV facilities

Bayside Aluminium Smelter Water Use License Application

CESVI (African Ivory Route) resource mapping for Nthubu, Blouberg, Mutale Falls, Funduze, Modjadji, Baleni, Mtomeni, Mafefe and Manyeleti Camps

Master Plan for Kaloum and Loose Islands, Conakry, Guinea

Ekurhuleni Open Space mapping

Kumba Heuningkranz and Kolomela mines concept study

Joburg Property Company land strategy – inner city transformation roadmap

Bioregional Plan for the Mopani District

N2 Corridor Strategic Corridor Development Plan and landscape character assessment

Polokwane outfall sewer route and waste water treatment works

Ghana Northern Regions environmental overview

Rand Water disaster risk assessment

Redstone Solar Thermal Power Plant environmental sensitivity mapping

Landscape/Land use character maps for Ladysmith and Estcourt, Durban and Pietermaritzburg, Newcastle and Dundee

Oil and Gas Industrial Park, Hoima District, Uganda

Waterberg District EMF

Boegoebaai Port Development environmental screening

Lonmin Marikana Mining Operations environmental overview

Moses Kotane Local Municipality Integrated Environmental Management Plan

Vhembe District Bioregional Plan

Capricorn District Bioregional Plan

Sekhukhune District Bioregional Plan

Tourist maps for 12 provincial nature reserves in Limpopo

Afgri Grain Management spatial database

Eskom land cover and Isopleths (SO₂)

Gamma-Kappa transmission line corridors GIS and mapping

Nseleni Independent Floating Power Plant GIS and mapping

Regional Strategic Environmental Assessments (Regional Assessments)

Regional assessment for the Eskom Wind Energy Facility (Sere) in the Western Cape

Regional assessments for the Eskom Wind Integration Project (WIP)

- Area 1: West Coast (Saldanha to Garies)
- Area 2: Overberg Region

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- Area 3: Beaufort West region
 - Area 4: Eastern Cape (Tsitsikamma to Port Elizabeth)
 - Area 5: Northern Cape (Hondeklipbaai to Port Nolloth)

Sandveld Wind Energy Regional Assessment

West Coast National Park (Saldanha area) Regional Assessment

Regional Assessment for the Theewaterskloof Municipal area

Brand-se-Baai (Exxaro) wind energy regional assessment

Overberg (BioTherm) wind energy regional assessments

- Area 1: Gordons Bay to Pearly Beach
- Area 2: Napier RA (Agulhas NP/Swellendal region)

Suurplaat/Sutherland (Investec Wind Energy Development) Regional Assessment

Waterberg (Limpopo) Concentrating Solar Power (CSP) Regional Assessment (Exxaro)

Western Cape Province Regional SEA for Wind Energy Facility developments

ISS Global Mining Regional SEA for Power Station Developments in Mpumalanga Province

Northern Cape Province Regional SEA for Wind Energy Facility developments

Bosjesmansberg Regional SEA for solar PV projects

Delmas Regional SEA for Power Station Developments in Mpumalanga

Limpopo Regional SEA for solar PV projects

Slangkop Regional SEA for Wind Energy Facility developments

Bakenskop, Trouberg and Harpuisberg Regional SEA for WEFs

Wolf Wind (Addo Elephant NP) regional assessment

Nelson Mandela Bay Metropolitan Municipality SEA for WEFs

Umuziwabantu Local Municipality SEA

Visual Impact Assessments (VIA), viewshed analyses and visual assessments

- Coal strip mining in Zimbabwe viewshed analyses
- Viewshed analyses and sensitivity mapping for telecommunication masts in the northern provinces (Limpopo, Mpumalanga and North-West)
- Siemens 3rd license cellular communications infrastructure EIAs. Viewshed analyses and sensitivity mapping for over 4,000 telecommunication mast sites in all major metropolitan areas of South Africa.
- CSIR high mast viewshed analysis and sensitivity mapping

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- Atlantis Open Cycle Gas Turbine power station VIA
 - Kynoch Gypsum Tailings dam extension VIA
 - N1 Western Bypass Shell service station VIA
 - Coega regional hazardous waste processing facility VIA
 - Robinson Deep landfill extension VIA
 - Hazardous waste blending platform VIA
 - Mercury-Ferrum-Garona transmission line integration VIA
 - Matimba B (Medupi) coal-fired power station VIA
 - Concentrating Solar Power (CSP) plant in Upington VIA
 - Zeus to Mercury transmission line (comparative viewshed analyses)
 - Mmamabula (Botswana) transmission line and power station viewshed analyses
 - Petronet new multi-products pipeline VIA
 - Wind energy facility (Sere) in the Western Cape province VIA
 - Ankerlig power station conversion and transmission line VIA
 - Gourikwa power station conversion and transmission line VIA
 - Kyalami strengthening project VIA
 - Steelpoort integration project VIA
 - Medupi reservoir and telecommunication mast VIA
 - VIA's for Basic Assessment Reports (wind monitoring masts)
 - Cookhouse, Hopefield, Amakhala, Caledon, Worcester, Tulbach, Overberg, Britannia Bay, Brand-se-Baai, Deep River, Happy Valley, River Bank, Uiekraal, Beaufort West, Laingsburg, Rheboksfontein, Suurplaat and West Coast
 - Cookhouse wind energy facility VIA
 - Hopefield wind energy facility VIA
 - Mokopane Integration Project VIA
 - Cradle of Humankind World Heritage Site (WHS) viewshed protection zone, visual character assessment and visual zonation plan
 - Indwe wind energy facility VIA
 - Amakhala wind energy facility VIA
 - Boontjieskraal wind energy facility VIA
 - Britannia Bay wind energy facility VIA
 - Brand-se-Baai wind energy facility VIA
 - Upington and Pofadder solar thermal facilities VIAs
 - Dorper wind energy facility VIA
 - Flagging Trees wind energy facility VIA
 - Rheboksfontein, Suurplaat and West Coast wind energy facilities VIAs
 - Riverbank wind energy facility VIA
 - Waterberg photovoltaic plant VIA
 - Eskom wind intergration projects VIAs
 - Welgedacht water care works VIA
 - Aberdeen wind energy facility
 - Aggeneis-Oranjemund power line intergration
 - Project Blue wind energy facility
 - Inca De Aar solar energy facility
 - Aced De Aar solar energy facility
 - Exxaro Lephale solar energy facility
 - Happy Valley wind energy facility
 - Hendrina power station ash dam extension
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- Hidden Valley wind energy facility
 - Kakamas photovoltaic plant
 - Karoo renewable energy facility
 - Ilanga (Karoskraal) solar thermal power plant
 - Keimoes photovoltaic plants (Sonnenberg, Ofir and Geelkop)
 - Kimberley photovoltaic solar plant
 - Kleinbegin photovoltaic plant
 - Kleinzee wind energy facility
 - Koingnaas wind energy facility
 - Kabi Vaalkop (Orkney) PV solar energy facility
 - Oyster Bay wind energy facility
 - Ilanga Lethemba (Paardevelei) PV solar energy facility
 - Uppington photovoltaic solar facility
 - Ramphele (Ritchie) PV solar energy facility
 - Rodicon PV solar energy facility
 - Ruukie (Mpumalanga) coal fired power station
 - Saldanha Steel wind energy facility
 - Kathu, Sishen and San Solar PV solar energy facilities
 - Christiana, Morgenzon and Hertzogville PV solar energy facilities
 - Namaqua and Voëlkip PV solar energy facilities
 - Denhami (Struisbaai) wind energy facility
 - Spitskop wind energy facility
 - Tsitsikamma community wind energy facility
 - Uyekraal wind energy facility
 - Veldrift and Saldanha wind energy facilities
 - Vredendal photovoltaic solar energy facility
 - Wag'nBiekiespan solar energy facility
 - Walker Bay wind energy facility
 - Riemvasmaak (Augrabies) hydro electric facility
 - Bosjesmansberg solar energy facility
 - Everest, Grootkop, Watershed and Oryx PV solar energy facilities
 - Garob to Kronos power line
 - Graafwater PV solar energy facility
 - Kgabalatsane solar energy facility
 - Kheis solar park project
 - Gihon and Kison solar energy facilities
 - New Dimensions PV solar park in Mafikeng
 - Goereesoe (Outeniqua) wind farm
 - Burchell, Cuprum to Mooidraai power line
 - Rheboksfontein WEF power line
 - Ruuki power station
 - Sirius Solar PV projects
 - Tiger solar energy facility
 - Uyekraal WEF
 - Velddrif WEF
 - Zen WEF
 - Zoutpan (Olifants River) WEF
 - Gunsfontein and Stormberg WEFs

