ESKOM HOLDINGS SOC (LTD)

KOMATI POWER STATION SOLAR PHOTOVOLTAIC, BATTERY ENERGY STORAGE SYSTEM, WIND ENERGY FACILITIES AND ANCILLARY INFRASTRUCTURE

DRAFT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT
PART II – APPENDICES A – D3

22 AUGUST 2022 FINAL

KOMATI POWER STATION SOLAR PHOTOVOLTAIC, BATTERY ENERGY STORAGE SYSTEM, WIND ENERGY FACILITIES AND ANCILLARY INFRASTRUCTURE

DRAFT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - PART II – APPEDICES A – D3

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SIGNATURES

PREPARED BY

Megan Govender
Senior Consultant

REVIEWED BY

Tutayi Chifadza
Principal Consultant

This Draft Environmental Impact Assessment Report (Report) for the Proposed Construction of a Solar Photovoltaic, Battery Energy Storage System and Wind Energy Facility at the Komati Power Station has been prepared by WSP Group Africa (Pty) Ltd (WSP) on behalf and at the request of Eskom Holdings SOC Ltd (Client), as part of the application process for Environmental Authorisation.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client, as well as the supporting specialist studies. We have not reviewed any other documents in relation to this Report, except where otherwise indicated in the Report.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

PART II – APPENDICES A – D-3

PART III – APPENDICES E-1 – E-7

PART IV – APPENDICES E-8 – E-14

E-8 Visual

E-9 Aquatic Biodiversity

E-10 Traffic

E-11 Social

E-12 Groundwater

E-13 Contaminated Land

E-14 Geotechnical Desktop Study

APPENDIX

A EAP CVS

ASHLEA STRONG, MEM, EAP

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

Years with the firm

8

Years of experience

18

Professional qualifications

EAPASA

Areas of expertise

Auditing

ESIR

Energy

Environmental Control

Infrastructure

Mining

Training

Waste Management

CAREER SUMMARY

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

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

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

EDUCATION

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

ADDITIONAL TRAINING

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

PROFESSIONAL MEMBERSHIPS

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

PROFESSIONAL EXPERIENCE

Energy Sector

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

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

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

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

Infrastructure Sector

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

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

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

Mining Sector

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

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

Waste Management Projects

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

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

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

Specialist Projects

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

Auditing

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

authorisations at the Mogalakwena Mine in the Limpopo Province. Client: Anglo American Platinum.

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

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

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

Environmental Control Projects

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

Training

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

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

CHIFADZA TUTAYI, Pri.Sci.Nat, B.Sc.H

Environmental Consultant (Environmental Management), Environment & Energy

Years with the firm

3>

Years of experience

>7

Areas of practice

Environmental Management

Environmental and Social Impact Assessment

Compliance Auditing

Environmental, Social and Governance (Due Diligence Services)

Environmental Screening Assessments

Waste Classification and Management

CAREER SUMMARY

Tutayi Chifadza is an Environmental Consultant currently working for WSP at the Johannesburg, Bryanston office in the Environmental Services division. He also serves as a Client Relationship Manager for a strategic set of WSP's clients. He moved to WSP from Sparrow Consulting early 2016 where he was Project Manager for their Technical Manual/Training material development team.

He has experience in Scoping and EIA projects in several industrial sectors including Oil & Gas, Waste Management, Mining and Agricultural sectors applying local legislation. In 2018, he was part of the team that conducted an ESIA in Somaliland for Dubai Port World in their bid to expand the Port of Berbera quay. Furthermore, he has extensive experience in conducting compliance audits in different sectors on Environmental Authorisations, Waste Management Licenses and Environmental Management Programmes. He has been involved on a couple of projects conducting Environmental Health and Safety audits for worker safety.

Tutayi has also been involved in a couple of Due Diligence projects in the Industrial as well as Oil & Gas sectors. This has been through a desktop exercise reviewing documents provided and identifying information gaps as well as conducting site visits with the guidance of checklists generated from IFC Performance Standards.

He is currently part of the Employment Equity Committee at WSP representing foreign nationals as well as the WSP Environmental Fresh Exchange team that provides a link between employees and senior management.

EDUCATION

Bachelor of Science (Honours), Applied Science in Environmental Technology, University of Pretoria, Pretoria, South Africa	2013
Bachelor of Science, Chemistry, University of Pretoria, Pretoria, South Africa	2012

PROFESSIONAL REGISTRATIONS

South African Council for Natural Scientific Professions (SACNASP): *Pri.Sci.Nat*	2021

ADDITIONAL TRAINING

IFC Environmental and Social Risk Management Training Course for Due Diligence with focus on IFC Performance Standards and Equator Principles	2018 & 2019
IFC Environmental and Social Risk Management Training Workshop on publicly available tools for assisting in assessing the IFC performance standards for Due Diligence process	2018
Environmental Legal Compliance and Auditing Training by Janice Tooley & Associates	2017
Certificate of Completion for Project Management Professional (PMBOK), e-careers (Online Learning)	2016

PROFESSIONAL EXPERIENCE

Key Environmental Impact Assessment Process

— Gridflex Battery Energy Storage System Screening Assessment, Gauteng, South Africa (2020): Conducted a screening assessment for a proposed BESS facility in

order to determine the suitability of the proposed sites and technology for the project. The purpose of the BESS facility is to store additional energy and feed the grid when there is no supply. Client: Gridflex Limited.

— Eskom Gemsbok-KwaMhlanga 132kV Powerline Basic Assessment, KwaMhlanga, Mpumalanga, South Africa (2020): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Eskom to construct a 132kV powerline. Client: Eskom Holding SOC Limited.

— Eskom Hlanganani Customer Network Centre, Mahatlani, Limpopo, South Africa (2019): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Eskom to clear a 2-hectare area for the purposes of constructing a customer network centre. Client: Eskom Holding SOC Limited.

— Sasol Phenosolvan Plant Decommissioning of Redundant Equipment Basic Assessment (BA), Sasolburg, Free State, South Africa (2019): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Sasol to decommission redundant equipment on the Phenosolvan Plant to create space and improve the health and safety aspects of the site. Client: Sasol South Africa Limited.

— Eskom Medupi Raw Water Pipeline BA, Lephalale, Limpopo, South Africa (2019): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Eskom to clear a servitude in order to construct an underground raw water pipeline within the Medupi site in order to supply water for the use in the Flue Gas Desulphurisation process on the facility to reduce sulphur emissions. Client: Eskom Holding SOC Limited.

— AgriProtein Gauteng Nutrient Recycling Facility EIA, Johannesburg, Gauteng, South Africa (2018): Compiled the EIA supporting documentation including the Scoping Reports, EIA Reports, EMPr and the related public participation material. I was also the main contact with the Gauteng Department of Agriculture and Rural Development. The purpose of the EIA was for Agriprotein to develop and build an industrial scale nutrient recycling bio-technology plant at a green field site. Client: Agriprotein Gauteng.

— Wildcoast Special Economic Zone (SEZ) EIA, Mthatha, Eastern Cape, South Africa (2018): Compiled the EIA supporting documentation including the Scoping Reports, EIA Reports, EMPr and the related public participation material. The purpose of the EIA was for the Coega Development Corporation (CDC) to clear an area and develop an SEZ in the Wildcoast area to the immediate north and immediate south of the Mthatha airport. The purpose of the SEZ is to accommodate different economic activities, with agricultural activities to the north and commercial activities to the south (hotels, etc) to boost the local economy and create employment in the region. Client: Coega Development Corporation.

— Port of Berbera Phase 1 Expansion ESIA, Woqooyi Galbeed, Somaliland (2018): Assisted in compiling the ESIA supporting documentation including the Background Information Document, ESIA Report, Environmental and Social Monitoring Plan, Cumulative Impact Assessment methodology and report as well as the Legal Framework. This was done following conducting site assessments using the IFC Performance Standards as a basis. The purposes of the project was to extend the existing quay on the port in order to support larger vessels as well as expand the shipping container storage area including amenities as well as ensure control of the movement of goods around the region. Client: DP World.

— Proposed Animal Feedlot BA, Mpumalanga, South Africa (2018): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the feedlot was to support the project was

to support the Agri-Parks programme, which is the cornerstone of rural economic transformation, and support the red meat sector in the region. Client: Department of Rural Development and Land Reform.

— BioTherm Wind and Solar Energy Facilities, Western Cape and Northern Cape, South Africa (2017-2017): Created a consolidated impact assessment rating based on the available specialist studies for all the proposed sites. This assisted in acquiring the cumulative impact from all the projects in the area based on the publicly available information. It also included consolidating the comments and response from commenting authorities and stakeholders in the Comments and Responses Report. Client: BioTherm Energy.

— Transnet Pipelines EIA/BA process, Secunda, Mpumalanga, South Africa (2017): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Transnet to acquire an authorisation in order to cover an exposed hydrocarbon pipeline using a concrete gabion mattress structure to protect it and prevent contamination of surrounding watercourses. Client: Transnet Pipelines, a Division of Transnet Limited.

— Anglo Platinum Water Separation Project, Rustenburg, North West, Gauteng (2016-2017): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for Anglo to construct a new raw water pipeline and a reservoir for storage of water for use in the event of lack of supply as well as for firefighting purposes. Client: Anglo American Platinum Limited.

— Amandelbult Mine Dangerous Goods Storage and Railway Extension Project BA, Limpopo, South Africa (2017): Compiled the BA supporting documentation including the BAR, EMPr and the related public participation material. The purpose of the BA was for the client to obtain authorisation to install diesel storage tanks to support the mine expansion as well as the extension of the existing railway line in order to support more rail cars. Client: Rustenburg Platinum Mines Limited.

Due Diligence

— Environmental Due Diligence, South Africa (2020): Partnering a Senior Associate on a Phase 1 EDD conducting a desktop assessment of a site in Cape Town the client proposes to buy to extend their operations. My role entails reviewing existing studies as well as analysing GIS and ESG tools to draft a report which gives insight on the current state of the site along with any major findings the client has to be aware of before proceeding with the transaction. Client: Confidential.

— Environmental Due Diligence, South Africa (2019): Partnered a Senior Associate on a Phase 1 EDD conducting a desktop assessment of various sites in South Africa for an explosives manufacturing company which proposed to buy similar operations from another organisation. My role entailed reviewing existing studies and reports on the various sites to provide insight on the state of the sites along with any major findings the client had to be aware of before proceeding with the transaction. Client: Confidential.

— Environmental Social Governance Due Diligence, South Africa/Swaziland (2017): Partnered with two Senior Associates during the project and conducted site visits and conducted facility inspections (Johannesburg sites and at one facility in Swaziland) based on the checklist prepared in line with EHS Guidelines and IFC Performance Standards (1 and 2) at selected WACO Africa facilities in Johannesburg and Swaziland on behalf of the client who intended to invest. Client: The Abraaj Group.

Compliance Auditing: Key Projects

— Refurbishment (Fit-Out) of The 8th Floor in 140 West Building, South Africa (2020) Tutayi compiled the Environmental Management Plan for the

refurbishment/construction of the Goldman Sachs office space in Sandton, Johannesburg. This included understanding the proposed project activities and deriving the potential impacts from the different project aspects (waste, air quality, etc.). The EMP was compiled to provide the environmental management measures for the site for the proposed site activities in order to acquire a Green Star SA – Office v1 certification by the Green Building Council of South Africa. A monitoring programme was also developed as part of the project. Tutayi applied his scientific knowledge in coming up with the relevant management measures for the expected impacts. Client: Goldman Sachs

— Anglo Gold Ashanti Regulation 34 Audits, Klerksdorp, North West (2019): Conducted an EMPR compliance audit for the mine's Mine Waste Solutions business which focuses on tailings recovery based on Regulation 34 of the requirements of the local National Environmental Management Act (NEMA). Client: Anglo Gold Ashanti Limited.

— Impala Platinum Regulation 34 Audits, Rustenburg, North West (2019): Conducted an EMPR compliance audit focusing on the mine's shafts, concentrators, smelters and other ancillary operational activities based on Regulation 34 of the requirements of the local NEMA. Client: Impala Platinum Limited.

— Anglo American Mogalakwena Mine Regulation 34 Audits, Mokopane, North West (2019 & 2020): Conducted an EMPR compliance audit focusing on the mine's opencast pit operations as well as ancillary services based on Regulation 34 of the requirements of the local NEMA. Client: Anglo American Platinum.

— 1 Fricker Road Towers Building Development, South Africa (2018). Tutayi undertook the first compliance audit against the Environmental Management Plan for the refurbishment/construction of the J.P. Morgan Chase & Company office building in Illovo, Johannesburg. This included conducting interviews with the appointed Designated Environmental Officer from the contractor, site personnel on gathering information on the operations and the environmental management measures in place for the site. The purpose of the development was to acquire a Green Star SA – Office v1 certification by the Green Building Council of South Africa. A site walk was conducted to confirm any findings. A monitoring programme was also developed as part of the project. Tutayi applied his scientific knowledge in coming up with the relevant management measures for the expected impacts. Client: J.P. Morgan Chase and Company

— South 32 Water Use Licence (WUL) Audits, Middelburg, Mpumalanga (2016-2019, annual audits): Conducted compliance audits against two WULs focusing on the water uses for two different sections of opencast pits operations based on the requirements of the local National Water Act (NWA). Client: South 32.

— Tubatse Ferrochrome Waste Management Licence (WML) Audits, Steelpoort, Limpopo (2017-2019, annual audits): Conducted WML compliance audits against five licences mainly focusing on management of disposal of baghouse dust from the smelting operations as well as slag disposal facilities. Audits are based on the requirements of the local National Environmental Management: Waste Act (NEM: WA). Client: Samancor Chrome.

— Sasol Regulation 34 Audits, Secunda, Mpumalanga (2019): Conducted compliance audits against project based Environmental Authorisations and corresponding EMPrs for different operations on Sasol's Secunda facility based on Regulation 34 of the requirements of the local National Environmental Management Act (NEMA). Client: Sasol South Africa (Pty) Limited.

— Samancor Manganese South Plant demolition, Meyerton, Gauteng, South Africa (2016): Provide Environmental Control Officer (ECO) services by conducting bimonthly EMPr audits for the demolition of the South Plant site on the premises. This entailed conducting environmental audits to ensure EMP compliance for the

project to minimise impacts and risk during the activities. Client: Samancor Manganese, Metalloys, operated by South 32.

— Sappi External Waste Management Licence Compliance Audit, Springs, Gauteng, South Africa (2016): Conducted the WML environmental compliance audit of the solid waste disposal facility situated at Enstra and compile an audit report according to the requirements of NEMWA. Client: Sappi Southern Africa Limited.

— General Electric Healthcare Environmental Health and Safety Audit, Rosebank, Gauteng, South Africa (2016): Conducted an Environmental Health and Safety (EHS) inspection of the GE Healthcare operations in Rosebank and one field site. The field site was at the Life Carstenhof Hospital were the Field Engineers were installing a new piece of equipment. Client: GE Healthcare, a Division of General Electric.

— Rose Foundation Environmental Compliance Audit of Old Oil Man, Chamdor, Gauteng, South Africa (2016): Conducted an environmental compliance audit to identify and assess key environmental issues pertaining to the operations and facilities against which on-going continuous improvements and modifications of the facility can be evaluated. The audit covered site operational control measures, legal and regulatory compliance, impacts to environment and general environmental practice. Client: Rose Foundation.