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- Aberdeen WEF
 - Albertinia WEF
 - Exxaro Baseload Power Station Lephallale
 - Blue Wave (Wolmaransstad) PV SEF
 - Castle WEF
 - East Power Line (Hotazel)
 - Elliot WEF
 - Exheredo Renewable Energy projects
 - Kareebosch WEF
 - Koeberg to Ankerlig Power Line
 - Mainstream Pofadder renewable energy facility
 - Stuart Coal Weltevreden coal mine
 - Transalloys Coal-fired power plant
 - Colenso Power Station and Mine
 - Lonmin Mooinooi landfill extension
 - Metsimatala Concentrating Solar Power facility
 - Matjhabeng PV Solar Energy Facility
 - Modderfontein Solar Thermal PV Plants (Ekhurhuleni)
 - iSimangaliso Wetland Park viewshed analysis
 - Melkspruit substation to Rouxville substation power line
 - Muhlava mine
 - Tina Falls hydropower project
 - Boulders Wind Farm
 - Allepad PV 1- 4 SEFs
 - Licthenburg PV 1 - 3 SEFs
 - Namas and Zonnequa WEFs and overhead power lines
 - Wobben wind energy converter
 - Haga Haga WEF
 - Hyperion power line
 - Jagdlust overhead power lines and substation
 - Ilanga (Karoshoek) Solar Park
 - Calodex PV SEF
 - Kolkies and Sadawa PV SEFs
 - Kotulo Tsatsi PV SEFs
 - CBE WEF near Toalagnaro in Madagascar
 - Richards Bay Gas to Power Project
 - Grid connection infrastructure for the Frontier Power Gas to Power Project
 - Vrede and Rondavel PV SEFs
 - Vygenhoek Platinum Mine
 - Various comparative viewshed analyses and reviews for Part 2 Amendments

Professional History

4/2017: Professional GISc and VIA Practitioner (sole proprietor/self employed)

1/2016 – 3/2017: SMEC South Africa, Pretoria – Technical Specialist

11/1999 – 12/2015: MetroGIS (Pty) Ltd, Pretoria – Director

10/1997 – 10/1999: GISBS (GIS Business Solutions - Q Data Consulting) – Project Manager

4/1990 - 9/1997: GisLAB CC (GIS Laboratory - University of Pretoria) – Member / Project Manager

Courses & Conferences attended

1997 ESRI International User Conference – United States of America

Publications & Papers presented

Name: Gateway to Kruger Map and Guide

Authors: Andy Tinker Photography

Publisher: ATP Publishing

Date: 2010

Name: Kruger National Park Map and Photographic Guide

Authors: Andy Tinker Photography

Publisher: ATP Publishing

Date: 2007

Name: Lowveld and Kruger Guide

Authors: High Branching Team

Publisher: Jacana Media (Pty) Ltd

Date: 2004

Name: Heights to Homes to Oceans (H2O) Water Wise information poster

Authors: Rand Water

Publisher: Rand Water

Date: 2004

Name: Garden Route - Still Bay to Storms River (Discover the Magic)

Authors: Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2003

Name: KwaZulu-Natal - A celebration of biodiversity

Authors: Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2001

Name: Pilanesberg Official Map and Park Guide

Authors: North-West Parks & Tourism Board and Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2001

Name: ESRI Map Book (Volume 13)

Authors: Various

Publisher: Environmental Systems Research Institute (ESRI)

Date: 1998

Name: Environmental Potential Atlas for South Africa

Authors: W. van Riet, J. van Rensburg, P. Claassen, L. du Plessis and T. van Viegen

Publisher: J.L. van Schaik

Date: 1997

Awards

Award: Best South African Environmental Technical Paper

Awarded for: Environmental Potential Atlas for South Africa (Publication)

Awarded by: Environmental Planning Professions Interdisciplinary Committee (EPPIC)

Date: 1998

Award: QDC Performance Award

Awarded for: ENPAT Development

Awarded by: Q Data Consulting

Date: 1998

Award: Best Cartographic Map Gallery Competition - 3rd Place

Awarded for: Environmental Potential Atlas for South Africa (Publication)

Awarded by: Environmental Systems Research Institute (ESRI)

Date: 1998 International ESRI User Conference

Award: Map Gallery Most Analytical Competition - 3rd Place

Awarded for: Environmental Potential Atlas for South Africa

Awarded by: Environmental Systems Research Institute (ESRI)

Date: 1997 International ESRI User Conference

Award: Best South African Environmental Technical Paper

Awarded for: National Environmental Potential Atlas (ENPAT National)

Awarded by: Environmental Planning Professions Interdisciplinary Committee (EPPIC)

Date: 1995

Language Skills

Mother Tongue: Afrikaans

Languages	Speak	Read	Write
English	Good	Good	Good
Afrikaans	Good	Good	Good

THE SOUTH AFRICAN COUNCIL FOR
PROFESSIONAL AND
TECHNICAL SURVEYORS



DIE SUID AFRIKAANSE RAAD VIR
PROFESSIONELE EN
TEGNIESE OPMETERS

CERTIFICATE OF REGISTRATION
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Hiermee word gesertifiseer dat

Lourens Martinus du Plessis

was registered as a

geregistreer is as 'n

PROFESSIONAL GISc PRACTITIONER

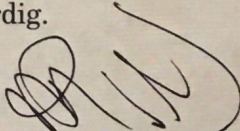
on the 11th day of July 2011

op die 11^{de} dag van Julie 2011


in accordance with the provisions of the Professional and Technical Surveyors' Act, 1984 (Act No 40 Of 1984) and is entitled to carry on his/her profession or calling in any part of the Republic of South Africa in terms of the said Act and rules framed thereunder.

ingevolge die bepalings van die Wet op Professionele en Tegnieese Opmeters, 1984 (Wet nr 40 van 1984) en geregtig is om sy/haar beroep of nering in enige deel van die Republiek van Suid-Afrika te beoefen ingevolge die genoemde Wet en reëls daarvolgens uitgevaardig.

Issued under the Seal of the Council
Uitgereik onder die Seël van die Raad



President



Registration Number
Registrasienommer **PGP 0147**

Heunak
Registrar
Registrateur



Education

*Master of Environmental Management
Environmental Management, University of the Free State, Free State, 2020*

*Bsc (Hons) Environmental management
Environmental Management, University of South Africa, Johannesburg, 2016*

Bsc life and environmental science Geography and environmental, University of Johannesburg, Johannesburg, 2012

Languages

Tshivenda – Fluent

English – Fluent

Zulu – Fluent

Johannesburg

Junior Wetland Ecologist

Lufuno is a junior wetland ecologist with seven years' experience in the consulting firm. Her experience includes environmental permitting, environmental compliance auditing and biodiversity assessments which includes wetland assessment, terrestrial assessment, and aquatic biomonitoring assessment. Her core interest lies in biodiversity assessment, particularly, wetland ecological assessments.

Her responsibilities within the biodiversity division at Golder includes wetland monitoring, wetland delineation and wetland health assessments, wetland impact assessment, terrestrial assessments, and biodiversity management assessments. She has successfully completed biodiversity assessment project both locally and internationally (Africa).