Waste Management

— Transnet Port Terminals Waste Classification Survey, South Africa (2020): Tutayi conducted the waste classification survey of the Transnet Port Terminals around the country which included, Durban Car Terminal, Maydon Wharf, Durban Container Terminal 1, Durban Container Terminal 2, Richards Bay, Port Elizabeth, East London, Cape Town and Saldanha Bay. This included conducting interviews with the SHEQ Manager, SHEQ Officers and gathering information on the operations and the waste management measures in place for both general and hazardous waste based on the operations. A survey of the available documentation including the waste inventory and previous classifications and SDSs was done. This was to ensure that the waste management requirements were met. Site walks were conducted at each site to confirm that the same standards were applied and any unclassified waste streams had samples collected for analysis at an accredited laboratory. The results were then analysed internally and Tutayi developed the SDSs for the waste streams identified as hazardous. Tutayi also applied his scientific knowledge when he was advising the clients and contractors when dealing with challenges onsite that had to be solved and providing recommendations for any non-compliances noted during the audit. This was reflected in the waste classification survey reports which were produced for each site. Client: Transnet Port Terminals

— South 32 Dam Sludge Classification Project, South Africa (2018): Tutayi assisted in the waste classification on the sludge from the South 32 Ifalethu Colliery Pollution Control Dams. South 32 intended to do dam clean up and wanted to assess the sludge for disposal. Tutayi collected samples from the dams which were analysed at an accredited laboratory. The results were then analysed internally and Tutayi developed the SDSs for the waste streams identified as hazardous. Client: South 32 Coal Holdings

— Mine Water Reclamation Plant (MWRP) Gypsum Classification Project: Tutayi assisted in the waste classification of the gypsum generated from the South 32 water treatment plant. The MWRP generates a solid waste during the mine water treatment process, which theoretically, should be gypsum based on the chemistry of the plant. The project was to intended to confirm that the gypsum produced was pure and could be sold to farmers for use as a fertilizer. This would help empty the gypsum dams that were getting full and find a way to reuse the by-product. Tutayi collected grab samples which were analysed at an accredited laboratory.

The results were then analysed internally and an SDS and a classification report produced. Client: South 32 Coal Holdings

— PPC Waste Classification, All PPC South Africa sites, South Africa (2016): Consolidated the waste inventories from different sites into one waste inventory, pre-classified the waste, collected samples, conducted waste profiling, waste classification and created SDSs based on laboratory analysis of samples collected. Created generic SDSs for waste were sampling was not required. Client: PPC Ltd.

MEGAN GOVENDER, Cand.Sci.Nat, BSc (Hons)

Senior Consultant, Environmental Planning & Advisory

< 1 year with the firm

6 years total

Areas of practice

Environmental Management

Environmental Impact Assessments

Risk Assessments

Water Use Licencing

Water Management

Compliance Auditing

Education

Bachelor of Science (Honours), Environmental Management, University of South Africa, 2019

Bachelor of Science, Geology, University of KwaZulu-Natal, 2013

Professional memberships

South African Council for Natural Scientific Professions (SACNASP), Cand.Sci.Nat

CAREER SUMMARY

Megan Govender is a Senior Consultant currently working for WSP Group Africa at the Johannesburg, Bryanston office in the Environmental Planning and Advisory Department. She moved from SRK Consulting in 2022 where she was an Environmental Scientist in the Environmental and Social Governance Department.

Megan has experience in the environmental and water quality management fields with expertise in environmental impact assessments, environmental auditing, environmental management plans, water use licence applications, integrated water and waste management plans, rehabilitation plans and compliance auditing, for mining and construction industries.

PROFESSIONAL EXPERIENCE

Environmental Impact Assessment Process

- Greenside Colliery Dewatering Project Basic Assessment, Mpumalanga Province, South Africa (2020): Assisted in compiling the BA supporting documentation including the BAR and related public participation material. The purpose of the BA was for the dewatering of underground resources at Greenside Colliery to continue with coal mining. Client: Anglo American Coal South Africa: Greenside Colliery.
- Elders Colliery Integrated Environmental Authorisation (EA), Mpumalanga Province, South Africa (2020): Assisted in compiling the EA Amendment supporting documentation including the BAR and related public participation material. The purpose of the amendment was for the inclusion of additional infrastructure to support the coal mining process. Client: Anglo American Inyosi Coal: Elders Colliery.
- Consolidation of the Environmental Impact Assessments for Mopani Copper Mine, Copperbelt Province, Zambia (2021): Assisted in the consolidation of EMP commitments for the Mufulira and Nkana operations. Client: Mopani Copper Mines: Mufulira and Nkana Mine. Project Value: R 4 711 430,00.
- Gap Analysis for a proposed river diversion at Kudumane Manganese Resources, Northern Cape, South Africa (2021): Assisted in compiling an environmental permitting gap analysis report for a proposed river diversion at Kudumane Manganese Resources. Client: Kudumane Manganese Resources (Pty) Ltd. Project Value: R 392 836.50.
- Gap Analysis for the inclusion of Middellaagte farm at Amandelbult Complex, Limpopo Province, South Africa (2020): Compiled an environmental permitting gap analysis report for the inclusion of the Middellaagte farm at Amandelbult Complex. Client: Anglo American Platinum Limited: Amandelbult Complex. Project Value: 148 435,00.

Water Use Licence Applications

- Kudumane Manganese Resources Expansion Project Water Use Licence Application (WULA), Northern Cape, South Africa (2021): Compiled a WULA Report in terms of Section 21 of The National Water Act, Act 36 of 1998 (NWA) based on R267 regulations for submission on eWULAAS for water uses associated with the expansion project at Kudumane Manganese Resources. Client: Kudumane Manganese Resources (Pty) Ltd. Project Value: R 1 614 285,00.
- EMalahleni Water Reclamation Plant Dewatering Project WULA, Mpumalanga province, South Africa (2021): Compiled a WULA Report in terms of Section 21 of NWA based on R267 regulations for submission on eWULAAS for water uses associated with the treatment of underground water at EMalahleni Water

Reclamation Plant. Client: Anglo Operations (Pty) Ltd: EMalahleni Water Reclamation Plant. Project Value: R 111 760,00.

- GA for temporary crossings over Groot Sandsloot River at Mogalakwena Mine, Limpopo Province, South Africa (2021): Compiled a GA in terms of Section 21 of the NWA for water uses associated with the construction of temporary crossings over the Groot Sandsloot River at Mogalakwena Mine. Client: Anglo American Platinum Limited, Rustenburg Platinum Mines Mogalakwena Complex. Project Value: R 200 000,00.
- Elders Colliery WUL Amendment, Mpumalanga Province, South Africa (2021): Compiled the WUL Amendment Report for the amendment of Elders Colliery existing WUL. Client: Anglo American Operations (Pty) Ltd: Elders Colliery. Project Value: R 30 000,00.
- Greenside Colliery Dewatering Project WULA, Mpumalanga Province, South Africa (2020): Compiled a WULA Report in terms of Section 21 of NWA based on R267 regulations for submission on eWULAAS for water uses associated with the dewatering of underground resources at Greenside Colliery. Client: Anglo American Coal South Africa: Greenside Colliery.
- Mogalakwena Mine Expansion Project WULA, Limpopo Province, South Africa (2019): Compiled a WULA Report in terms of Section 21 of NWA based on R267 regulations for submission on eWULAAS for water uses associated with the expansion project at Mogalakwena Platinum Mine. Client: Anglo American Platinum Limited, Rustenburg Platinum Mines Mogalakwena Complex. Project Value: R 3 279 161,00.
- Elders Colliery General Authorisation for the drilling of boreholes, Mpumalanga Province, South Africa (2019): Compiled a GA in terms of Section 21 of the NWA for water uses associated with the drilling of boreholes within 500m of a wetland at Elders Colliery. Client: Anglo American Operations (Pty) Ltd: Elders Colliery. Project Value: R 45 000,00.
- Mogalakwena Platinum Mine Water Use Licence (WUL) Amendment, Limpopo Province, South Africa (2018): Compiled the WUL Amendment Report for the amendment and consolidation of Mogalakwena Platinum Mines existing WULs. Client: Anglo American Platinum Limited, Rustenburg Platinum Mines Mogalakwena Complex. Project Value: R 213 580,00.
- WULA for Twickenham Platinum Mine, Limpopo Province, South Africa (2018): Compiled a WULA Report in terms of Section 21 of NWA based on R267 regulations for submission on eWULAAS for water uses associated with Twickenham Platinum Mine. Client: Anglo American Platinum Limited: Twickenham Platinum Mine.
- General Authorisation for the Emergency Culvert Replacement on the P68 Main Road, Hibiscus Coast Local Municipality, KwaZulu-Natal, South Africa (2017): Compiled a General Authorisation in terms of Section 21 of the NWA, for the emergency replacement of a culvert along a main road. Client: Samani Consulting (on behalf of KZN Department of Transport).

Integrated Water and Waste Management Plans

- Integrated Water and Waste Management Plan for Anglo American Platinum – Mogalakwena Platinum Mine, Limpopo Province, South Africa (2018 – 2021, annual updates): Compiled the annual update of the Integrated Water and Waste Management Plan for Mogalakwena Platinum Mine. Client: Anglo American Platinum Limited, Rustenburg Platinum Mines Mogalakwena Complex. Project Value: R 190 000,00.

- Integrated Water and Waste Management Plan for Pilanesberg and Sedibelo Platinum Mine, North-West Province, South Africa (2018 – 2021, annual updates): Compiled the annual update of the Integrated Water and Waste Management Plan for the Pilanesberg and Sedibelo Operations. Client: Pilanesberg Platinum Mine. Project Value: R 220 000,00.
- Integrated Water and Waste Management Plan for Polokwane Metallurgical Complex, Limpopo Province, South Africa (2020): Analysed water quality data for input into the Integrated Water and Waste Management Plan for Polokwane Metallurgical Complex. Client. Anglo American Platinum Limited Polokwane Metallurgical Complex. Project Value: R 180 000,00.
- Integrated Water and Waste Management Plan for Twickenham Platinum Mine, Limpopo Province, South Africa (2018 & 2019, annual updates): Compiled the annual update of the Integrated Water and Waste Management Plan for Twickenham Platinum Mine. Client: Anglo American Platinum Limited: Twickenham Platinum Mine. Project Value: R 145 000,00.

Maintenance Management Plans

- Sasol Field Guide, Gauteng Province, South Africa (2020): Compiled a maintenance field guide for the Sasol pipelines crossing watercourses. Client: Sasol. Project Value: R 33 000,00.
- Environmental Maintenance Management Plan for Lebalelo Water Users Association water pipeline, Limpopo, South Africa (2018): Compiled an environmental maintenance management plan for water pipelines. Client: Lebalelo Water Users Association. Project Value: R 125 000,00.

Compliance Auditing

- Mogalakwena Platinum Mine Temporary River Crossings GA and GN704 Exemption audits, Limpopo Province, South Africa (2021): Conducted compliance audits against the General Authorisation and GN704 Exemption permits in terms of the NWA for temporary river crossings at Mogalakwena Platinum Mine. Client: Anglo American Platinum Limited, Rustenburg Platinum Mines Mogalakwena Complex. Project Value: R 190 000,00.
- Coca-Cola Beverages South Africa Bloemfontein Water Use Licence (WUL) Audits, Free State Province, South Africa (2020 & 2021, annual audits): Conducted compliance audits against the WUL focussing on the water uses at the Gutsche and Tannery Plants for Coca-Cola Beverages South Africa Bloemfontein based on the requirements of the NWA. Client: Coca-Cola Beverages South Africa. Project Value: R 58 000,00.
- Impala Platinum Mine Water Use Licence (WUL) Audits, North-West Province, South Africa (2018 – 2020, annual audits): Conducted compliance audits against the WUL focussing on the water uses for different sections of Impala Platinum Mine based on the requirements of the NWA. Client: Impala Platinum Mine. Project Value: R 130 000,00.
- Modikwa Platinum Mine WUL Audit, Limpopo Province, South Africa (2018 & 2019, annual audits): Conducted compliance audits against the WUL focussing on water uses for different sections of Modikwa Platinum Mine based on the requirements of the NWA. Client: Anglo American Platinum Limited: Modikwa Platinum Mine. Project Value: R 94 040,00.
- Pilanesberg and Sedibelo Platinum Mine WUL Audit, North-West Province, South Africa (2018): Conducted compliance audits against two WULs for different sections of the Pilanesberg and Sedibelo Operations based on the requirements of the NWA. Client: Pilanesberg Platinum Mine. Project Value: R 156 000,00.

- Twickenham Platinum Mine WUL Audit, Limpopo Province, South Africa (2018 & 2019, annual audits): Conducted compliance audits against the WUL for different sections of Twickenham Platinum Mine based on the requirements of the NWA. Client: Anglo American Platinum Limited: Twickenham Platinum Mine.
- Hillcrest Retirement Country Estate Environmental Construction Monitoring, KwaZulu-Natal, South Africa (2016 – 2017): Provided Environmental Control Officer (ECO) services by conduction monthly EMPr audits for the construction of houses at the Hillcrest Retirement Country Estate. Client: Hillcrest Retirement Country Estate.

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 (EcIA), 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

SMFG Nimba Fauna Baseline (2020) Nimba Mountains, Guinea	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.
Large Infrastructure Barging Route - Marine Ecology Impact Assessment (2020) Vilanculos, Mozambique	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.
Konza Techno City - Biodiversity Baseline and BMP Review (2019) Machakos, Kenya	Acting as biodiversity expert on behalf of the lending institution, was responsible for review of the intial biodiversity baseline study and BMP, and development of recommendations for additonal work required to ensure that the baseline and BMP are of the standard necessary to satisfy the requirements of Performance Standard 6.
Proposed Oil Field Development (Confidential) (2014 - 2019) Turkana, Kenya	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.
Ahafo North Mine Biodiversity Baseline and IA (2018) Brong-Ahafo, Ghana	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
Beach Landing Sites (Confidential) - Marine and Coastal baseline and Critical Habitat Assessment (2018) Vilanculos, Mozambique	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.
Kinsevere Copper Mine (2018) Haut-Katanga, DRC	Consolidated biodiversity data from previous studies with up-to-date baseline data on flora and birds into an updated biodiveristy baseline report and impact assessment for the proposed expansion of TSF to adjoining tenement
Oil Exploration Block - Biodiversity Baseline and Impact Assessment (2018) Hoima, Uganda	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
Proposed Copper Mine (Confidential) (2017) Katanga, DRC	Ecosystem services review and impact assessment to satisfy the requirements of IFC PS6 for a proposed copper mine development.
Bokpoort Solar PV & CSP Tower (2016) Northern Cape, South Africa	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.

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) Mpumulanga, 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 rigourous 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 serivces 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 crest 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 aquisition

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

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

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).

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 (PM_{10}) 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 (PM_{10}) 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 (PM_{10} 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 (PM_{10}) 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 Hyytiälä, 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 where 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

- NOx or Not: Nitrogen Oxide Levels over the South African Highveld, Mpumalanga, South Africa (2006). This was Kirsten's honours project and was performed in collaboration with Eskom. This project aimed to validate the nitrogen dioxide hotspot over the South African Highveld as identified by satellite technology. The prevalent sources of nitrogen dioxide were investigated as well as the diurnal and seasonal distributions. Client: Eskom Holdings SOC Limited.

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". National Association for Clean Air (NACA) conference	2008
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.

SACNASP

South African Council for Natural Scientific Professions

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 fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **20 July 2016** Expires **31 March 2021**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

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. Lient: 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 Kamoa 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 Kamoa 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 hydropedological 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 Hydropedological 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 Hydropedological 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 Hydropedological 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 Hydropedological 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.
- eThekwini 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: eThekwini 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.

	The Biodiversity Company (Pty) Ltd. *Junior Natural Scientist (September 2018 to March 2019)* Field assistant and data collation for various ecological surveys including aquatic biomonitoring; aquatic, fauna and flora baseline biodiversity assessments. ***Gauteng Department of Agriculture & Rural Development.*** *Biodiversity Unit Intern (March 2018 to August 2018)* 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.

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 (NMGM) 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 & Gounkoto 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) Freestate	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) Freestate	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 Kusasalethu 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).

Lourens du Plessis

Professional GISc Practitioner | Visual Impact Assessment Specialist

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. PGP0147
- 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

Miscelaneous 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 (SO_2)

Gamma-Kappa transmission line corridors GIS and mapping

Nseleni Independend 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

- 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

- 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 Lephalale solar energy facility
- Happy Valley wind energy facility
- Hendrina power station ash dam extension

- 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 (Paardevlei) PV solar energy facility
- Upington 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

- Aberdeen WEF
- Albertinia WEF
- Exxaro Baseload Power Station Lephalale
- 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 Madacascar
- 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
SERTIFIKAAT VAN REGISTRASIE

This is to certify that

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 11de dag van Julie 2011

in accordance with the provisions of the Professional and Technical Surveyors' Act, 1984 (Act No 40 0f 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 Tegniese 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.