Employment History

Golder Associates Africa (Pty) Ltd. – Midrand Wetland Ecologist (2017 to Present)

- Conducting Environmental Impact Assessments
- Compiling Environmental Management Plans
- Involvement in international Environmental and Social Impact Assessment in the Oil and Gas industry
- Conducting external Environmental Compliance Auditing
- Undertaking Mining Right Applications and Section 102 applications
- Conducting Wetland Assessment and Delineations
- Conducting Aquatic Biomonitoring Assessments
- Involvement in Ecological Assessments
- Involvement in Mine Closure and Rehabilitation Plan
- Conducting surface water and Groundwater monitoring

Sazi Environmental Consulting – Midrand Environmental Consultant (2015 to 2017)

- Water use License Application
- Environmental Practice facilitation
- Wetland Assessment and Delineation
- Business development
- Ecological Assessments and species identification
- Integrated Water and Waste Management Plans
- Environmental Impact Assessment (Basic Assessment)
- ARC GIS Mapping (locality maps, sensitivity areas and delineation maps) Public participation Process
- Environmental Compliance and Enforcement Audits
- Implementing the Environmental management plan

Sebata Group of Companies – Midrand

Environmental sciences intern (2013 to 2014)

Involvement in undertaking Environmental Impact Assessments (EIAs);

Report/chapter writing;

Preparation of project proposals, cost outline, resource allocation and timeline.

Site visit and attendance/participation at meetings;

Conducting Public Participation Process;

Involvement in Eskom Projects such as Ingula Pump Storage Scheme;

Assisting in ISO 14001 internal auditing.

PROJECT EXPERIENCE – ECOLOGY

Metalkol Mining Concession Katanga, DRC	Compiled a Biodiversity Action Plan for Metalkol Mining Concession
Arnot Mine Mpumalanga, South Africa	Collaborated in the compilation of Arnot Mine Closure Site Biodiversity Study
Eskom Lethabo Power Station Free State, South Africa	Compiled a Biodiversity Management Plan for Eskom Lethabo Power Station consistent with the norms and standards for biodiversity management plans for indigenous and migratory species in accordance with Eskom Biodiversity standards
Kamoa Copper Katanga, DRC	Compiled a Biodiversity Impact Assessment for Kamoa Copper Powerline ESHIA
Lakenvlei Wetland Rehabilitation Mpumalanga, South Africa	Compiling a Wetland Construction Method Statement for the rehabilitation process Monitoring rehabilitation progress
Anglo American BMP Mpumalanga, South Africa	Screening Assessment for Flora and Fauna species within seven Anglo American Mines
Genser Ghana Ghana	Phase II Biodiversity Baseline, Impact Assessment and Action Plan
Glencore iMpunzi Mpumalanga, South Africa	Ecological screening study for the proposed haul road at iMpunzi complex mine
Nooitgedacht 406KQ portion 2 and 10 Limpopo, South Africa	Conducting a wetland delineation and assessment of Portion 2 and 10 of the Nooitgedacht 406 KQ Property associated with the Nooitgedacht Mine as part of a Water Use License Application.
Mafube LifeX Project Mpumalanga, South Africa	Conducting a wetland audit of the wetland crossings within the Mafube LifeX site against the approved WUL conditions
Belfast Implementation Project Mpumalanga, South Africa	Conducting a wet season wetland assessment to monitor changes within each identified Belfast wetland HGM unit against the baseline results obtained prior to the Belfast Implementation Project.

PROJECT EXPERIENCE – ENVIRONMENTAL ASSESSMENT

Glencore iMpunzi Mpumalanga, South Africa	Conducting environmental Impact Assessment and compiling the scoping report for the integrated regulatory process associated with the proposed expansion of the iMpunzi paddocks and venture dump facilities
Bushveld Vametco North west, South Africa	Conducting Basic Impact Assessment for the Development of solar panels and a Vanadium Redox Flow Battery storage within a mining right area at Vametco Mine in Brits, North West.

Vanderbijlpark service road along Houtheuvel and Potchefstroom railway line

Gauteng, South Africa

Environmental Assessment Practitioner for a basic assessment and Water Use Licence of the reconstruction of the Transnet Collapsed bridge in Vanderbijlpark service road along Houtheuvel and Potchefstroom railway line.

PROJECT EXPERIENCE – ENVIRONMENTAL MANAGEMENT**GoodRock Chemworks**
Kathu, Northern cape

Conducting external Environmental compliance audit for the operational phase of a Ball Mill project

Universal Coal North Block Complex (NBC) Paardeplaats Mine
Mpumalanga, South Africa

External Environmental Control Officer for NBC Paardeplaats Mine. Undertaking weekly environmental compliance audits in accordance with the approved EMP and authorised WUL at the Paardeplaats Mine.

Vopak South Africa Developments_Lesedi
Gauteng, Heidelberg, South Africa

Environmental Control Officer for the VSAD Lesedi Project. Conducting environmental compliance audits for the construction phase of the VSAD Lesedi which entails the construction of hydrocarbon storage tanks.

Ariadne-Eros Eskom Powerline
Kwazulu-Natal, South Africa

Environmental Control Officer for the Eskom Ariadne-Eros Powerline .Conducting environmental compliance and enforcement audits on a full-time basis during the construction of the Eskom Powerline.

TRAINING

Introduction to Wetland Delineation and Assessment
University of Free State, 2017

Standard ARC GIS mapping
ESRI, 2015

PROFESSIONAL AFFILIATIONS

South African Wetland Society

South African Council of Natural Scientist Professional

Education

BSc Eng Civil, University of the Witwatersrand, Johannesburg, 2009

Languages

Afrikaans – Fluent

English – Fluent

Midrand

Water Engineer

Eugeshin currently works in the Water Resources Department as a Water Engineer. His previous experience was primarily in the development, calibration and running of various dynamic water balance models in Goldsim. He also has experience in flood line delineation, dam yield analysis and development of storm water management plans for various mines in Africa. Projects also involved baseline monitoring of rainfall, surface water flow and water quality.

Employment History

WSP Group Africa (Pty) Ltd – Johannesburg

Water Engineer (2019 to Present)

Knight Piesold Pty Ltd – Johannesburg

Water Engineer (2016 to 2019)

GCS (Pty) Ltd – Johannesburg

Water Resources Engineer (2014 to 2016)

Golder Associates Africa (Pty) Ltd – Johannesburg

Water Resources Engineer (2011 to 2014)

DSE Structural Engineers and Contractors – Johannesburg

Design Engineer (2010 to 2011)

PROJECT EXPERIENCE – DAM ENGINEERING

**Ferroglobe
Silicone Smelters**
Mpumalanga, South
Africa

Storm water dam detailed design and construction supervision.

PROJECT EXPERIENCE – WATER RESOURCES

Simandou
Simandou, Guinea

Design of culverts and bridges for railway crossings. Hydrological and hydraulic analysis for river flood peak determination, flood line derivation. Unsteady analysis was used to size the major streams traversing the project area.

**Richards Bay
Industrial
Development Zone**
Kwazulu-Natal, South
Africa

Calculated flood peaks, flood lines and sized culverts for road crossings on a number of water courses in the Industrial Development Zone.

**Platreef Water
Study** Limpopo,
South Africa

Designed, installed and monitored a network of specialized hydrological and meteorological monitoring stations. This involved site selection, measuring the river cross section and measuring surface water flow. Hydrological and hydraulic analysis for river flood peak determination and flood line delineation.

**Grootegeeluk Coal
Mine** Limpopo, South
Africa

Design of mine storm water management plans, including design of channels, sumps, return water dams, weirs, and culverts.

**Ruighoek Chrome
Mine**
North West Province,
South Africa

Design of mine storm water management plans, including design of channels, sumps, return water dams, weirs and culverts.

Greenside Collieries
Mpumalanga, South
Africa

Hydrological and hydraulic analysis for river flood peak determination and flood line derivation. Design of mine storm water management plans, including design of channels, sumps, return water dams, weirs, culverts.

PROJECT EXPERIENCE – CIVIL ENGINEERING

**Cononish
Mine** Scotland

Storm water system and settlement pond detailed design.

**Kusile Power
Station** Mpumalanga,
South Africa

Determined the capacity of the existing Kusile coal stockpile area stormwater management plan as a concrete liner has been implemented on the contributing catchments.

**Medupi Power
Station** Limpopo,
South Africa

Design of surface water and sewage infrastructure.

SUPPLEMENTAL SKILLS

Dam Design

Detailed design of embankment dams.

Flood Line

Flood line calculation and delineation.

Storm Water Management

Design of mine storm water management plans; including design of channels, sumps, return water dams, weirs, and culverts.

PROFESSIONAL AFFILIATIONS

South African Institute of Civil Engineers, Member No. 201600424

Engineering Council of South Africa, Member No.: 20190664

**Education**

*Bachelor of Science in Engineering
(Chemical Engineering)
Engineering, Howard College,
Durban, 2011*

Languages

English – Fluent

Midrand***Environmental Consultant and Modeller***

Novania is a consultant with over 9 years' experience in the environmental industry. Her area of expertise lies within the air quality and acoustics fields related to sectors ranging from mining to the oil and gas industry. Novania has a broad understanding of the various laws and regulations associated with the air quality and noise procedures. She holds the responsibility of data collection, inventory development, compilation of air emission licence and scientific modelling and reporting. Her project experience includes countries such as South Africa, Botswana, Guinea, Zambia, Dubai, Iraq, Jordan and Saudi Arabia.

Novania has also obtained a certificate in the Greenhouse Gas Reporting Training Course and was involved in the development of a municipality wide greenhouse gas evaluation in South Africa which included two major refineries.

Additionally, Novania has a year of experience within the petrochemical industry at Total SA where she has learnt prominent aspects such as communication skills, having attended a 3 day course for a communication workshop and leadership traits, by training fellow staff members. These characteristics along with her sound knowledge of the petrochemical industry has attained her to become the consultant she is today.

Employment History

Golder Associates Africa (Pty) Ltd – Johannesburg, South Africa
Environmental Consultant and Modeller

WSP Environmental (Pty) Ltd – Johannesburg, South Africa
Consultant (2016 to 2018)

Senior Consultant (2019 to 2020)

WKC Group – Durban, South Africa
Environmental Engineer (2013 to 2016)

Total SA – Durban, South Africa
Graduate (2012 to 2013)

PROJECT EXPERIENCE – AIR QUALITY**Air Quality Impact Assessment for Bauxite Project (2021)**
Cameroon

An Air Quality Impact Assessment was undertaken to develop the Minim Martap Bauxite Project in Cameroon. The Project is made up of the Minim Martap, Makan and Ngaoundal exploration permits, the haul route to transport the bauxite from the mine to the railway facility, the rail transport corridor, the Port facilities within the Douala port and transshipment between the Douala berth and a deep-water transshipment location.

Air Quality Impact Assessment for the Vale BSM 4&5 Project (2021)
Mozambique

An Air Quality Impact Assessment was undertaken for the Vale's Moatize Coal Mine in the District of Moatize, in the province of Tete, in Mozambique. The mine has been producing coking coal (CC) and thermal coal (TC) for export to several countries since 2011, through the Ports of Beira and Nacala. A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for Kamo-a-Kakula Project (2020/2021)
Democratic Republic of the Congo

An Air Quality Impact Assessment was undertaken which focused on the Kakula mine development, that aimed to produce 565 000 tonnes of copper concentrate per annum, through the mining of 6 MTPA of copper sulphide ore from the Kakula deposit. A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for the Kolwezi Road Project (2020/2021)
Democratic Republic of the Congo

An Air Quality Impact Assessment was undertaken for a new Bypass Toll road that will divert heavy truck traffic (mining, general freight, agriculture) of over 220 000 trucks per year around the Kolwezi city centre in the DRC. A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for the Zibulo Colliery (2020/2021)
Mpumalanga, South Africa

An Air Quality Impact Assessment was undertaken for the Zibulo Colliery for the development of a proposed coal and discard dump, located north-west of the town of Ogies, on the footprint of its opencast mine in Mpumalanga. A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for the Mafube Colliery (2020)
Mpumalanga, South Africa

An Air Quality Impact Assessment was undertaken for the Mafube Colliery to provide the environmental inputs into the Crush and Stockpile project, which supported mining of the MGF pit. A Level one screening model (SCREENVIEW) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for the Tulu Kapi Gold Mine (2020)
Ethiopia

An Air Quality Impact Assessment was undertaken to determine the potential air quality impacts on the surrounding environment from the proposed mining operations. A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Air Quality Impact Assessment for the Palabora Copper Stream Operations (2020)
Limpopo, South Africa

An Air Quality Impact Assessment was undertaken for the Palabora Copper Stream Operations in Limpopo. Palabora was proactively seeking an emissions inventory and dispersion modelling study to supplement their management plan for emissions reduction and control.

Air Quality Impact Assessment for the Palabora Vermiculite Operations (2020)
Limpopo, South Africa

An Air Quality Impact Assessment was undertaken for the Palabora Vermiculite Operations in Limpopo. Palabora was proactively seeking an emissions inventory and dispersion modelling study to supplement their management plan for emissions reduction and control.

Air Quality Impact Assessment for the N3 Project (2019/2020)
Durban, South Africa

An Air Quality Impact Assessment for the proposed widening, realignment and upgrades of the N3 in the Key Ridge area in KwaZulu-Natal was undertaken. It was understood that the N3 was operating at full capacity with traffic studies indicating the need to upgrade sections of the N3 to accommodate future growth and to improve road safety. Therefore, the South African National Roads Agency SOC Limited proposed to widen, realign and upgrade a section of the N3, extending from approximately just after the M13 Interchange, at the top of Key Ridge, to the Hammersdale Interchange at the bottom of Key Ridge. The study required an AQIA to be undertaken, using a Level 2 dispersion model (AERMOD) to assess the potential impacts of specified sensitive receptors on the surrounding environment.

Air Quality Monitoring and Management Plan for the Koumbia Bauxite Project, Guinea (2019/2020)
Guinea

The Koumbia Bauxite Project included the exploration and development of an open cut mine as well as related infrastructure. An Air Quality Monitoring and Management Plan for the Koumbia Bauxite Project in Guinea was compiled.

Air Quality Impact Assessment for the proposed T3 Copper Mine Project in the Ghanzi District, Botswana (2018/2019)
Ghanzi, Botswana

The proposed development included an open pit mine and processing plant (concentrator) at the project site as well as all associated facilities and infrastructure including tailings disposal, waste dumps, water and power supply, workshops, offices and other required facilities. Key pollutants associated with on-site activities were identified as PM₁₀ (particulate matter with an aerodynamic diameter less than 10 microns) and PM_{2.5} (particulate matter with an aerodynamic diameter less than 2.5 microns). A Level two dispersion model (AERMOD) was utilized to predict the potential air quality impacts associated with the proposed project.

Atmospheric Impact Report for the Kelvin Power Station within the Ekurhuleni Metropolitan Municipality, Gauteng (2018)

Johannesburg, South Africa

In support of the Air Emission License renewal for the Kelvin Power Station, an Air Quality Impact Assessment was undertaken. This assessment aimed to assess the ambient impact of PM, SO₂, NO₂ and CO emissions associated with the operations onsite. An emissions inventory for the onsite sources was developed, and inputted to a Level 3 atmospheric dispersion model, CALPUFF, to calculate ambient air concentrations of key pollutants associated with the operations. Relevant long-term (period) and short-term 99th percentile 24-hour and 1-hour average concentrations for the pollutants of focus were compared with the relevant National Ambient Air Quality Standard.