President

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

Registrar
Registrateur

Registration Number
Registrasienommer PGP 0147

Goldfields Press

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 Houtheuwel 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 Houtheuwel and Potchefstroomrailway 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.
Grootegeluk 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 transhipment between the Douala berth and a deep-water transhipment 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 Kamoa-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 PM_{10} (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, SO_2, NO_2 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 Permoseal facility within the City of Cape Town (2018)
Cape Town, South Africa

In support of the Air Emission License for the Permoseal 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 NO_2, CO, PM, HCl, HF, NH_3, 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, SO_2, 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, eThekwini 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 SO_2, 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 NO_2, CO, SO_2, PM_{10}, NH_3, 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 NO_2, CO, SO_2, PM_{10}, 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 transhipment between the Douala berth and a deep-water transhipment 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 SO_2 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 yo 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

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 – Mhaltuze 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 (IAP^2)

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

PROFESSIONAL AFFILIATIONS

SACNASP - 130284

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 Pigging Stations Wetland Delineation and Functional Assessment, KwaZulu-Natal, South Africa (2020). Undertake a wetland delineation and functional assessment for the proposed pigging 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.

SACNASP

South African Council for Natural Scientific Professions

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 fields(s) of practice (Schedule 1 of the Act)

Water Resources Science (Professional Natural Scientist)

Effective **6 May 2020** Expires **31 March 2022**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX

C DFFE SCREENING REPORTS

APPENDIX

C-1 DFFE SCREENING REPORT FOR SOLAR PV AND BESS

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: 41103965

Project name: Eskom Komati PV and BESS

Project title: Eskom Komati PV and BESS EIA

Date screening report generated: 23/05/2022 13:39:51

Applicant: Eskom Holdings SOC (Ltd)

Compiler: Megan Govender

Compiler signature:

.....

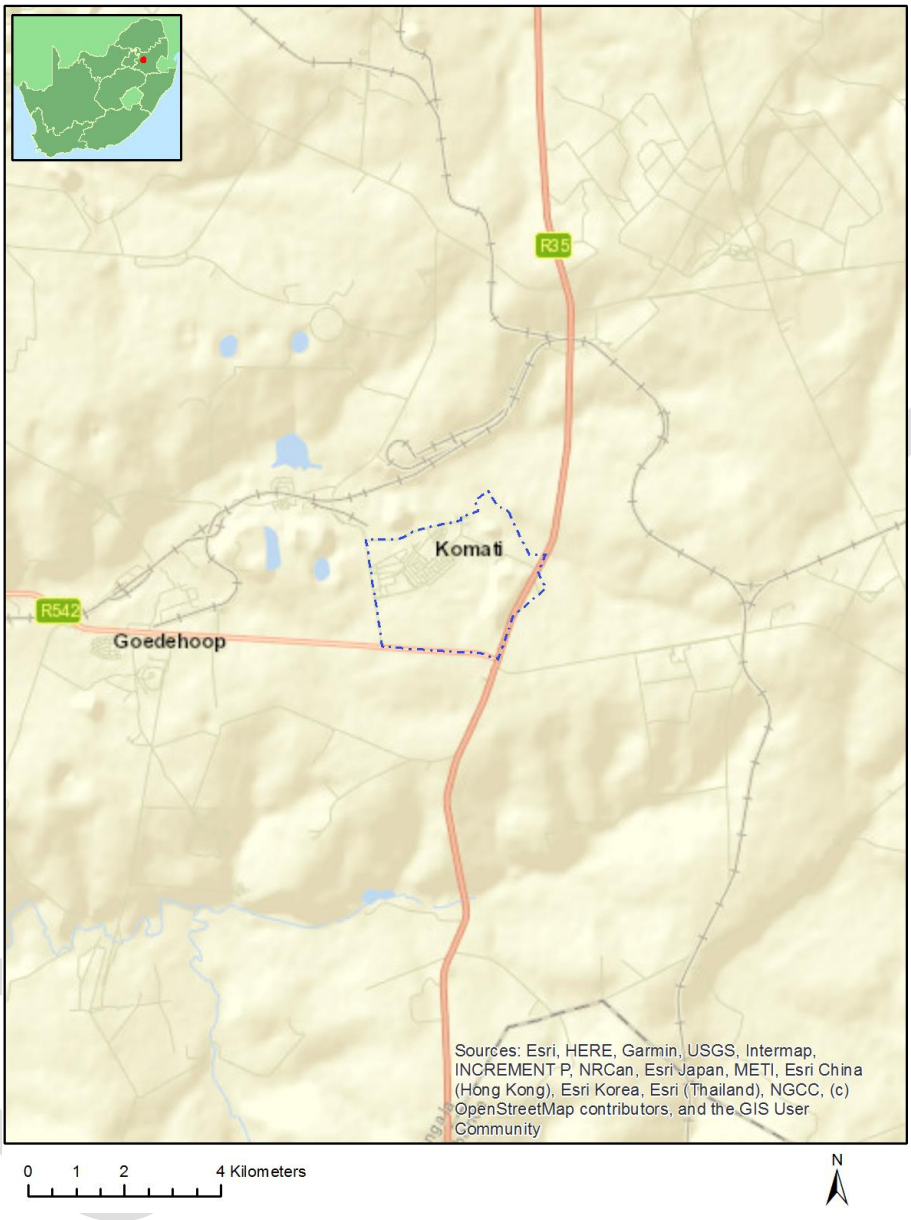
Application Category: Utilities Infrastructure|Electricity|Generation|Renewable|Solar|PV

Table of Contents

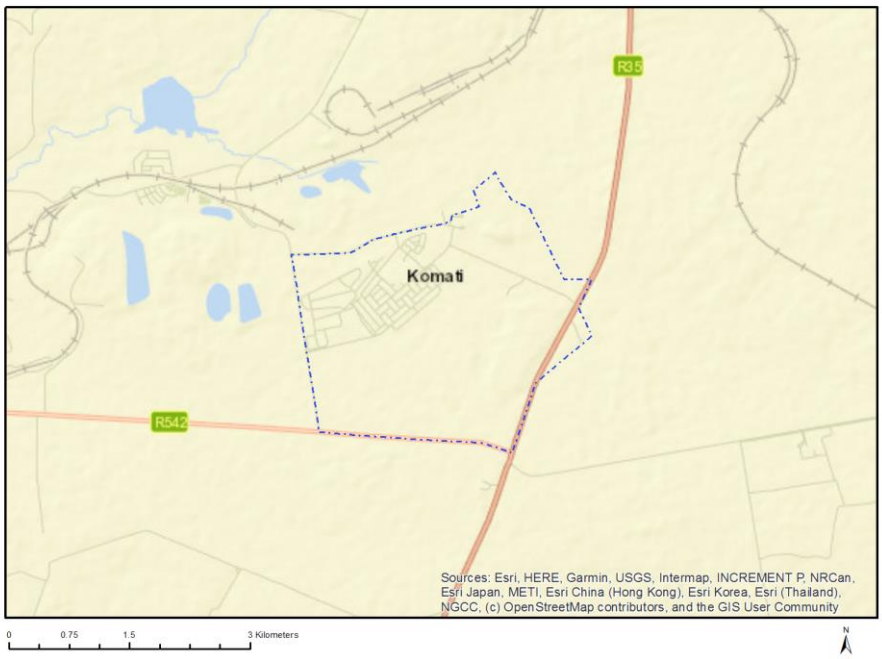
Proposed Project Location

Orientation map 1: General location

General Orientation: Eskom Komati PV and BESS



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	KOMATI	2	0	26°5'39.73S	29°27'27.08E	Erven
2	KOMATI	17	0	26°5'35.6S	29°27'32.47E	Erven
3	KOMATI	24	0	26°5'40.64S	29°27'28.3E	Erven
4	KOMATI	27	0	26°5'42.89S	29°27'26.23E	Erven
5	KOMATI	31	0	26°5'45.88S	29°27'23.47E	Erven
6	KOMATI	38	0	26°6'0.76S	29°27'31.39E	Erven
7	KOMATI	42	0	26°5'58.89S	29°27'27.48E	Erven
8	KOMATI	53	0	26°5'55.34S	29°27'27.72E	Erven
9	KOMATI	60	0	26°5'58.94S	29°27'29.69E	Erven
10	KOMATI	79	0	26°5'53.86S	29°27'29.64E	Erven
11	KOMATI	117	0	26°5'47.59S	29°27'26.08E	Erven
12	KOMATI	137	0	26°5'47.62S	29°27'32.12E	Erven
13	KOMATI	138	0	26°5'48.2S	29°27'31.37E	Erven
14	KOMATI	139	0	26°5'48.78S	29°27'30.61E	Erven
15	KOMATI	143	0	26°5'48.02S	29°27'34.09E	Erven
16	KOMATI	156	0	26°5'46.27S	29°27'37.62E	Erven
17	KOMATI	158	0	26°5'35S	29°27'37.1E	Erven
18	KOMATI	160	0	26°5'34.07S	29°27'42.89E	Erven
19	KOMATI	161	0	26°5'35.83S	29°27'43.74E	Erven
20	KOMATI	180	0	26°5'28.8S	29°27'43.26E	Erven
21	KOMATI	188	0	26°5'27.15S	29°27'47.53E	Erven
22	KOMATI	202	0	26°5'27.15S	29°27'48.8E	Erven
23	KOMATI	215	0	26°5'37.48S	29°27'53.87E	Erven
24	KOMATI	221	0	26°5'40.53S	29°27'55.59E	Erven
25	KOMATI	233	0	26°5'40.8S	29°27'54.11E	Erven
26	KOMATI	239	0	26°5'39.78S	29°27'52E	Erven
27	KOMATI	244	0	26°5'41.88S	29°27'55.77E	Erven

28	KOMATI	246	0	26°5'40.84S	29°27'56.88E	Erven
29	KOMATI	254	0	26°5'42.29S	29°27'52.36E	Erven
30	KOMATI	1	0	26°5'40.49S	29°27'26.4E	Erven
31	KOMATI	5	0	26°5'37.43S	29°27'27.83E	Erven
32	KOMATI	10	0	26°5'34.39S	29°27'30.39E	Erven
33	KOMATI	12	0	26°5'33.39S	29°27'32.17E	Erven
34	KOMATI	15	0	26°5'34.13S	29°27'34.24E	Erven
35	KOMATI	20	0	26°5'37.94S	29°27'30.54E	Erven
36	KOMATI	26	0	26°5'42.13S	29°27'26.92E	Erven
37	KOMATI	37	0	26°6'0.12S	29°27'32.42E	Erven
38	KOMATI	39	0	26°6'1.29S	29°27'29.6E	Erven
39	KOMATI	47	0	26°5'50.87S	29°27'23.54E	Erven
40	KOMATI	56	0	26°5'57.57S	29°27'29.81E	Erven
41	KOMATI	59	0	26°5'59.69S	29°27'30.39E	Erven
42	KOMATI	64	0	26°5'55.97S	29°27'26.89E	Erven
43	KOMATI	96	0	26°5'50.05S	29°27'24.6E	Erven
44	KOMATI	98	0	26°5'46.9S	29°27'25.31E	Erven
45	KOMATI	99	0	26°5'46.18S	29°27'25.94E	Erven
46	KOMATI	107	0	26°5'40.73S	29°27'30.94E	Erven
47	KOMATI	108	0	26°5'41.37S	29°27'31.77E	Erven
48	KOMATI	157	0	26°5'38.78S	29°27'33.89E	Erven
49	KOMATI	170	0	26°5'27.81S	29°27'43.3E	Erven
50	KOMATI	174	0	26°5'29.5S	29°27'45.59E	Erven
51	KOMATI	175	0	26°5'29.95S	29°27'46.17E	Erven
52	KOMATI	181	0	26°5'28.37S	29°27'42.67E	Erven
53	KOMATI	183	0	26°5'27.07S	29°27'45.09E	Erven
54	KOMATI	186	0	26°5'26.44S	29°27'47.2E	Erven
55	KOMATI	189	0	26°5'27.41S	29°27'46.78E	Erven
56	KOMATI	194	0	26°5'29.07S	29°27'47E	Erven
57	KOMATI	200	0	26°5'28.4S	29°27'48.53E	Erven
58	KOMATI	203	0	26°5'26.49S	29°27'48.94E	Erven
59	KOMATI	3	0	26°5'38.98S	29°27'27.78E	Erven
60	KOMATI	32	0	26°6'0.76S	29°27'27.39E	Erven
61	KOMATI	49	0	26°5'52.36S	29°27'24.93E	Erven
62	KOMATI	51	0	26°5'53.86S	29°27'26.32E	Erven
63	KOMATI	78	0	26°5'53.12S	29°27'28.94E	Erven
64	KOMATI	93	0	26°5'52.28S	29°27'26.7E	Erven
65	KOMATI	109	0	26°5'42.05S	29°27'31.16E	Erven
66	KOMATI	120	0	26°5'49.48S	29°27'29.18E	Erven
67	KOMATI	123	0	26°5'51.52S	29°27'31.09E	Erven
68	KOMATI	126	0	26°5'50.8S	29°27'28.99E	Erven
69	KOMATI	128	0	26°5'49.44S	29°27'27.72E	Erven
70	KOMATI	131	0	26°5'47.44S	29°27'30.66E	Erven
71	KOMATI	141	0	26°5'49.25S	29°27'32.48E	Erven
72	KOMATI	142	0	26°5'48.64S	29°27'33.28E	Erven
73	KOMATI	145	0	26°5'47.57S	29°27'35.45E	Erven
74	KOMATI	151	0	26°5'43.01S	29°27'32.85E	Erven
75	KOMATI	153	0	26°5'44.69S	29°27'35.1E	Erven
76	KOMATI	163	0	26°5'39.68S	29°27'46.41E	Erven
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78	KOMATI	167	0	26°5'44.23S	29°27'39.31E	Erven
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80	KOMATI	219	0	26°5'39.52S	29°27'55.78E	Erven
81	KOMATI	222	0	26°5'40.03S	29°27'55.11E	Erven
82	KOMATI	224	0	26°5'39.01S	29°27'54.15E	Erven
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87	KOMATI	261	0	26°5'42.93S	29°27'51.52E	Erven

88	KOMATI	16	0	26°5'34.93S	29°27'33.25E	Erven
89	KOMATI	21	0	26°5'31.67S	29°27'36.12E	Erven
90	KOMATI	22	0	26°5'39.18S	29°27'29.64E	Erven
91	KOMATI	23	0	26°5'39.92S	29°27'28.95E	Erven
92	KOMATI	30	0	26°5'45.14S	29°27'24.16E	Erven
93	KOMATI	33	0	26°6'1.68S	29°27'28.1E	Erven
94	KOMATI	44	0	26°5'57.36S	29°27'26.14E	Erven
95	KOMATI	58	0	26°5'59.05S	29°27'31.21E	Erven
96	KOMATI	68	0	26°5'52.98S	29°27'24.13E	Erven
97	KOMATI	70	0	26°5'51.46S	29°27'22.77E	Erven
98	KOMATI	71	0	26°5'50.7S	29°27'22.1E	Erven
99	KOMATI	86	0	26°5'57.38S	29°27'31.59E	Erven
100	KOMATI	88	0	26°5'55.93S	29°27'30.19E	Erven
101	KOMATI	89	0	26°5'55.21S	29°27'29.54E	Erven
102	KOMATI	90	0	26°5'54.52S	29°27'28.79E	Erven
103	KOMATI	92	0	26°5'53.03S	29°27'27.39E	Erven
104	KOMATI	101	0	26°5'44.81S	29°27'27.19E	Erven
105	KOMATI	105	0	26°5'42.09S	29°27'29.69E	Erven
106	KOMATI	106	0	26°5'41.41S	29°27'30.32E	Erven
107	KOMATI	110	0	26°5'42.73S	29°27'30.53E	Erven
108	KOMATI	140	0	26°5'49.87S	29°27'31.68E	Erven
109	KOMATI	148	0	26°5'49.32S	29°27'33.94E	Erven
110	KOMATI	154	0	26°5'45.57S	29°27'36.22E	Erven
111	KOMATI	165	0	26°5'41.17S	29°27'44.5E	Erven
112	KOMATI	169	0	26°5'30.52S	29°27'42.53E	Erven
113	KOMATI	172	0	26°5'28.63S	29°27'44.42E	Erven
114	KOMATI	176	0	26°5'30.55S	29°27'45.62E	Erven
115	KOMATI	178	0	26°5'29.67S	29°27'44.44E	Erven
116	KOMATI	197	0	26°5'28.6S	29°27'49.38E	Erven
117	KOMATI	4	0	26°5'38.19S	29°27'28.47E	Erven
118	KOMATI	28	0	26°5'43.64S	29°27'25.54E	Erven
119	KOMATI	48	0	26°5'51.61S	29°27'24.24E	Erven
120	KOMATI	76	0	26°5'51.63S	29°27'27.54E	Erven
121	KOMATI	85	0	26°5'58.07S	29°27'32.29E	Erven
122	KOMATI	94	0	26°5'51.54S	29°27'26E	Erven
123	KOMATI	100	0	26°5'45.49S	29°27'26.56E	Erven
124	KOMATI	102	0	26°5'44.13S	29°27'27.82E	Erven
125	KOMATI	113	0	26°5'44.77S	29°27'28.66E	Erven
126	KOMATI	127	0	26°5'50.12S	29°27'28.34E	Erven
127	KOMATI	134	0	26°5'45.72S	29°27'32.93E	Erven
128	KOMATI	147	0	26°5'48.71S	29°27'34.73E	Erven
129	KOMATI	191	0	26°5'27.82S	29°27'45.23E	Erven
130	KOMATI	210	0	26°5'30.85S	29°27'47E	Erven
131	KOMATI	212	0	26°5'33.65S	29°27'49.02E	Erven
132	KOMATI	214	0	26°5'36.99S	29°27'53.4E	Erven
133	KOMATI	229	0	26°5'38.76S	29°27'52.2E	Erven
134	KOMATI	230	0	26°5'39.26S	29°27'52.68E	Erven
135	KOMATI	231	0	26°5'39.77S	29°27'53.16E	Erven
136	KOMATI	235	0	26°5'41.82S	29°27'53.93E	Erven
137	KOMATI	237	0	26°5'40.8S	29°27'52.96E	Erven
138	KOMATI	238	0	26°5'40.29S	29°27'52.48E	Erven
139	KOMATI	248	0	26°5'42.04S	29°27'56.82E	Erven
140	KOMATI	257	0	26°5'44.11S	29°27'54.06E	Erven
141	KOMATI	262	0	26°5'42.33S	29°27'50.95E	Erven
142	KOMATI	263	0	26°5'41.73S	29°27'50.4E	Erven
143	KOMATI	267	0	26°5'40.23S	29°27'48.27E	Erven
144	KOMATI	274	0	26°5'42.01S	29°27'47.64E	Erven
145	KOMATI	284	0	26°5'45.05S	29°27'45.88E	Erven
146	KOMATI	11	0	26°5'33.93S	29°27'31.31E	Erven
147	KOMATI	14	0	26°5'32.98S	29°27'34.32E	Erven