Atmospheric Impact Report for the Permoeseal facility within the City of Cape Town (2018)

Cape Town, South Africa

In support of the Air Emission License for the Permoeseal facility located in Montague Gardens, an Air Quality Impact Assessment was undertaken. This assessment aimed to assess the ambient impact of PM and VOC emissions associated with the operations onsite. An emissions inventory for the onsite sources was developed, and inputted to a Level 2 atmospheric dispersion model, AERMOD, to calculate ambient air concentrations of key pollutants associated with the operations. Relevant long-term and short-term average concentrations for the pollutants of focus were compared with the relevant National Ambient Air Quality Standard.

Atmospheric Impact Report for the ArcelorMittal South Africa Newcastle Works facility within the Amajuba District Municipality (2016)

Newcastle, South Africa

An Air Quality Impact Assessment was undertaken using the AERMOD atmospheric dispersion model in order to assess the potential ambient air quality impacts. The results were assessed against the South African Ambient Air Quality Standards.

Air Quality Impact Assessment for the Boseto Mine in Botswana (2016)

Ghanzi, Botswana

The study comprised a screening level assessment, using a Level 1 dispersion modelling platform (SCREEN3), to predict the potential air quality impacts associated with the mine for a current throughput of 2 mtpa and an increased throughput of 3.6 mtpa. Ambient PM₁₀ and TSP were identified to be the key pollutants of concern from the mining operations.

Annual Reporting for the Weir Minerals Isando Foundry (2016)

Johannesburg, South Africa

An Annual Report for the 2015 reporting period in the heavy industrial zone of Isando in Ekurhuleni Metropolitan Municipality in the Gauteng Province was compiled. Annual reporting of emissions, auditing and upgrades of the facility are an important component of tracking progress on air pollution and for tracking performance and relative contributions of pollution sources which will in turn assist in assessing historic trends. This report included key items such as operations at the facility, legal framework, pollutant emission trends, compliance audit reports, major upgrades projects (abatement or process equipment) and greenhouse gas emissions.

Air Quality Impact Assessment for Al Lajun Shale Processing Facility, Jordan, Amman (2015)
Amman, Jordan

An air quality impact assessment for the proposed mining facility located in Jordan was performed. The objective of this Project was to design, construct and operate an oil shale processing facility that is safe and efficient to operate and maintain combined with a minimal environmental footprint. The Project involved the construction and operation of a 4,000 barrels per day plant, based on retort technology, with an operating capacity of 250 tonnes per hour. Further Project phases are planned to enable full development of the oil shale resource. The project involved developing an emission inventory of the entire facility and was modelled using CAPLUFF as the modelling platform.

Air Quality Impact Assessment for the Scrap Metal Recycling Plant Project, Durban, Isipingo and Elsies Rivier, Cape Town, South Africa (2014)
Durban / Cape Town,
South Africa

A review of relevant Republic of South Africa ambient air quality legislation was undertaken and a summary of the minimum standards that was required to be achieved was quantified and assessed. Emissions of NO₂, CO, PM, HCl, HF, NH₃, Hg, metals, Cd + TI and PCDD/PCDF were assessed.

Atmospheric Impact Report for Eskom Grootvlei, Mpumalanga, South Africa (2014)
Mpumalanga, South
Africa

An Atmospheric Impact Report was prepared in order to accompany Eskom's application for a temporary relaxation of certain requirements of the Grootvlei Atmospheric Emission Licence. This involved developing an emission inventory for the existing power station and modelling the PM emissions which were of concern.

Air Quality Impact Assessment for Nemai NATREF Clean Fuels Project II, Sasolburg, South Africa (2014)
Sasolburg, South Africa

An air quality impact assessment for the NATREF Plant was undertaken, which involved developing an emission inventory for the both the normal and upset conditions. The key emissions included NO_x, SO₂, CO and PM.

Odour Impact Assessment for the Shell Majnoon Project, Basra, Iraq (2014)
Basra, Iraq

An odour screening study at the DS1 facility located at the Shell Majnoon Field was conducted. The quantitative assessment has been undertaken to determine whether continuous venting of hydrocarbon gases from two oil flow tank vents could lead to odour nuisance experienced by workers.

Update of Greenhouse Gas Emission Inventory Project, eThekweni Municipality, Durban, KwaZulu-Natal, South Africa (2014)
KwaZulu-Natal, South Africa

An evaluation of the greenhouse gas emissions from certain activities within the municipal boundaries was undertaken. The scope included a high-level review and verification of the whole 2012 Greenhouse Gas Emission Inventory that was prepared by the Energy Office. The inventory provided the basis for creating an emissions forecast and reduction target tool, and enabled the quantification of emissions reductions associated with implemented and proposed measures.

Odour Impact Assessment for the Sunderland and Hennops Project, South Africa (2013)
Sunderland / Hennops, South Africa

An odour impact assessment was conducted. The project involved developing an odour emission inventory for the existing and proposed facilities and AERMOD modelling software was thereafter utilized to quantify and assess the odour impact.

Air Quality Impact Assessment for the Rustenburg Incinerator Project, Rustenburg, South Africa (2013)
Rustenburg, South Africa

An air quality impact assessment for the proposed incinerator in Rustenburg was undertaken. Key emission sources included SO₂, NO_x, PM and CO.

Atmospheric Dispersion Modelling Assessment for SABIC Carbon Fiber Project, Kingdom of Saudi Arabia (2013)
Yanbu, Saudi Arabia

An air dispersion modelling assessment for the SABIC PAN Precursor and Carbon Fiber Project was undertaken. This involved developing an emission inventory for the combustion sources and vent scrubbers. The key emissions included NO₂, CO, SO₂, PM₁₀, NH₃, HCN, and tar. Acrylonitrile, vinyl acetate monomer, dimethylamine and dimethylacetamide were also considered for an emergency case for the vent scrubbers.

Atmospheric Dispersion Modelling Assessment for the Petro Rabigh Phase II Project, Kingdom of Saudi Arabia (2013)
Rabigh, Saudi Arabia

This Project consisted of expanding the ethane cracker and new aromatics complex at the Petro Rabigh facility. This considered emissions of NO₂, CO, SO₂, PM₁₀, cumene, alpha-methyl styrene, acetone, phenol, acetaldehyde, propanol, dimethyl benzyl alcohol and acetophenone.

PROJECT EXPERIENCE – NOISE**Noise Impact Assessment for Bauxite Project (2021)**
Cameroon

A Noise Impact Assessment was undertaken to develop the Minim Martap Bauxite Project in Cameroon. The Project is made up of the Minim Martap, Makan and Ngaoundal exploration permits, the haul route to transport the bauxite from the mine to the railway facility, the rail transport corridor, the Port facilities within the Douala port and transshipment between the Douala berth and a deep-water transshipment location.

Noise Impact Assessment for the Vale BSM 4&5 Project (2021)
Mozambique

A Noise Impact Assessment was undertaken for the Vale's Moatize Coal Mine in the District of Moatize, in the province of Tete, in Mozambique. The mine has been producing coking coal (CC) and thermal coal (TC) for export to several countries since 2011, through the Ports of Beira and Nacala. The CadnaA model was utilized to predict the potential noise impacts associated with the proposed project.

Noise Impact Assessment for the proposed T3 Copper Mine Project in the Ghanzi District, Botswana (2018/2019)
Ghanzi, Botswana

In order to assess the environmental acoustic impacts of the proposed development both baseline (monitored) and proposed construction and operational noise levels were assessed. Comparison of the existing and proposed noise levels at various specified sensitive receptors (noise receivers) enabled an assessment of changes in noise levels at these locations as a result of the proposed development. Such changes were then assessed against the South African National Standards community or group responses in order to assess the anticipated impacts/responses as a result of such increases.

Noise Impact Assessment for the Polokwane Smelter in the Limpopo province (2017)
Limpopo, South Africa

An acoustic impact assessment for the proposed SO₂ abatement equipment, during the operational phase, at the Polokwane Smelter was performed. CadnaA was used as the advanced modelling platform to assess the impact of the proposed noisy sources.