148	KOMATI	35	0	26°5'58.49S	29°27'33.99E	Erven
149	KOMATI	43	0	26°5'58.13S	29°27'26.81E	Erven
150	KOMATI	46	0	26°5'50.13S	29°27'22.85E	Erven
151	KOMATI	52	0	26°5'54.6S	29°27'27.02E	Erven
152	KOMATI	61	0	26°5'58.2S	29°27'28.99E	Erven
153	KOMATI	62	0	26°5'57.46S	29°27'28.29E	Erven
154	KOMATI	65	0	26°5'55.23S	29°27'26.19E	Erven
155	KOMATI	66	0	26°5'54.49S	29°27'25.5E	Erven
156	KOMATI	67	0	26°5'53.74S	29°27'24.81E	Erven
157	KOMATI	74	0	26°5'50.14S	29°27'26.15E	Erven
158	KOMATI	95	0	26°5'50.79S	29°27'25.3E	Erven
159	KOMATI	111	0	26°5'43.43S	29°27'29.89E	Erven
160	KOMATI	116	0	26°5'46.8S	29°27'26.79E	Erven
161	KOMATI	122	0	26°5'50.83S	29°27'30.46E	Erven
162	KOMATI	133	0	26°5'46.29S	29°27'32.17E	Erven
163	KOMATI	146	0	26°5'48.14S	29°27'35.53E	Erven
164	KOMATI	152	0	26°5'43.9S	29°27'34.05E	Erven
165	KOMATI	159	0	26°5'33S	29°27'39.84E	Erven
166	KOMATI	177	0	26°5'30.11S	29°27'45.03E	Erven
167	KOMATI	179	0	26°5'29.24S	29°27'43.85E	Erven
168	KOMATI	182	0	26°5'27.25S	29°27'44.41E	Erven
169	KOMATI	187	0	26°5'26.24S	29°27'47.84E	Erven
170	KOMATI	196	0	26°5'27.94S	29°27'49.52E	Erven
171	KOMATI	209	0	26°5'31.33S	29°27'46.56E	Erven
172	KOMATI	211	0	26°5'30.33S	29°27'47.46E	Erven
173	KOMATI	228	0	26°5'38.26S	29°27'51.72E	Erven
174	KOMATI	232	0	26°5'40.29S	29°27'53.63E	Erven
175	KOMATI	241	0	26°5'38.76S	29°27'51.06E	Erven
176	KOMATI	7	0	26°5'35.71S	29°27'26.86E	Erven
177	KOMATI	8	0	26°5'35.17S	29°27'28.39E	Erven
178	KOMATI	13	0	26°5'32.69S	29°27'33.2E	Erven
179	KOMATI	18	0	26°5'36.35S	29°27'31.84E	Erven
180	KOMATI	36	0	26°5'59.4S	29°27'33.4E	Erven
181	KOMATI	40	0	26°6'0.43S	29°27'28.83E	Erven
182	KOMATI	55	0	26°5'56.83S	29°27'29.12E	Erven
183	KOMATI	57	0	26°5'58.31S	29°27'30.51E	Erven
184	KOMATI	69	0	26°5'52.21S	29°27'23.45E	Erven
185	KOMATI	72	0	26°5'48.66S	29°27'24.75E	Erven
186	KOMATI	87	0	26°5'56.67S	29°27'30.89E	Erven
187	KOMATI	91	0	26°5'53.77S	29°27'28.09E	Erven
188	KOMATI	97	0	26°5'49.31S	29°27'23.9E	Erven
189	KOMATI	103	0	26°5'43.46S	29°27'28.43E	Erven
190	KOMATI	104	0	26°5'42.79S	29°27'29.06E	Erven
191	KOMATI	115	0	26°5'46.12S	29°27'27.41E	Erven
192	KOMATI	119	0	26°5'48.8S	29°27'28.54E	Erven
193	KOMATI	121	0	26°5'50.15S	29°27'29.82E	Erven
194	KOMATI	125	0	26°5'51.48S	29°27'29.62E	Erven
195	KOMATI	130	0	26°5'48.02S	29°27'29.91E	Erven
196	KOMATI	150	0	26°5'50.55S	29°27'32.33E	Erven
197	KOMATI	155	0	26°5'46.98S	29°27'36.7E	Erven
198	KOMATI	166	0	26°5'42.77S	29°27'42.32E	Erven
199	KOMATI	171	0	26°5'28.2S	29°27'43.84E	Erven
200	KOMATI	184	0	26°5'26.88S	29°27'45.8E	Erven
201	KOMATI	193	0	26°5'28.42S	29°27'47.27E	Erven
202	KOMATI	195	0	26°5'27.3S	29°27'49.65E	Erven
203	KOMATI	198	0	26°5'29.25S	29°27'49.24E	Erven
204	KOMATI	205	0	26°5'30.26S	29°27'48.7E	Erven
205	KOMATI	255	0	26°5'42.89S	29°27'52.93E	Erven
206	KOMATI	260	0	26°5'43.53S	29°27'52.09E	Erven
207	KOMATI	266	0	26°5'40.75S	29°27'47.59E	Erven

208	KOMATI	268	0	26°5'39.72S	29°27'48.93E	Erven
209	KOMATI	271	0	26°5'40.48S	29°27'49.65E	Erven
210	KOMATI	278	0	26°5'43.8S	29°27'46.15E	Erven
211	KOMATI	279	0	26°5'44.41S	29°27'46.72E	Erven
212	KOMATI	282	0	26°5'46.25S	29°27'47.02E	Erven
213	KOMATI	283	0	26°5'45.66S	29°27'46.45E	Erven
214	KOMATI	293	0	26°5'46.75S	29°27'43.81E	Erven
215	KOMATI	297	0	26°5'47.46S	29°27'47.84E	Erven
216	KOMATI	302	0	26°5'44.83S	29°27'51.27E	Erven
217	KOMATI	304	0	26°5'46.11S	29°27'51.3E	Erven
218	KOMATI	321	0	26°5'49.61S	29°27'42.82E	Erven
219	KOMATI	335	0	26°5'45.99S	29°27'42.44E	Erven
220	KOMATI	344	0	26°5'50.34S	29°27'37.64E	Erven
221	KOMATI	360	0	26°5'51.49S	29°27'35.24E	Erven
222	KOMATI	366	0	26°5'54.43S	29°27'33.83E	Erven
223	KOMATI	396	0	26°5'53.84S	29°27'41.22E	Erven
224	KOMATI	419	0	26°5'57.95S	29°27'40.27E	Erven
225	KOMATI	421	0	26°5'59.2S	29°27'38.63E	Erven
226	KOMATI	429	0	26°5'47.5S	29°27'52.16E	Erven
227	KOMATI	454	5	26°5'53.1S	29°27'36.84E	Erven
228	KOMATI	454	7	26°5'53.95S	29°27'36.84E	Erven
229	KOMATI	264	0	26°5'41.77S	29°27'46.26E	Erven
230	KOMATI	291	0	26°5'47.91S	29°27'44.9E	Erven
231	KOMATI	305	0	26°5'46.63S	29°27'50.61E	Erven
232	KOMATI	313	0	26°5'48.35S	29°27'43.1E	Erven
233	KOMATI	328	0	26°5'46.26S	29°27'40.4E	Erven
234	KOMATI	345	0	26°5'50.94S	29°27'38.2E	Erven
235	KOMATI	368	0	26°5'55.63S	29°27'34.97E	Erven
236	KOMATI	385	0	26°5'55.19S	29°27'37.78E	Erven
237	KOMATI	392	0	26°5'51.52S	29°27'42.57E	Erven
238	KOMATI	397	0	26°5'54.37S	29°27'40.54E	Erven
239	KOMATI	398	0	26°5'54.89S	29°27'39.85E	Erven
240	KOMATI	400	0	26°5'55.94S	29°27'38.48E	Erven
241	KOMATI	409	0	26°5'54.01S	29°27'43.65E	Erven
242	KOMATI	411	0	26°5'52.76S	29°27'45.3E	Erven
243	KOMATI	412	0	26°5'53.53S	29°27'46.04E	Erven
244	KOMATI	425	0	26°5'50.02S	29°27'48.87E	Erven
245	KOMATI	427	0	26°5'48.75S	29°27'50.51E	Erven
246	KOMATI	428	0	26°5'48.13S	29°27'51.34E	Erven
247	KOMATI	433	0	26°5'44.98S	29°27'55.45E	Erven
248	KOMATI	436	0	26°5'47.64S	29°27'53.72E	Erven
249	KOMATI	441	0	26°5'50.8S	29°27'49.61E	Erven
250	KOMATI	454	6	26°5'53.69S	29°27'37.38E	Erven
251	KOMATI	454	8	26°5'54.27S	29°27'36.43E	Erven
252	KOMATI	213	0	26°5'36.74S	29°27'49.76E	Erven
253	KOMATI	226	0	26°5'37.99S	29°27'53.2E	Erven
254	KOMATI	245	0	26°5'41.42S	29°27'56.27E	Erven
255	KOMATI	251	0	26°5'43.32S	29°27'55.24E	Erven
256	KOMATI	256	0	26°5'43.49S	29°27'53.5E	Erven
257	KOMATI	259	0	26°5'44.13S	29°27'52.65E	Erven
258	KOMATI	275	0	26°5'42.52S	29°27'46.96E	Erven
259	KOMATI	290	0	26°5'47.15S	29°27'45.62E	Erven
260	KOMATI	298	0	26°5'46.93S	29°27'48.52E	Erven
261	KOMATI	299	0	26°5'46.41S	29°27'49.21E	Erven
262	KOMATI	312	0	26°5'47.75S	29°27'42.53E	Erven
263	KOMATI	317	0	26°5'50.77S	29°27'45.37E	Erven
264	KOMATI	320	0	26°5'50.21S	29°27'43.39E	Erven
265	KOMATI	327	0	26°5'46.77S	29°27'39.73E	Erven
266	KOMATI	329	0	26°5'45.75S	29°27'41.06E	Erven
267	KOMATI	332	0	26°5'44.21S	29°27'43.08E	Erven

268	KOMATI	356	0	26°5'52.28S	29°27'32.55E	Erven
269	KOMATI	359	0	26°5'50.75S	29°27'34.55E	Erven
270	KOMATI	394	0	26°5'52.79S	29°27'42.59E	Erven
271	KOMATI	395	0	26°5'53.32S	29°27'41.9E	Erven
272	KOMATI	401	0	26°5'56.47S	29°27'37.8E	Erven
273	KOMATI	402	0	26°5'58.44S	29°27'37.9E	Erven
274	KOMATI	423	0	26°5'51.27S	29°27'47.22E	Erven
275	KOMATI	454	3	26°5'53S	29°27'35.85E	Erven
276	KOMATI	454	10	26°5'54.03S	29°27'35.57E	Erven
277	KOMATI	455	5	26°5'56.03S	29°27'31.64E	Erven
278	KOMATI	300	0	26°5'45.88S	29°27'49.89E	Erven
279	KOMATI	311	0	26°5'49.78S	29°27'46.49E	Erven
280	KOMATI	315	0	26°5'49.56S	29°27'44.24E	Erven
281	KOMATI	323	0	26°5'48.4S	29°27'41.68E	Erven
282	KOMATI	330	0	26°5'45.23S	29°27'41.74E	Erven
283	KOMATI	333	0	26°5'44.96S	29°27'43.78E	Erven
284	KOMATI	339	0	26°5'48.04S	29°27'39.77E	Erven
285	KOMATI	341	0	26°5'49.06S	29°27'38.43E	Erven
286	KOMATI	342	0	26°5'49.13S	29°27'36.5E	Erven
287	KOMATI	352	0	26°5'50.37S	29°27'36.23E	Erven
288	KOMATI	355	0	26°5'52.79S	29°27'31.88E	Erven
289	KOMATI	358	0	26°5'51.25S	29°27'33.88E	Erven
290	KOMATI	365	0	26°5'54.06S	29°27'31.91E	Erven
291	KOMATI	376	0	26°5'55.67S	29°27'33.57E	Erven
292	KOMATI	377	0	26°5'55.06S	29°27'33E	Erven
293	KOMATI	393	0	26°5'52.27S	29°27'43.28E	Erven
294	KOMATI	405	0	26°5'56.53S	29°27'40.36E	Erven
295	KOMATI	417	0	26°5'56.68S	29°27'41.92E	Erven
296	KOMATI	422	0	26°5'51.91S	29°27'46.4E	Erven
297	KOMATI	424	0	26°5'50.65S	29°27'48.05E	Erven
298	KOMATI	431	0	26°5'46.23S	29°27'53.81E	Erven
299	KOMATI	435	0	26°5'47.01S	29°27'54.54E	Erven
300	KOMATI	454	1	26°5'53.63S	29°27'34.98E	Erven
301	KOMATI	455	7	26°5'56.84S	29°27'32.44E	Erven
302	KOMATI	199	0	26°5'28.98S	29°27'48.41E	Erven
303	KOMATI	204	0	26°5'29.84S	29°27'47.96E	Erven
304	KOMATI	206	0	26°5'30.83S	29°27'48.14E	Erven
305	KOMATI	218	0	26°5'39.01S	29°27'55.31E	Erven
306	KOMATI	220	0	26°5'40.03S	29°27'56.25E	Erven
307	KOMATI	227	0	26°5'37.49S	29°27'52.73E	Erven
308	KOMATI	249	0	26°5'42.46S	29°27'56.35E	Erven
309	KOMATI	258	0	26°5'44.74S	29°27'53.22E	Erven
310	KOMATI	287	0	26°5'43.24S	29°27'44.19E	Erven
311	KOMATI	295	0	26°5'48.51S	29°27'46.47E	Erven
312	KOMATI	303	0	26°5'45.59S	29°27'51.97E	Erven
313	KOMATI	308	0	26°5'48.21S	29°27'48.55E	Erven
314	KOMATI	309	0	26°5'48.73S	29°27'47.86E	Erven
315	KOMATI	319	0	26°5'50.81S	29°27'43.95E	Erven
316	KOMATI	322	0	26°5'49S	29°27'42.25E	Erven
317	KOMATI	324	0	26°5'48.31S	29°27'37.73E	Erven
318	KOMATI	336	0	26°5'46.5S	29°27'41.77E	Erven
319	KOMATI	370	0	26°5'56.83S	29°27'36.09E	Erven
320	KOMATI	372	0	26°5'58.08S	29°27'35.83E	Erven
321	KOMATI	386	0	26°5'54.67S	29°27'38.46E	Erven
322	KOMATI	387	0	26°5'54.14S	29°27'39.14E	Erven
323	KOMATI	399	0	26°5'55.42S	29°27'39.16E	Erven
324	KOMATI	404	0	26°5'57.17S	29°27'39.54E	Erven
325	KOMATI	430	0	26°5'46.87S	29°27'52.98E	Erven
326	KOMATI	437	0	26°5'48.27S	29°27'52.9E	Erven
327	KOMATI	444	0	26°5'52.69S	29°27'47.13E	Erven

328	KOMATI	454	9	26°5'54.6S	29°27'36.06E	Erven
329	KOMATI	455	8	26°5'57.29S	29°27'32.71E	Erven
330	KOMATI	455	6	26°5'56.44S	29°27'31.97E	Erven
331	KOMATI	455	4	26°5'55.61S	29°27'31.21E	Erven
332	KOMATI	242	0	26°5'42.73S	29°27'54.67E	Erven
333	KOMATI	243	0	26°5'42.3S	29°27'55.21E	Erven
334	KOMATI	269	0	26°5'39.2S	29°27'49.6E	Erven
335	KOMATI	272	0	26°5'41S	29°27'48.97E	Erven
336	KOMATI	277	0	26°5'43.2S	29°27'45.58E	Erven
337	KOMATI	280	0	26°5'45.01S	29°27'47.29E	Erven
338	KOMATI	286	0	26°5'43.84S	29°27'44.74E	Erven
339	KOMATI	289	0	26°5'46.46S	29°27'45.47E	Erven
340	KOMATI	301	0	26°5'45.36S	29°27'50.57E	Erven
341	KOMATI	307	0	26°5'47.68S	29°27'49.23E	Erven
342	KOMATI	314	0	26°5'48.95S	29°27'43.67E	Erven
343	KOMATI	316	0	26°5'50.16S	29°27'44.81E	Erven
344	KOMATI	318	0	26°5'51.41S	29°27'44.52E	Erven
345	KOMATI	325	0	26°5'47.79S	29°27'38.39E	Erven
346	KOMATI	337	0	26°5'47.02S	29°27'41.11E	Erven
347	KOMATI	350	0	26°5'51.58S	29°27'37.36E	Erven
348	KOMATI	354	0	26°5'53.31S	29°27'31.21E	Erven
349	KOMATI	361	0	26°5'52S	29°27'34.6E	Erven
350	KOMATI	364	0	26°5'53.55S	29°27'32.58E	Erven
351	KOMATI	371	0	26°5'57.45S	29°27'36.66E	Erven
352	KOMATI	373	0	26°5'57.47S	29°27'35.26E	Erven
353	KOMATI	388	0	26°5'53.62S	29°27'39.82E	Erven
354	KOMATI	390	0	26°5'52.57S	29°27'41.19E	Erven
355	KOMATI	391	0	26°5'52.04S	29°27'41.88E	Erven
356	KOMATI	403	0	26°5'57.8S	29°27'38.72E	Erven
357	KOMATI	408	0	26°5'54.65S	29°27'42.84E	Erven
358	KOMATI	410	0	26°5'53.38S	29°27'44.48E	Erven
359	KOMATI	414	0	26°5'54.8S	29°27'44.39E	Erven
360	KOMATI	416	0	26°5'56.06S	29°27'42.75E	Erven
361	KOMATI	420	0	26°5'58.58S	29°27'39.46E	Erven
362	KOMATI	434	0	26°5'46.34S	29°27'55.26E	Erven
363	KOMATI	455	0	26°5'57.72S	29°27'33.2E	Erven
364	KOMATI	207	0	26°5'31.34S	29°27'47.68E	Erven
365	KOMATI	216	0	26°5'37.99S	29°27'54.34E	Erven
366	KOMATI	223	0	26°5'39.52S	29°27'54.64E	Erven
367	KOMATI	236	0	26°5'41.31S	29°27'53.44E	Erven
368	KOMATI	273	0	26°5'41.5S	29°27'48.3E	Erven
369	KOMATI	281	0	26°5'45.61S	29°27'47.85E	Erven
370	KOMATI	288	0	26°5'46.23S	29°27'44.76E	Erven
371	KOMATI	296	0	26°5'47.99S	29°27'47.15E	Erven
372	KOMATI	326	0	26°5'47.28S	29°27'39.07E	Erven
373	KOMATI	334	0	26°5'45.47S	29°27'43.12E	Erven
374	KOMATI	340	0	26°5'48.55S	29°27'39.11E	Erven
375	KOMATI	346	0	26°5'51.54S	29°27'38.77E	Erven
376	KOMATI	347	0	26°5'52.15S	29°27'39.33E	Erven
377	KOMATI	349	0	26°5'52.19S	29°27'37.93E	Erven
378	KOMATI	351	0	26°5'50.98S	29°27'36.79E	Erven
379	KOMATI	357	0	26°5'51.77S	29°27'33.22E	Erven
380	KOMATI	362	0	26°5'52.52S	29°27'33.94E	Erven
381	KOMATI	363	0	26°5'53.03S	29°27'33.26E	Erven
382	KOMATI	389	0	26°5'53.09S	29°27'40.51E	Erven
383	KOMATI	406	0	26°5'55.91S	29°27'41.19E	Erven
384	KOMATI	413	0	26°5'54.16S	29°27'45.21E	Erven
385	KOMATI	418	0	26°5'57.32S	29°27'41.1E	Erven
386	KOMATI	432	0	26°5'45.6S	29°27'54.63E	Erven
387	KOMATI	438	0	26°5'48.91S	29°27'52.07E	Erven

388	KOMATI	440	0	26°5'50.17S	29°27'50.42E	Erven
389	KOMATI	443	0	26°5'52.06S	29°27'47.96E	Erven
390	KOMATI	454	2	26°5'53.33S	29°27'35.44E	Erven
391	KOMATI	454	4	26°5'52.62S	29°27'36.29E	Erven
392	KOMATI	6	0	26°5'36.55S	29°27'27.36E	Erven
393	KOMATI	9	0	26°5'34.73S	29°27'29.36E	Erven
394	KOMATI	19	0	26°5'37.18S	29°27'31.22E	Erven
395	KOMATI	25	0	26°5'41.38S	29°27'27.61E	Erven
396	KOMATI	29	0	26°5'44.39S	29°27'24.85E	Erven
397	KOMATI	34	0	26°5'59.05S	29°27'34.53E	Erven
398	KOMATI	41	0	26°5'59.66S	29°27'28.15E	Erven
399	KOMATI	45	0	26°5'56.52S	29°27'25.49E	Erven
400	KOMATI	50	0	26°5'53.11S	29°27'25.62E	Erven
401	KOMATI	54	0	26°5'56.08S	29°27'28.41E	Erven
402	KOMATI	63	0	26°5'56.71S	29°27'27.59E	Erven
403	KOMATI	73	0	26°5'49.39S	29°27'25.44E	Erven
404	KOMATI	75	0	26°5'50.89S	29°27'26.84E	Erven
405	KOMATI	77	0	26°5'52.38S	29°27'28.24E	Erven
406	KOMATI	112	0	26°5'44.11S	29°27'29.25E	Erven
407	KOMATI	114	0	26°5'45.45S	29°27'28.03E	Erven
408	KOMATI	118	0	26°5'48.04S	29°27'27.85E	Erven
409	KOMATI	124	0	26°5'52.15S	29°27'30.26E	Erven
410	KOMATI	129	0	26°5'48.73S	29°27'27.08E	Erven
411	KOMATI	132	0	26°5'46.87S	29°27'31.41E	Erven
412	KOMATI	135	0	26°5'46.43S	29°27'33.7E	Erven
413	KOMATI	136	0	26°5'47.04S	29°27'32.87E	Erven
414	KOMATI	144	0	26°5'47.41S	29°27'34.84E	Erven
415	KOMATI	149	0	26°5'49.94S	29°27'33.13E	Erven
416	KOMATI	162	0	26°5'36.99S	29°27'46.67E	Erven
417	KOMATI	168	0	26°5'39.36S	29°27'39.43E	Erven
418	KOMATI	185	0	26°5'26.67S	29°27'46.5E	Erven
419	KOMATI	190	0	26°5'27.64S	29°27'46.03E	Erven
420	KOMATI	192	0	26°5'28.64S	29°27'46.41E	Erven
421	KOMATI	201	0	26°5'27.77S	29°27'48.66E	Erven
422	KOMATI	208	0	26°5'31.84S	29°27'47.24E	Erven
423	KOMATI	217	0	26°5'38.5S	29°27'54.83E	Erven
424	KOMATI	240	0	26°5'39.27S	29°27'51.53E	Erven
425	KOMATI	250	0	26°5'42.9S	29°27'55.78E	Erven
426	KOMATI	253	0	26°5'41.69S	29°27'51.8E	Erven
427	KOMATI	265	0	26°5'41.26S	29°27'46.93E	Erven
428	KOMATI	270	0	26°5'39.97S	29°27'50.31E	Erven
429	KOMATI	276	0	26°5'42.59S	29°27'45.01E	Erven
430	KOMATI	285	0	26°5'44.44S	29°27'45.31E	Erven
431	KOMATI	292	0	26°5'47.33S	29°27'44.35E	Erven
432	KOMATI	294	0	26°5'49.03S	29°27'45.79E	Erven
433	KOMATI	306	0	26°5'47.16S	29°27'49.92E	Erven
434	KOMATI	310	0	26°5'49.26S	29°27'47.18E	Erven
435	KOMATI	331	0	26°5'44.72S	29°27'42.41E	Erven
436	KOMATI	338	0	26°5'47.53S	29°27'40.44E	Erven
437	KOMATI	343	0	26°5'49.74S	29°27'37.07E	Erven
438	KOMATI	348	0	26°5'52.78S	29°27'38.5E	Erven
439	KOMATI	353	0	26°5'49.77S	29°27'35.67E	Erven
440	KOMATI	367	0	26°5'55.02S	29°27'34.4E	Erven
441	KOMATI	369	0	26°5'56.22S	29°27'35.52E	Erven
442	KOMATI	374	0	26°5'56.87S	29°27'34.69E	Erven
443	KOMATI	375	0	26°5'56.27S	29°27'34.13E	Erven
444	KOMATI	384	0	26°5'55.72S	29°27'37.09E	Erven
445	KOMATI	407	0	26°5'55.28S	29°27'42.01E	Erven
446	KOMATI	415	0	26°5'55.42S	29°27'43.57E	Erven
447	KOMATI	426	0	26°5'49.39S	29°27'49.69E	Erven

448	KOMATI	439	0	26°5'49.54S	29°27'51.25E	Erven
449	KOMATI	442	0	26°5'51.43S	29°27'48.78E	Erven
450	KOMATI	455	3	26°5'55.27S	29°27'30.92E	Erven
451	KOMATI	455	1	26°5'54.49S	29°27'30.2E	Erven
452	KOMATI	455	2	26°5'54.88S	29°27'30.5E	Erven
453	GELUK	26	0	26°5'52.64S	29°30'18.3E	Farm
454	BROODSNEYERSPLAATS	25	0	26°3'52.68S	29°29'36.26E	Farm
455	BLINKPAN	606	0	26°4'54.58S	29°28'9.62E	Farm
456	GOEDEHOOP	46	0	26°7'40.51S	29°25'26.47E	Farm
457	KOMATI POWER STATION 56	27	0	26°5'57.82S	29°27'49.26E	Farm
458	BROODSNEYERSPLAATS	25	11	26°5'21.76S	29°28'51.79E	Farm Portion
459	KOMATI POWER STATION 56	27	21	26°5'59.32S	29°27'15.81E	Farm Portion
460	KOPPIES KRAAL HS	56	10	26°5'47.5S	29°27'13.57E	Farm Portion
461	GELUK	26	7	26°6'29.9S	29°28'45.35E	Farm Portion
462	GELUK	26	27	26°6'38.56S	29°28'27.27E	Farm Portion
463	KOPPIES KRAAL HS	56	2	26°5'55.3S	29°27'2.25E	Farm Portion
464	BROODSNEYERSPLAATS	25	7	26°5'28.7S	29°29'12.17E	Farm Portion
465	KOPPIES KRAAL HS	56	12	26°6'4.95S	29°28'42.81E	Farm Portion
466	GOEDEHOOP	46	3	26°7'8.79S	29°27'28.85E	Farm Portion
467	KOPPIES KRAAL HS	56	0	26°5'57.94S	29°27'55.33E	Farm Portion
468	BROODSNEYERSPLAATS	25	39	26°5'17.64S	29°29'4.47E	Farm Portion
469	KOPPIES KRAAL HS	56	1	26°5'54.02S	29°27'2.07E	Farm Portion
470	KOPPIES KRAAL HS	56	6	26°6'9.44S	29°27'13.98E	Farm Portion
471	KOPPIES KRAAL HS	56	11	26°5'34.96S	29°27'19.57E	Farm Portion
472	BROODSNEYERSPLAATS	25	38	26°5'16.88S	29°29'5.29E	Farm Portion
473	KOMATI POWER STATION 56	27	24	26°5'59.58S	29°27'3.5E	Farm Portion
474	BLINKPAN	606	0	26°4'50.6S	29°28'7.51E	Farm Portion

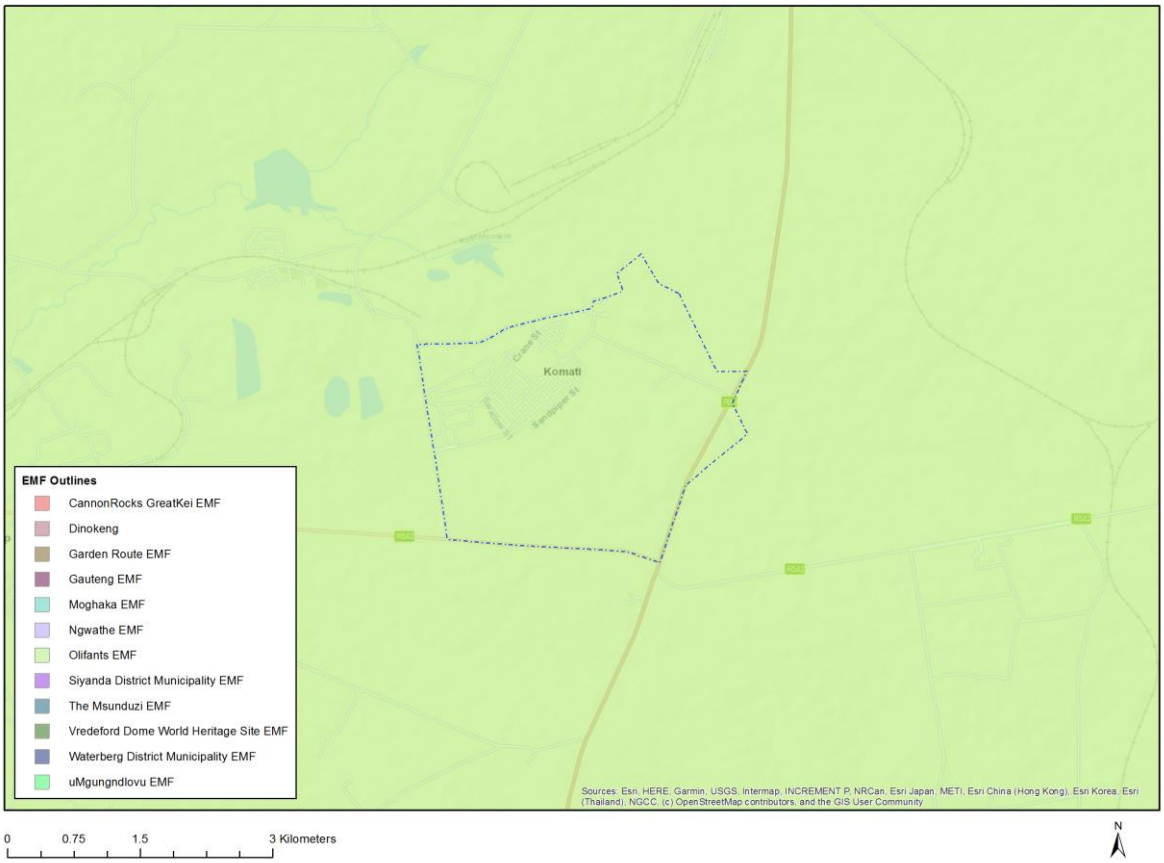
Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/759	Solar PV	Approved	18.8

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Utilities Infrastructure|Electricity|Generation|Renewable|Solar|PV**.