Preliminary and Final Noise Impact Assessment for the Ma'aden Ammonia Project, Kingdom of Saudi Arabia (2016)
Ras Al Khair, Saudi Arabia

A Preliminary and Final Acoustic Impact Assessment for the Ma'aden Umm Wu'al Phosphate Project's Ammonia Package Project was undertaken to determine the findings of a predictive acoustic modelling analysis of high-noise emitting equipment associated with the Project.

Noise Impact Assessment for Munali Nickel Mine Facility in Zambia (2016)
Albidon, Zambia

An acoustic impact assessment for the existing and proposed sources within the mining facility was conducted. SoundPlan was used as the modelling podium to assess the impact of the existing and proposed noisy equipment to be implemented on site.

**Noise Impact
Assessment for the
Boseto Mine in
Botswana (2016)**
Ghanzi, Botswana

A screening-level acoustic impact assessment of the proposed 3.6 mtpa operations at the Boseto Mine was undertaken in order to determine the acoustic impacts of the Proposed Project on the nearby residential receptors.

**Noise Impact
Assessment for the
proposed development
at the Amasundu
Quarry in KwaZulu-
Natal (2016)**
KwaZulu-Natal, South
Africa

A screening-level acoustic impact assessment of the proposed development of a staged mobile crushing plant at the Amasundu Quarry, near Mtunzini was undertaken. This assessment evaluated the potential acoustic impacts associated with the establishment and operational phases of the proposed crushing on the nearby residential receptors.

**Noise Impact
Assessment for Al
Lajun Shale
Processing Facility
(2015)**
Amman, Jordan

Undertook an acoustic impact assessment for the proposed mining facility located in Jordan. SoundPlan was used as the advanced modelling platform to assess the impact of the noisy equipment on site.

TRAINING

AERMOD and CALPUFF Modelling Course
2018

HIRA Training
2018

Snake Awareness Training, African Snakebite Institute
2016

**Education**

Masters (Environmental Science) , University of Pretoria, South Africa

Honours Degree in Development Studies, UNISA

BA Degree in Anthropology; University of Pretoria

Managers Development Programme (MDP) (University of Stellenbosch)

Certificate in Public Participation from the International Association of Public Participation Practitioners.

Languages

English

Afrikaans

Golder Associates Africa (Pty) Ltd. – A Member of WSP**Senior Social Scientist**

Stephen has been working in the social sciences since 1998 (23 years), in the mining, oil and gas, renewable energy and agricultural sectors. Expertise includes public participation, social baseline studies, social impact assessment, development of mitigation measures, social management plans, community and stakeholder engagement, resettlement action plans, grievance mechanisms, high conservation value assessments and livelihood restoration plans.

Stephen has experience both locally, in South Africa, and internationally, working in compliance with International Finance Corporation (IFC) social performance standards. He has worked in 13 African countries including Angola, Botswana, Cameroon, Democratic Republic of Congo, Ivory Coast, Mali, Malawi, Mozambique, Nigeria, São Tome, Sierra Leone, South Africa and Tanzania.

Employment History**Independent Consultant (August 2015 to 11 March 2022)**

Independent social sciences consultant (6 years).

Digby Wells Environmental (December 2008 to July 2015)

Principal Consultant, Departmental Manager (7 years).

Perisseuo Consulting CC, CK98/68973/23, (December 1998 to December 2008)

Self employed. Independent Consultant.

University of South Africa (UNISA); Dept of Development, (January 1996 to December 1998)

Administration, Junior Lecturer, Co-ordinator: Centre for Development Administration

South African Defence Force, (February 1990 to December 1990)

Operational Medical Orderly, Medical Phase course instructor.

PROJECT EXPERIENCE – INTERNATIONAL EXPERIENCE

Resettlement Action Plan: Implementation of Stakeholder Engagement Process for Grave Relocations - Mozambique Gas Development Project for Total Energy, Professional Grave Solutions (Mozambique) 2018 – 2021

High Conservation Value (HCV) Monitoring: HCVs 4,5 and 6, Monitoring and management plan development, Socapalm Palm Oil Plantations, HCV Africa (Cameroon) 2021

Resettlement Action Plan Development: Longonjo Ndpr Project, International Finance Corporation (IFC), standard, Pensana, HCV Africa, (Angola) 2021

Social Impact Assessment and Stakeholder Engagement: For the Proposed Minbos Cácata Phosphate Mine Project, Cabinda Province, HCV Africa (Angola) 2021

Retrocession of concession areas: Stakeholder Engagement and Participatory Process of ceding parts of the Agripalma palm oil concession back to the government of São Tome, HCV Africa (Sao Tome) 2021

Social Impact Assessment and Stakeholder Engagement Longonjo Ndpr Project Environmental and Social Impact Assessment (ESIA), International Finance Corporation (IFC), HCV Africa (Angola) 2019 - 2021

High Conservation Value Assessments: Socapalm palm oil plantations for Roundtable of Sustainable Palm Oil (RSPO) certification, HCV Africa (Cameroon and São Tome) 2018-2020

High Conservation Value Assessment: SOGB palm oil plantation for RSPO certification HCV Africa (Ivory Coast) 2019

Stakeholder Engagement Process: Grave Relocation Action Plan (GRAP) Development - Mozambique Gas Development Project, Anadarko, Professional Grave Solutions (Mozambique) 2016

Stakeholder Engagement Process Review: Environmental and Social Impact Assessment (ESIA), International Finance Corporation (IFC), Nachu Graphite Mine, Uranex, Digby Wells (Tanzania) 2015

Stakeholder Engagement: EISA, IFC, Rare Earths project, Mkango Resources, Digby Wells (Malawi) 2014 – 2015

Stakeholder Engagement: ESIA, IFC, Bridge over the Niger River, Aurecon, Digby Wells (Nigeria) 2013 -2014

Stakeholder Engagement: ESIA, RAP, IFC, Hydro Power Stations on the Kibali River, Randgold Digby Wells (Democratic Republic of Congo) 2013

Stakeholder Engagement Plan: Life of Mine Kibali Gold Project, Randgold, Digby Wells (Democratic Republic of Congo) 2012

Stakeholder Engagement: Hydro Power Developments ESIA, Kibali Gold Project Randgold, Digby Wells (Democratic Republic of Congo) 2012

Stakeholder Engagement Independent Review: Afema Gold project Taurus Gold, Digby Wells (Ivory Coast) 2012

Stakeholder Engagement: Updating of ESIA, IFC, Lolo Mine Randgold, Digby Wells (Mali) 2011

Public Consultation and Disclosure: ESIA, Resettlement Action Plan (RAP) engagements to IFC standard, Randgold, Digby Wells (Democratic Republic of Congo) 2010-2012

Public Consultation and Disclosure: ESIA, IFC, Resource Development, Digby Wells (Sierra Leone) 2010-2011

Public Consultation and Disclosure: Nzoro Road Upgrade ESIA, IFC, Randgold, Digby Wells (Democratic Republic of Congo) 2010-2011

Social Impact Assessment: Doko- Aru road upgrade IFC, Randgold, Digby Wells (Democratic Republic of Congo) 2010-2011

Independent Review: Bankable Feasibility Study, IFC, Banro Corporation, IMC, Digby Wells (Democratic Republic of Congo) 2009

Public Consultation and Disclosure: Serorome Parshalt, Mamabula Project ESIA IFC, CIC Energy, Digby Wells (Botswana) 2008

Anthropological Research: Chizumulu Island, Lake Malawi (Malawi) 1996

SOUTH AFRICAN PROJECT EXPERIENCE:

Social Impact Assessment: Proposed Botterblom Wind Energy Facility, (Northern Cape) 2021

Social Development Facilitation: Namakwa Irrigation Scheme, Talmar, Sustainable Developments, Onseepkans, (Northern Cape) 2018-2019, 2021

Public Participation process: Leslie 1 Coal Mining Project, Glencore, Kongiwe Environmental, Leslie (Mpumalanga) 2018