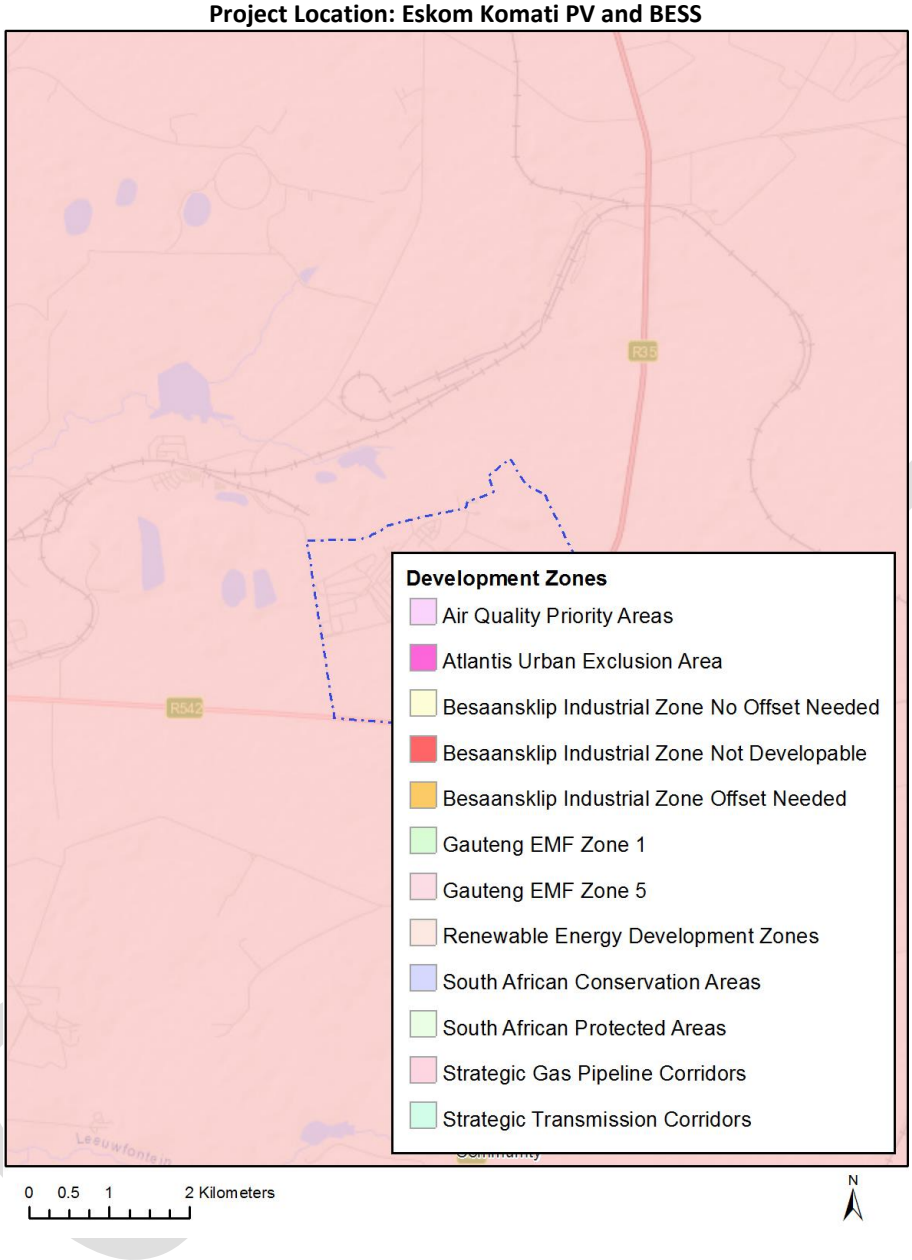
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf
Strategic Gas Pipeline Corridors -Phase 8: Rompco Pipeline Corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Eskom Komati PV and BESS



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Avian Theme				X
Civil Aviation (Solar PV) Theme			X	
Defence Theme				X
Landscape (Solar) Theme	X			
Paleontology Theme	X			
Plant Species Theme			X	
RFI Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

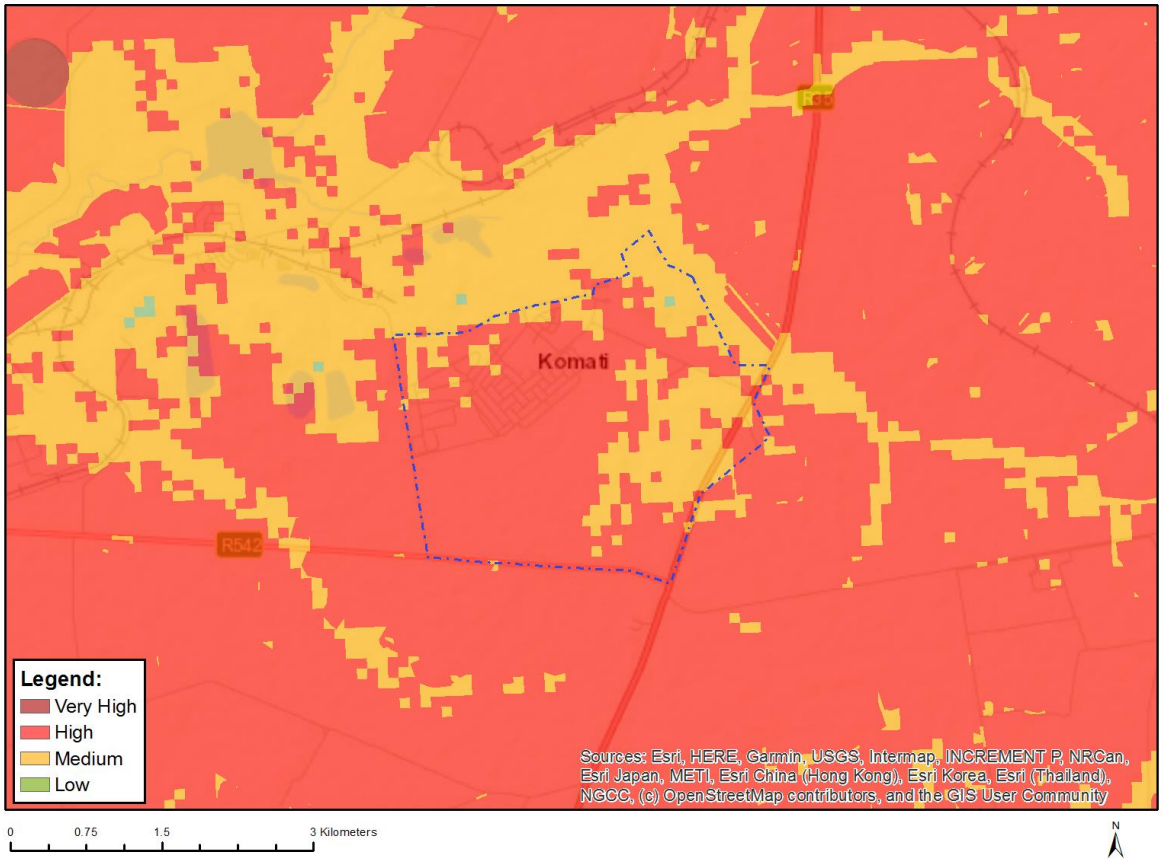
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_WindAndSolar_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf

	Impact Assessment	
7	Civil Aviation Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf
8	Defense Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Defence_Installations_Assessment_Protocols.pdf
9	RFI Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
13	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

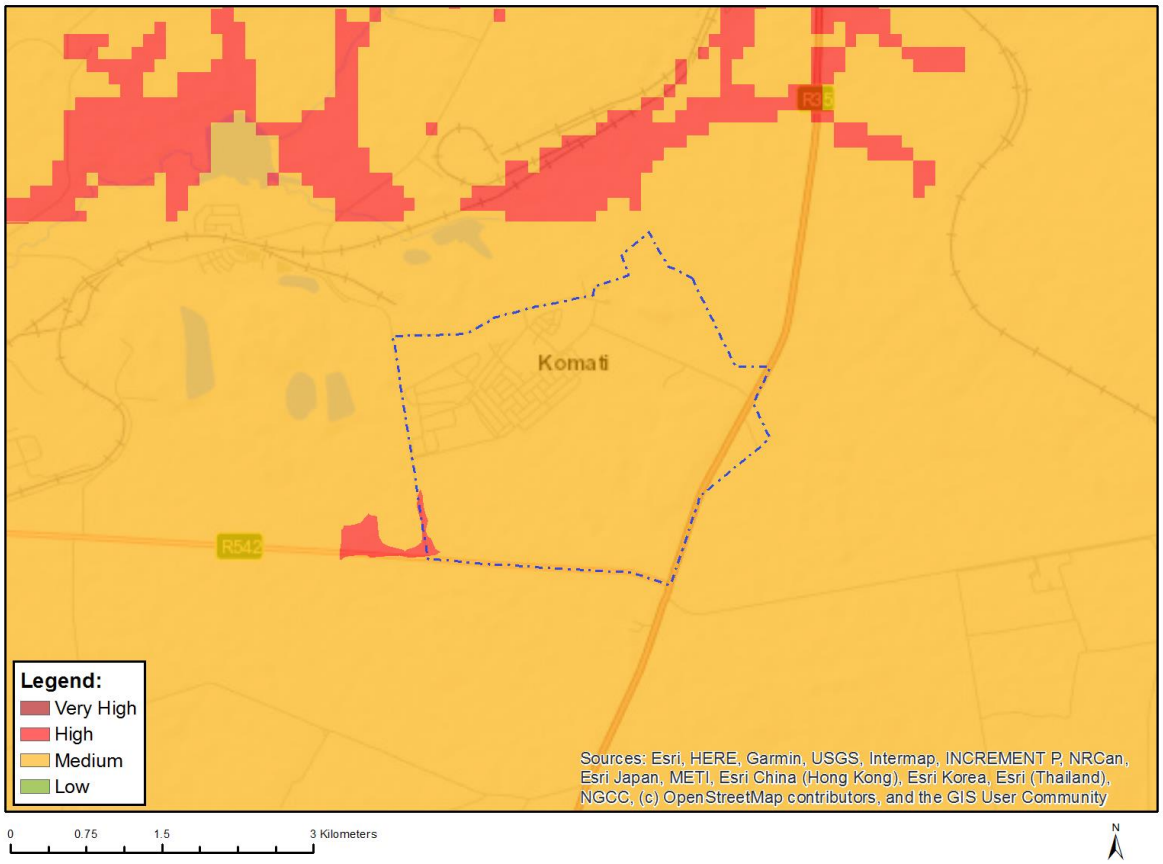


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



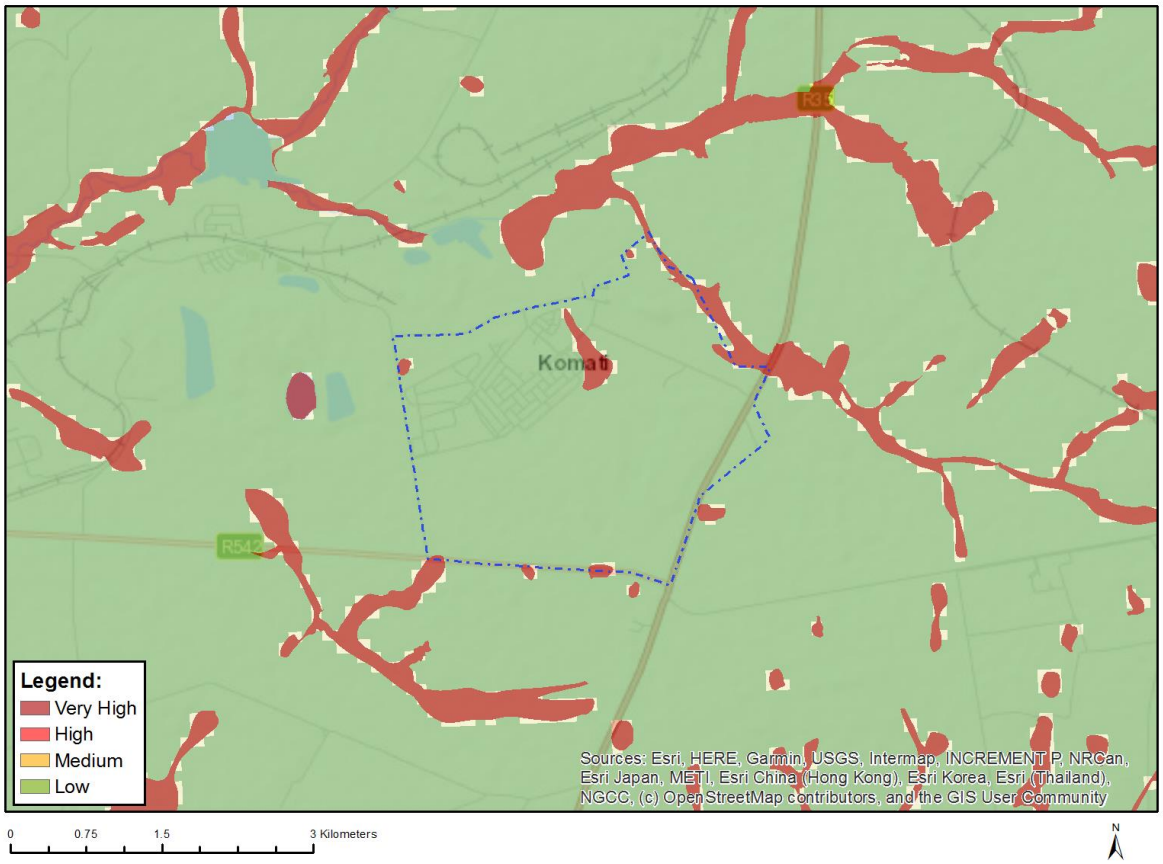
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Mammalia-Felis nigripes
Medium	Aves-Tyto capensis
Medium	Aves-Hydroprogne caspia
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

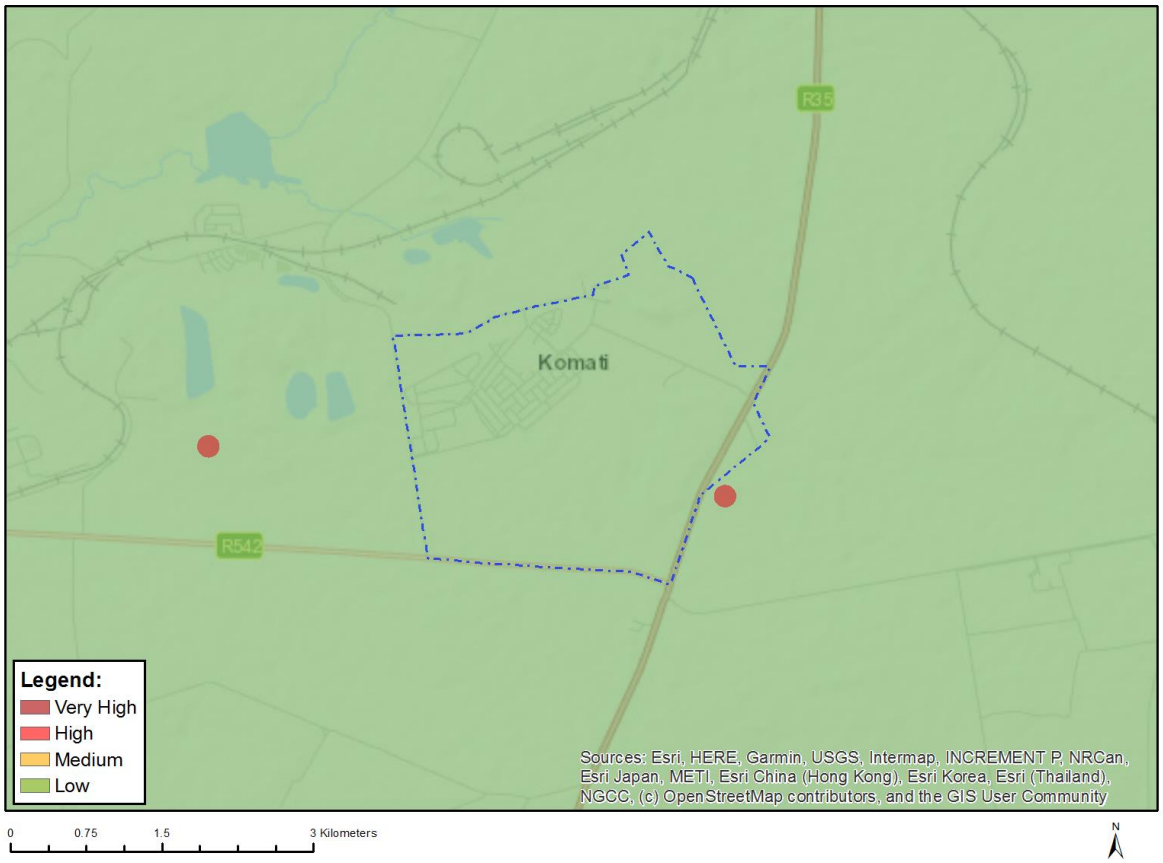


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

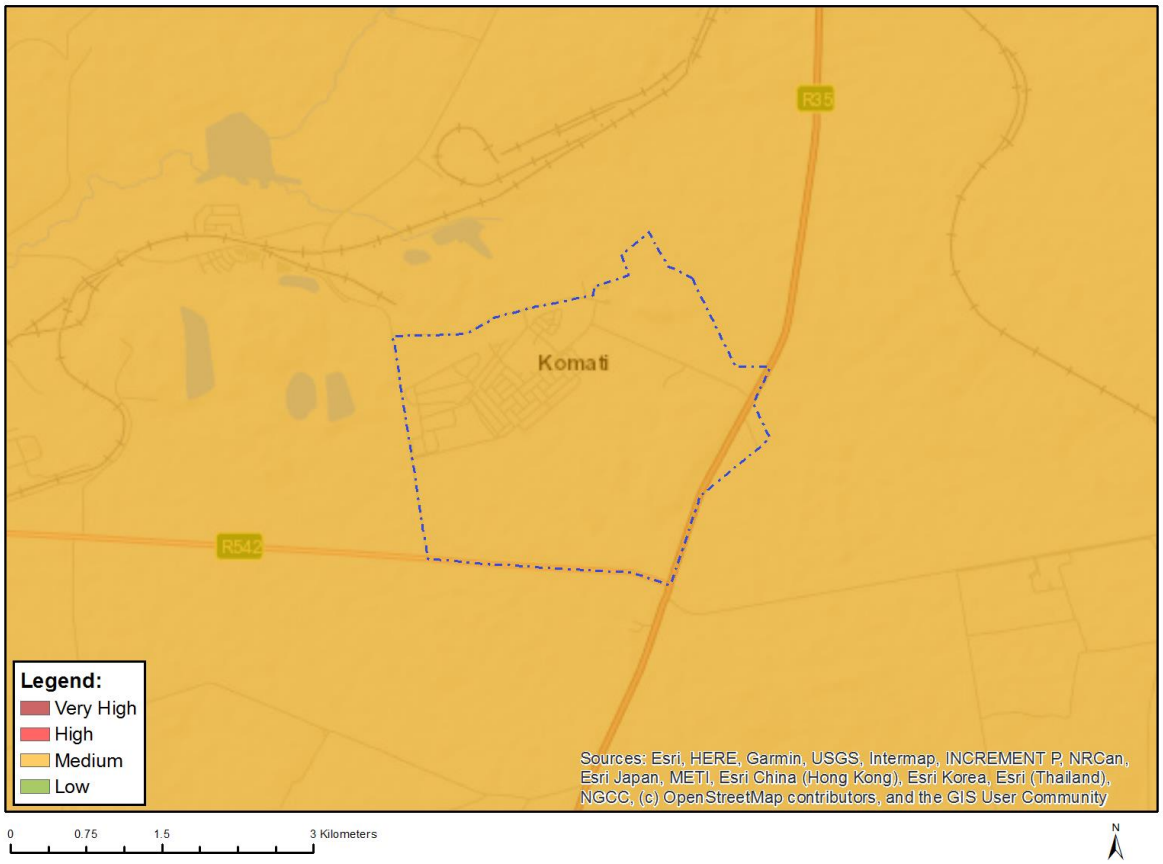
MAP OF RELATIVE AVIAN THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE CIVIL AVIATION (SOLAR PV) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Within 8 km of an other civil aviation aerodrome

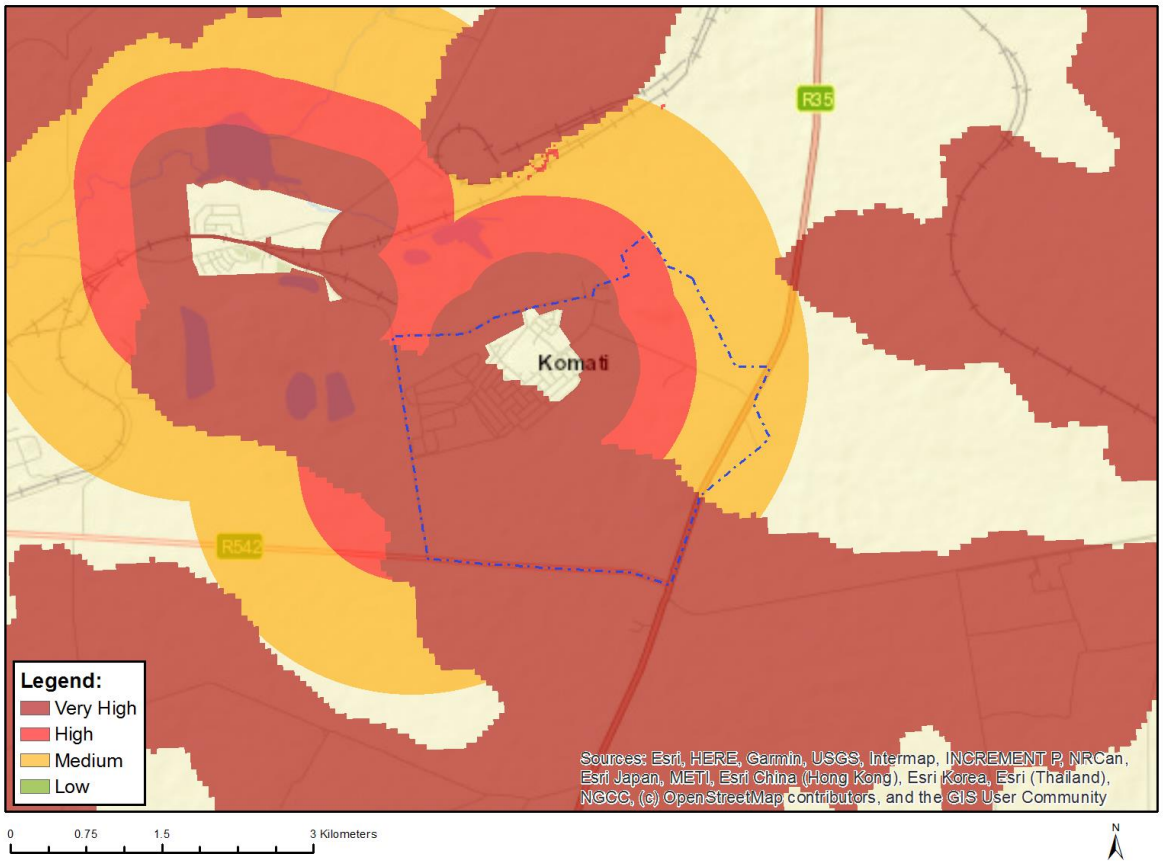
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY

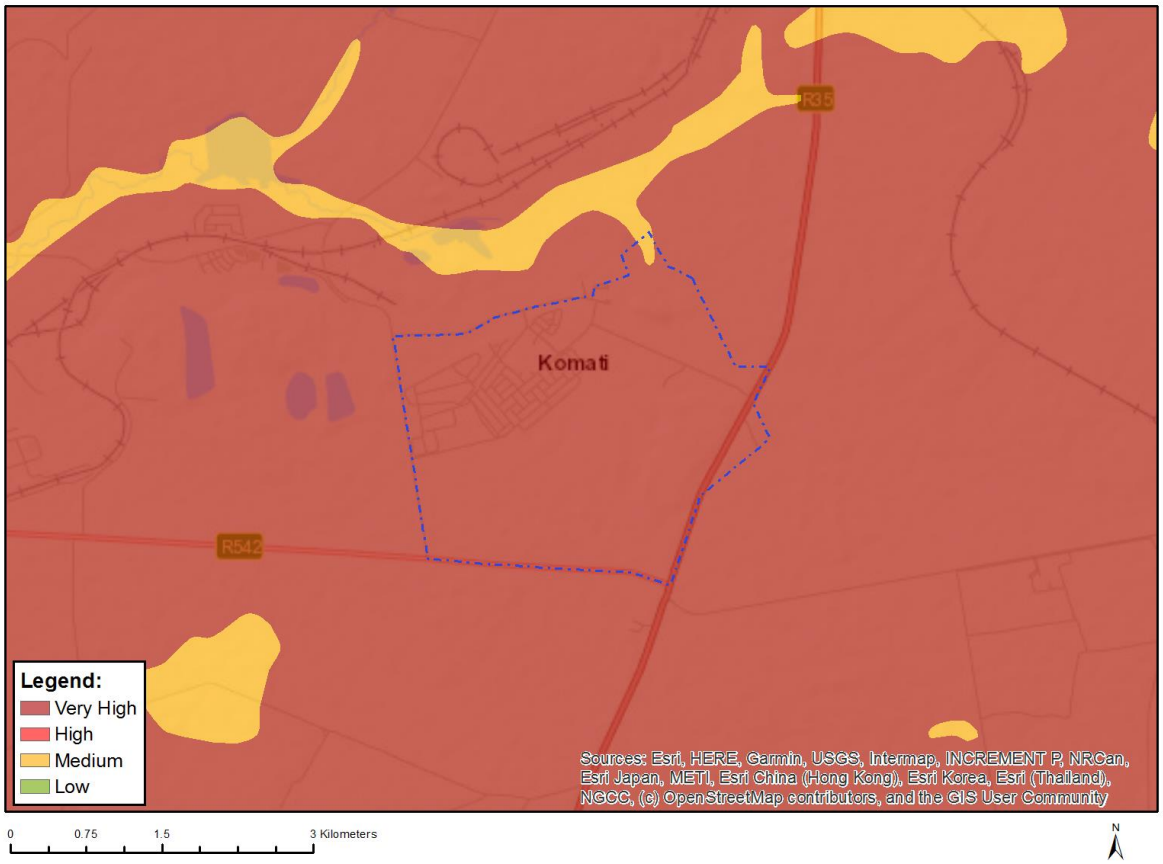


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Between 500 and 1000 m of a town or village
Medium	Between a and 2 km of a town or village
Very High	Within 500 m of a town or village
Very High	Mountain tops and high ridges

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

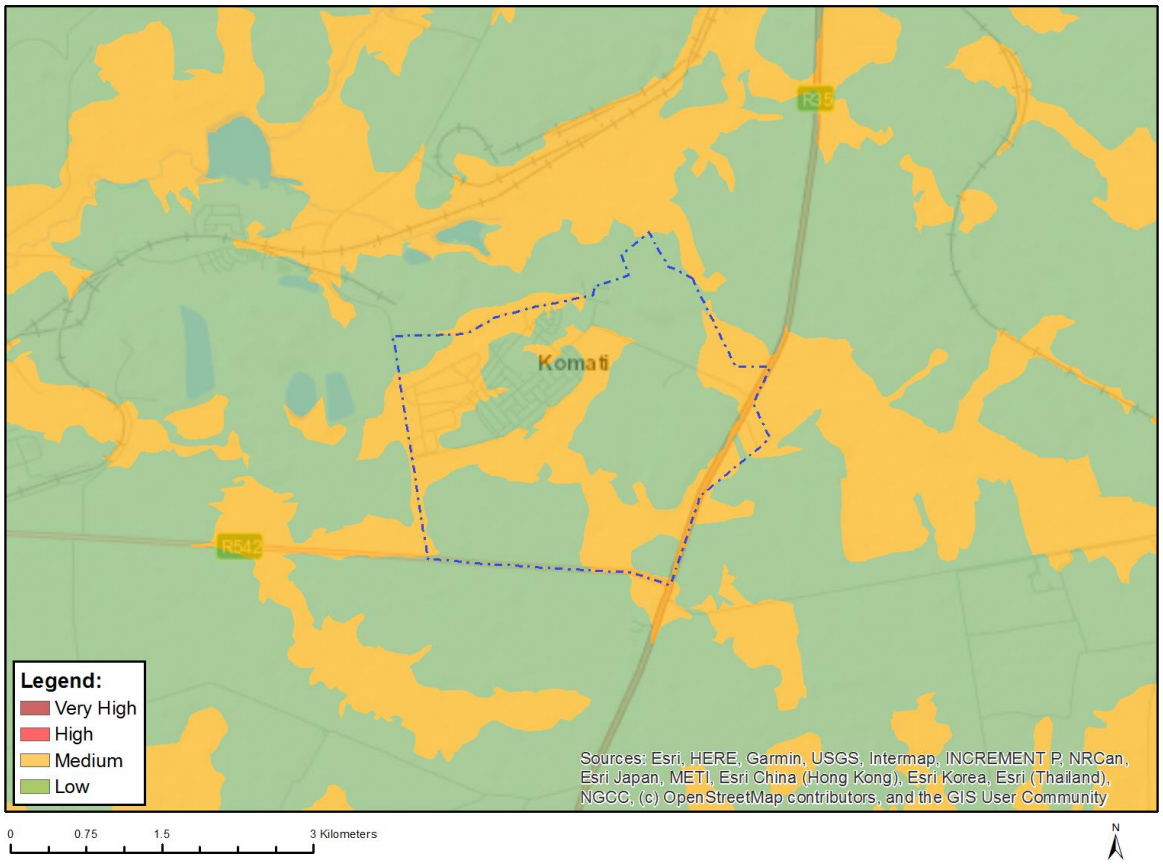


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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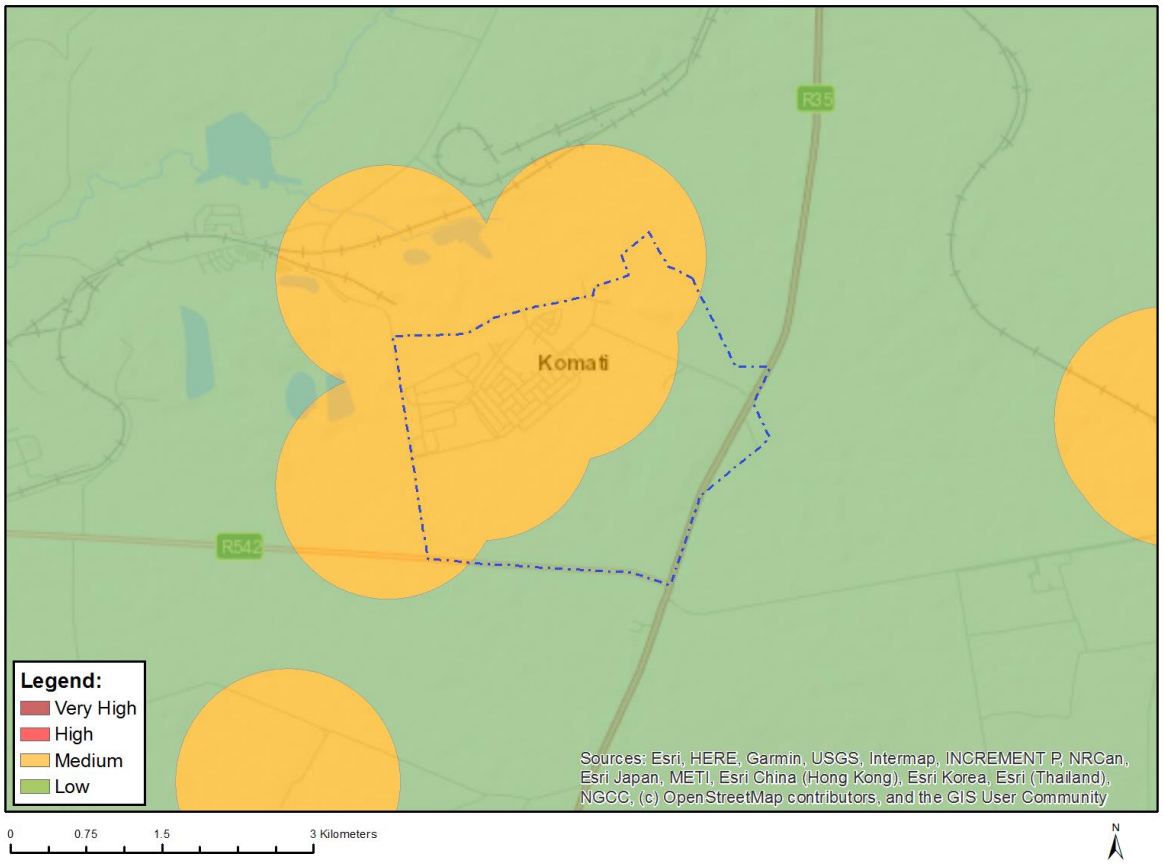
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 41
Medium	Sensitive species 691
Medium	Pachycarpus suaveolens