Public Participation process: eMakhazeni Coal Mining Project, Glencore, Kongiwe Environmental, Belfast (Mpumalanga) 2018

Public Participation process: Lephalale Coal and Power Project, Kongiwe Environmental, Lephalale (Limpopo) 2017

Social Development: Maboloka-Letlhabile Ground Water Supply Project, LMJ Consulting, Magalies Water, (Brits) 2016

Public Participation Process: EIA Sludge Storage Facility and Pipeline Associated with the Treatment of Acid Mine Drainage in the Eastern Basin of Witwatersrand Gold Fields, AECOM, Digby Wells, (Springs) 2014 - 2015

Public Participation Process: Environmental Regulatory Processes for Proposed Syferfontein Block 4 Mine Expansion Project, Sasol Mining, Digby Wells (Trichardt) 2014-2015

Public Participation Process: Environmental Authorisation for Listed Activities Associated with a Proposed Open Pit Coal Mine on the Farm Weltevreden 381 JT, Northern Coal, Digby Wells Environmental, Belfast, (Mpumalanga Province) 2014 – 2015

Stakeholder Engagement: ESIA, Platreef Resources, Digby Wells (Limpopo) 2013 -2014

Public Participation Process: Trichardtsfontein Mining Right Application, Xstrata Coal South Africa, Digby Wells (Mpumalanga) 2013

Public Participation Process: EIA for the Immediate and Short Term Interventions for the Treatment of Acid Mine Drainage (AMD) In the Western, Central and Eastern Basins of the Witwatersrand Gold Fields, TCTA, BKS, Digby Wells (Gauteng) 2012

Environmental Impact Assessment: Mining Right application and NEMA applications, Universal Coal, Digby Wells, (Mpumalanga) 2012

Public Participation Process: Zandbaken Mine, EIA Green Fields Project, Xstrata Coal, Digby Wells (Mpumalanga) 2012

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- Social and Labour Plan Audit:** Northern Coal Jaglust Colliery, Digby Wells (Mpumalanga) 2011
- Public Participation:** Prospecting Right Application, Mincorp, Digby Wells (KwaZulu Natal) 2011
- Public Participation:** Mining Right Application, Temo Coal, Digby Wells (Limpopo) 2011
- Social and Labour Plan:** Vollspruit Mine, Sylvania, Digby Wells (Steelpoort Valley Limpopo) 2011
- Social and Labour Plan:** Kangwane South, Zyl Limited, Digby Wells (KwaZulu Natal) 2011
- Social and Labour Plan:** Palesa Colliery, HCI Kusela, Digby Wells (Gauteng) 2011
- Social and Labour Plan:** Easternplats Kenidies Vale & Spitzkop, Digby Wells (Limpopo) 2011
- Public meetings facilitation:** Lesedi Power Station, Xstrata Alloys, Digby Wells (Mpumalanga) 2010
- Public Participation Process:** Palesa Colliery Expansion, HCI Khusela, EIA EMP amendment, Digby Wells (Mpumalanga) 2010
- SLP Local Economic Feasibility Assessment:** Xstrata Coal, Digby Wells (Mpumalanga) 2010
- Public Consultation:** Geluk Closure Plan Mashala Resorches, Digby Wells (KwaZulu Natal) 2010-2011
- Public Participation:** Crown Ergo Pipeline Project, DRD Gold, Digby Wells (Gauteng) 2010-2011
- Social and Labour Plan Audit:** Eastplats, Crocodile River Operations, Digby Wells (North West) 2010
- Community Baseline Survey:** Xstrata Coal Operations, Digby Wells (Mpumalanga) 2009-2010
- Environmental Impact Assessment:** Mining Right Application, Universal Coal, Digby Wells (Mpumalanga) 2009-2011
- Community Baseline Survey:** Kutala Southern Access Project, BHP Billiton, Digby Wells (Mpumalanga) 2009
- Public Participation:** Mbali Mine EMP amendment, HCI Khusela, Digby Wells (Mpumalanga) 2009
- Public Participation:** Bankfontein, Mining Right Application, Marafe Resources, Digby Wells (Mpumalanga) 2009
- Social and Labour Plan:** Agnus Mine Tyax Trading Mining Right Conversion, Digby Wells (Mpumalanga) 2009
- Social and Labour Plan:** Kangala Mining Right Application, Universal Coal, Digby Wells (Mpumalanga) 2009
- Public consultation:** Prospecting Right Application Bakgaga Mining, Digby Wells (Limpopo) 2008
- Public participation:** Schoongezicht, Mining Right Application, Mincorp, Digby Wells (Mpumalanga) 2008
- Public consultation:** Topstar Dump Reclamation, Crown Gold Recoveries, (Gauteng) 2008-2011
- Public participation:** Arnot Coal EIA/EMP amendment, Exxaro, Digby Wells (Mpumalanga) 2008-2010
- Public participation:** Pomodzi Gold EMP Amendment, Digby Wells (North West) 2008
- Consultation Process:** Prospecting Right Application Vista Resources, Digby Wells (Makhado Local Municipality, Limpopo Province) 2008
- Public Participation Process:** IFC and World Bank standards Proposed ConRoast Platinum Smelter, TWP Perisseuo Consulting (North West) 2008
-

Social Impact Assessment: IFC and World Bank standards proposed Wesizwe Platinum Mine TWP, Perisseuo Consulting (North West) 2007-2008

Public Participation Process: Closure Plan Black Mountain Mine, Umsizi, Perisseuo Consulting (Northern Cape) 2007-2008

Public Participation: Super Dump (EIA) Mintails, Umsizi, Perisseuo Consulting (Gauteng) 2008

Special Intervention Programme: Data Management Specialist, Free Basic Water Implementation, Department of Public Works, Bigin Africa, Perisseuo Consulting (National) 2008

Consumer Survey: Water Services: Regulation Department of Water Affairs and Forestry WRP, Perisseuo Consulting (National) 2008

Business Intelligence Team: Water Services: Planning and Information Department of Water Affairs and Forestry, Perisseuo Consulting, (National) 2005 -2008

Preliminary Environmental, Social and Transition Management Assessments: for possible sites for National Government Head Offices the Department of Public Works, BKS, Perisseuo Consulting (Pretoria, Gauteng) 2007-2008

Monitoring and Evaluation Framework: Department of Provincial and Local Government Focus BI, Perisseuo Consulting (National) 2006

Public Participation: for the conversion of the old order mining rights: extension of existing opencast mining operations, construction of a river diversion and application for an integrated water use licence on the farm Halfgewonnen 190 is, CT Environmental, Perisseuo Consulting (Mpumalanga) 2006

Environmental Impact Assessment: (EIA): and Environmental Management Programme (EMP) for Boschmanskop Coal Mine, CT Environmental, Perisseuo Consulting (Mpumalanga) 2006

Socio-Economic Profiling: Kromme, Seekoei Catchments, Reserve Determination, Department of Water Affairs and Forestry, Coastal & Environmental Services, Perisseuo Consulting (Eastern Cape) 2006

Public Participation: Taba Romana Granite, CT Environmental, Perisseuo Consulting (Britz, North West) 2006

Social Plan Development: BHP Billiton, Digby Wells, Perisseuo Consulting (Revilo North West) 2005

Public Participation: Environmental Management Program Report (EMPR) new coal mine development Boschmanskop, CT Environmental, Perisseuo Consulting (Mpumalanga) 2005

Public Participation: Spitzkop Colliery (EMPR amendment), Digby Wells, Perisseuo Consulting (Ermelo, Mpumalanga) 2005

Resettlement Action Plan: Tselentis Colliery, Digby Wells, Perisseuo Consulting (Mpumalanga) 2004

Feasibility Study: Mankwe Campus University of the North West, Price Waterhouse Coopers, Perisseuo Consulting (North West) 2004

Social Plan Development: Revilo Mine, BHP Billiton, Digby Wells, Perisseuo Consulting (North West) 2004

Preliminary Public Participation: Environmental Management Program Report (EMPR) new coal mine development, Boschmanskop, Digby Wells, Perisseuo Consulting (Mpumalanga) 2004

Social and Labour Plan Development: Chemwes Recovery Operation, Digby Wells, Perisseuo Consulting (North West) 2004

Public Participation: Spitzkop Colliery, EMPR amendment, Digby Wells, Perisseuo Consulting (Mpumalanga) 2003

Public Participation: EMPR and Water License Application new diamond mining development, Etruscan, Digby Wells, Perisseuo Consulting (North West) 2003

Public Participation: EMPR Diamond Mining Development, Digby Wells, Perisseuo Consulting (Vaal River) 2003

Project Coordinator Strategic Environmental Assessment: Usutu – Mhlatuze Water Management Area Department of Water Affairs and Forestry, Perisseuo Consulting (Kwa-Zulu Natal) 2000-2003

Socio-Economic Impact Assessment: Winning Business Systems, Woman's Development Bank, Perisseuo Consulting (Boipatong, Daveyton, Katlehong) 1999

Social Impact Assessment: (EMPR) Tavistock Collieries, Digby Wells, Perisseuo Consulting (Ogies) 1999

Social Impact Assessment: Expansions to Tselentis colliery, Digby Wells, Perisseuo Consulting (Mpumalanga) 1999

Social Impact Assessment: Sand dump reclamation 3/A/1, Digby Wells, Perisseuo Consulting (Gauteng) 1998

CAPACITY BUILDING, TRAINING AND FACILITATION 1998 – PRESENT

Social Development Facilitation: Namakwa Irrigation Scheme, Talmar Sustainable Developments, Onseepkans, (Northern Cape)

Training Community Liaison Officers: For the relocation of approximately 1000 graves in northern Mozambique

Chairing and facilitation: Public and Stakeholder Meetings, Kongiwe Environmental

Chairing and facilitation: Public and Stakeholder Meetings, Digby Wells Environmental

Workshop facilitations: Chair public and stakeholder meetings, various projects, Perisseuo Consulting

Workshop facilitation and chairing meetings: for the Strategic Environmental Assessment (SEA) Usutu to Mhlatuze Water Management Area (WMA), Department of Water Affairs and Forestry

Training and workshop facilitation: for small business development, Winning Business Systems Skills Accel / South Atlantic Plastics

Workshop facilitation and training: in small business development, Client BKS / Consultbro

Co-ordinator: Centre for Development Administration, Teaching Programme in Community Based Development UNISA.

Teaching Participatory Development Management: during attendance sessions, University of South Africa

Junior lecturer: Development Administration first year, teaching first year Development Administration

Tutor: Development Administration first year, University of South Africa

Project trainer: MA Political Science, Managing simulation game: Exaction, Stellenbosch University

Project trainer: Air Traffic Controllers, managing simulation game Green Revolution, Atlas Aviation Company

Kyalami Community Health Education Programme: BKS Consultburo, Consulting Engineers for the Kyalami Metropolitan Council, Perisseuo Consulting (Gauteng Province) 1998

Medical Phase Instructor: Teaching the Operational Medical Orderly Course, South African Medical Services, South African Defence Force (1990)

PROFESSIONAL AFFILIATIONS

International Association for Impact Assessment: South Africa (IAIASA)

International Association for Public Participation Practitioners (IAP²)

**Education**

BSc Geography, University of Pretoria, Pretoria, 2016

Languages

Setswana – Fluent

English – Fluent

Sotho – Fluent

Sepedi – Fluent

Midrand**Employment History****Golder Associates Africa – Midrand**

Consultant (2022 to Present)

As part of the Environmental Planning and Advisory team focused in the permitting division where I conduct stakeholder engagement as well as the compilation of social and environmental permitting reports.

Savannah Environmental – Woodmead

Public Participation Consultant (2021 to 2021)

A public participation/stakeholder engagement consultant focused on the PP process as legislated by NEMA working on mostly renewable energy projects. Compiling notification material, creating and maintaining stakeholder databases, planning and capturing focus group meetings, compiling Comment and Responses Reports, corresponding with Organs of State and I&APs.

Nemai Consulting – Randburg

Social Officer (2021 to 2021)

A social officer appointed on a project basis focusing on social surveys and conducting the public participation process involved in Environmental Impact Assessment and Water Use License applications.

Golder Associates Africa – Pretoria

Junior Consultant (2019 to 2020)

As part of the Mine Environment team focused in the permitting division where I assisted with Stakeholder Engagement as well as the compilation of Basic Assessments, General Authorisations, Integrated Water and Waste Management Plans, Water Use license renewal and Waste License amendments.

Nemai Consulting – Randburg

Environmental Intern (2017 to 2018)

I was part of an internship program at Nemai Consulting, which is an Environmental, Social and Occupational Health & Safety consultancy in Randburg, Johannesburg. The department in which I interned is focuses on Environmental Authorisations and Water Use License Applications.

PROJECT EXPERIENCE – ENVIRONMENTAL ASSESSMENT

- Water Use License Application**
Mpumalanga, South Africa
Assisted in the Water Use License Application for the establishment of an underground mine.
- Water Use License Application**
Free State, South Africa
Assisted in the Water Use License Application for the establishment of an open cast pit and underground mining.
- Water Use License Amendment**
KwaZulu Nata, South Africa
Amendment of a water use license
- Water Use License Audit**
KwaZulu Natal, South Africa
Auditing compliance of the site against the conditions provided in the Water Use License
- Water Use License Renewal**
Mpumalanga, South Africa
Renewal of a mining complex Water use License.
- Lakenvlei Wetland Off-set**
Mpumalanga, South Africa
General Authorisation for the implementation of a wetland rehabilitation strategy.
- Surface Water Pipeline and Associated Infrastructure**
Gauteng, South Africa
Basic Assessment and General Authorisation for the dewatering of a defunct mine shaft through a surface pipeline to a dam.

PROJECT EXPERIENCE – STAKEHOLDER ENGAGEMENT

- Rabie Ridge**
Gauteng, South Africa
A baseline assessment of the baseline Socio-Economic conditions of 5 communities near Tembisa and Rabie Ridge in Johannesburg
- Stakeholder Perception Study**
South Africa
Collecting information on the sanitation facilities of Mining, Industrial, Commercial and Public workplaces in South Africa
- Cullinan**
Gauteng, South Africa
Conducted a crack survey on houses in Cullinan, Gauteng
- Mining Right Application Public Meeting**
Free State, South Africa
Presentation of a public meeting for the mining right application of an underground coal mine.

PROJECT EXPERIENCE – PUBLIC PARTICIPATION

- Woodhouse** A Basic Assessment for grid connection infrastructure associated with a solar pv facility near Vryburg.
North West, South Africa
- Majuba** A Basic Assessment for a general waste disposal site near Amersfoort.
Mpumalanga, South Africa
- Great Karoo** A cluster of renewable energy facilities and associated infrastructure near Richmond
Northern Cape, South Africa
- Nama Solar** A Basic Assessment for solar energy facilities and associated grid infrastructure near Kleinsee.
Northern Cape, South Africa
- Korana** A substantive amendment of a Wind Energy Facility near Pofadder.
Northern Cape, South Africa
- Poortjies 2** A substantive amendment of a Wind Energy Facility near Pofadder.
Northern Cape, South Africa
- Wind Relic** A Basic Assessment for a Cluster of Renewable Energy Facilities between Somerset East and Makhanda.
Eastern Cape, South Africa
- Pienaarspoort 2** A Basic Assessment for solar energy facilities and associated grid infrastructure near Ceres.
Western Cape, South Africa
- Vrede and Rondavel** A Basic Assessment for electrical grid infrastructure near Kroonstad.
Free State, South Africa
- Northam** A Basic Assessment for a Solar PV facility near Northam.
Limpopo, South Africa

PROFESSIONAL AFFILIATIONS

SACNASP - 130284