MAP OF RELATIVE RFI THEME SENSITIVITY

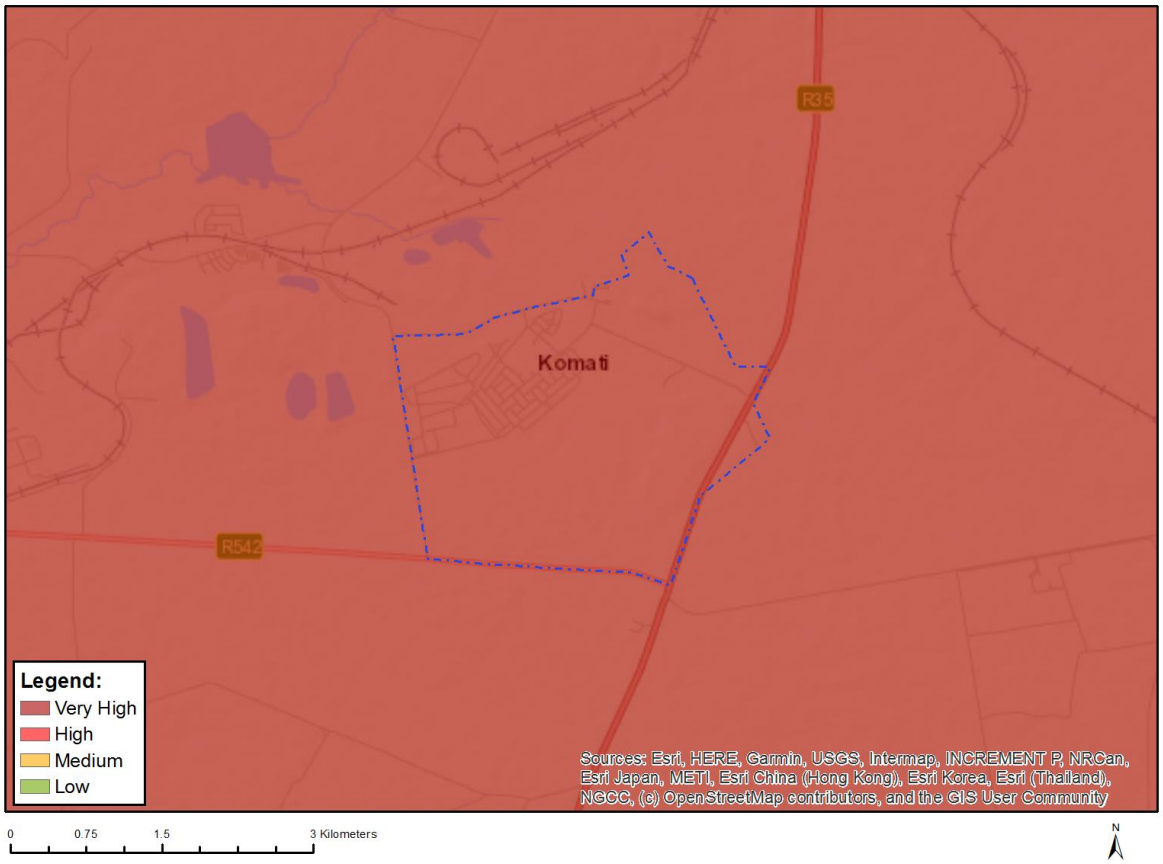


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Medium	Within 1 km of a telecommunication facility

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 2
Very High	Vulnerable ecosystem

APPENDIX

C-2 DFFE SCREENING REPORT FOR WEF

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: 41103965

Project name: Eskom Komati Wind Energy Facility

Project title: Komati WEF EIA

Date screening report generated: 27/06/2022 11:42:29

Applicant: Eskom Holdings SOC

Compiler: Megan Govender - WSP

Compiler signature:

.....

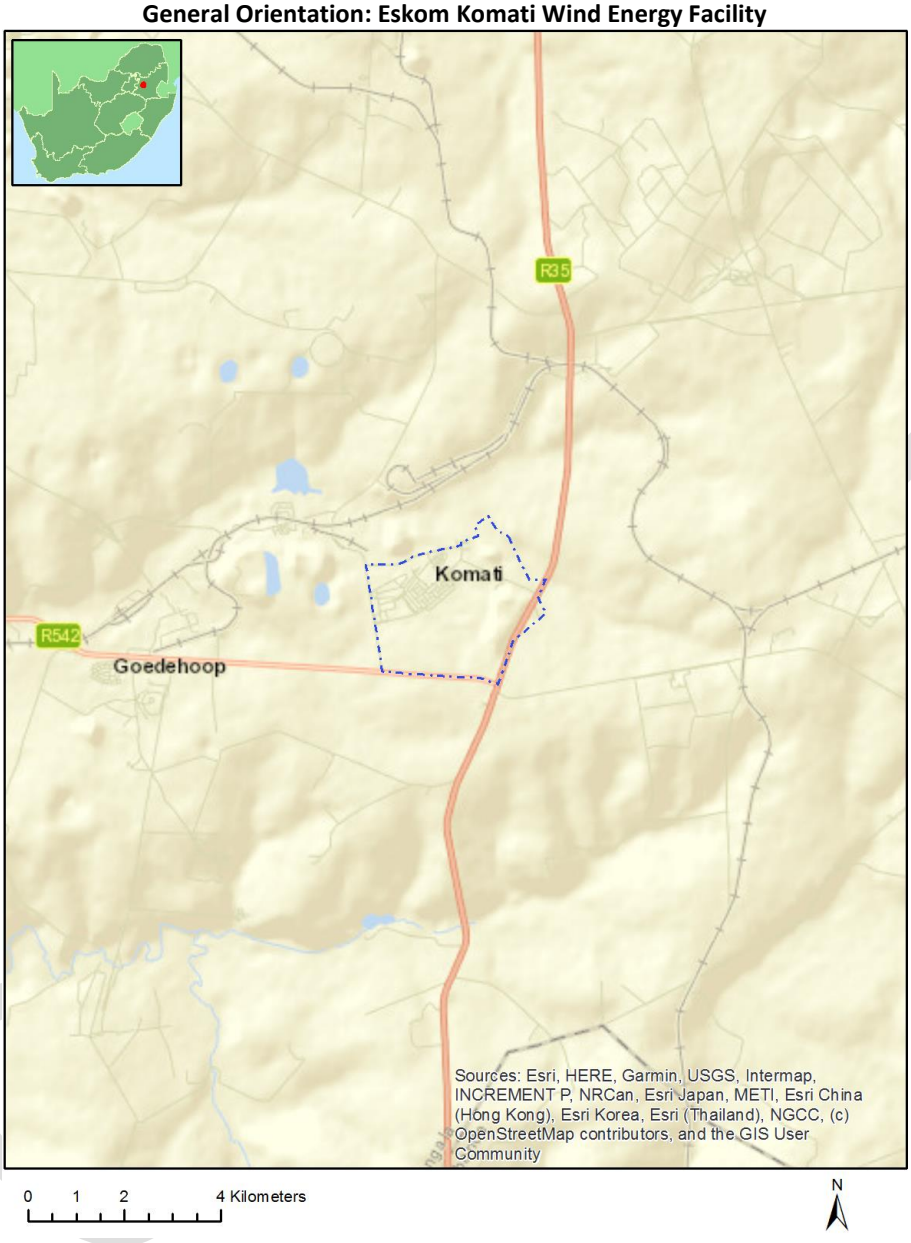
Application Category: Utilities Infrastructure|Electricity|Generation|Renewable|Wind

Table of Contents

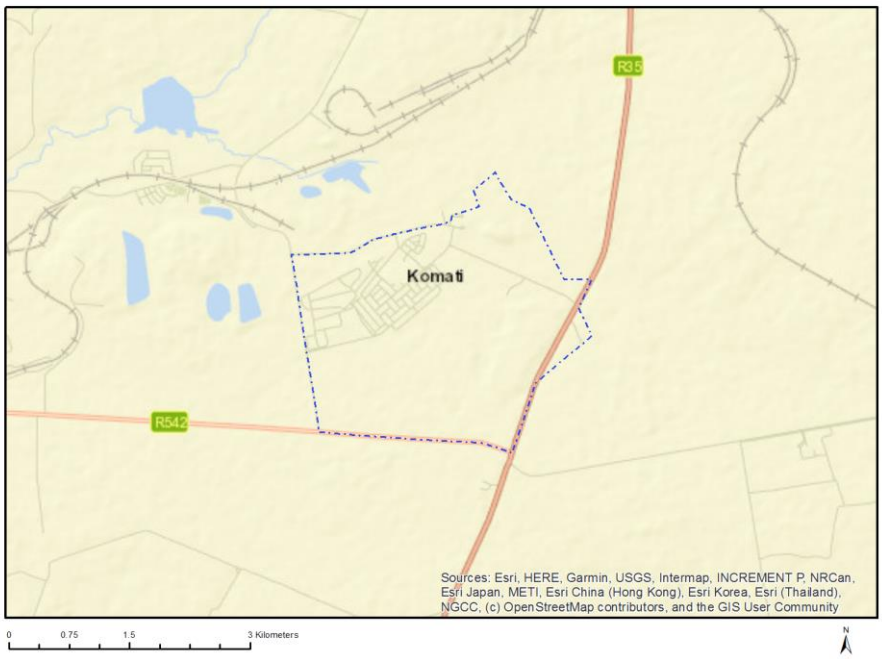
Proposed Project Location

Orientation map 1: General location

General Orientation: Eskom Komati Wind Energy Facility



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	KOMATI	16	0	26°5'34.93S	29°27'33.25E	Erven
2	KOMATI	21	0	26°5'31.67S	29°27'36.12E	Erven
3	KOMATI	22	0	26°5'39.18S	29°27'29.64E	Erven
4	KOMATI	23	0	26°5'39.92S	29°27'28.95E	Erven
5	KOMATI	30	0	26°5'45.14S	29°27'24.16E	Erven
6	KOMATI	33	0	26°6'1.68S	29°27'28.1E	Erven
7	KOMATI	44	0	26°5'57.36S	29°27'26.14E	Erven
8	KOMATI	58	0	26°5'59.05S	29°27'31.21E	Erven
9	KOMATI	68	0	26°5'52.98S	29°27'24.13E	Erven
10	KOMATI	70	0	26°5'51.46S	29°27'22.77E	Erven
11	KOMATI	71	0	26°5'50.7S	29°27'22.1E	Erven
12	KOMATI	86	0	26°5'57.38S	29°27'31.59E	Erven
13	KOMATI	88	0	26°5'55.93S	29°27'30.19E	Erven
14	KOMATI	89	0	26°5'55.21S	29°27'29.54E	Erven
15	KOMATI	90	0	26°5'54.52S	29°27'28.79E	Erven
16	KOMATI	92	0	26°5'53.03S	29°27'27.39E	Erven
17	KOMATI	101	0	26°5'44.81S	29°27'27.19E	Erven
18	KOMATI	105	0	26°5'42.09S	29°27'29.69E	Erven
19	KOMATI	106	0	26°5'41.41S	29°27'30.32E	Erven
20	KOMATI	110	0	26°5'42.73S	29°27'30.53E	Erven
21	KOMATI	140	0	26°5'49.87S	29°27'31.68E	Erven
22	KOMATI	148	0	26°5'49.32S	29°27'33.94E	Erven
23	KOMATI	154	0	26°5'45.57S	29°27'36.22E	Erven
24	KOMATI	165	0	26°5'41.17S	29°27'44.5E	Erven
25	KOMATI	169	0	26°5'30.52S	29°27'42.53E	Erven
26	KOMATI	172	0	26°5'28.63S	29°27'44.42E	Erven
27	KOMATI	176	0	26°5'30.55S	29°27'45.62E	Erven

28	KOMATI	178	0	26°5'29.67S	29°27'44.44E	Erven
29	KOMATI	197	0	26°5'28.6S	29°27'49.38E	Erven
30	KOMATI	7	0	26°5'35.71S	29°27'26.86E	Erven
31	KOMATI	8	0	26°5'35.17S	29°27'28.39E	Erven
32	KOMATI	13	0	26°5'32.69S	29°27'33.2E	Erven
33	KOMATI	18	0	26°5'36.35S	29°27'31.84E	Erven
34	KOMATI	36	0	26°5'59.4S	29°27'33.4E	Erven
35	KOMATI	40	0	26°6'0.43S	29°27'28.83E	Erven
36	KOMATI	55	0	26°5'56.83S	29°27'29.12E	Erven
37	KOMATI	57	0	26°5'58.31S	29°27'30.51E	Erven
38	KOMATI	69	0	26°5'52.21S	29°27'23.45E	Erven
39	KOMATI	72	0	26°5'48.66S	29°27'24.75E	Erven
40	KOMATI	87	0	26°5'56.67S	29°27'30.89E	Erven
41	KOMATI	91	0	26°5'53.77S	29°27'28.09E	Erven
42	KOMATI	97	0	26°5'49.31S	29°27'23.9E	Erven
43	KOMATI	103	0	26°5'43.46S	29°27'28.43E	Erven
44	KOMATI	104	0	26°5'42.79S	29°27'29.06E	Erven
45	KOMATI	115	0	26°5'46.12S	29°27'27.41E	Erven
46	KOMATI	119	0	26°5'48.8S	29°27'28.54E	Erven
47	KOMATI	121	0	26°5'50.15S	29°27'29.82E	Erven
48	KOMATI	125	0	26°5'51.48S	29°27'29.62E	Erven
49	KOMATI	130	0	26°5'48.02S	29°27'29.91E	Erven
50	KOMATI	150	0	26°5'50.55S	29°27'32.33E	Erven
51	KOMATI	155	0	26°5'46.98S	29°27'36.7E	Erven
52	KOMATI	166	0	26°5'42.77S	29°27'42.32E	Erven
53	KOMATI	171	0	26°5'28.2S	29°27'43.84E	Erven
54	KOMATI	184	0	26°5'26.88S	29°27'45.8E	Erven
55	KOMATI	193	0	26°5'28.42S	29°27'47.27E	Erven
56	KOMATI	195	0	26°5'27.3S	29°27'49.65E	Erven
57	KOMATI	198	0	26°5'29.25S	29°27'49.24E	Erven
58	KOMATI	205	0	26°5'30.26S	29°27'48.7E	Erven
59	KOMATI	11	0	26°5'33.93S	29°27'31.31E	Erven
60	KOMATI	14	0	26°5'32.98S	29°27'34.32E	Erven
61	KOMATI	35	0	26°5'58.49S	29°27'33.99E	Erven
62	KOMATI	43	0	26°5'58.13S	29°27'26.81E	Erven
63	KOMATI	46	0	26°5'50.13S	29°27'22.85E	Erven
64	KOMATI	52	0	26°5'54.6S	29°27'27.02E	Erven
65	KOMATI	61	0	26°5'58.2S	29°27'28.99E	Erven
66	KOMATI	62	0	26°5'57.46S	29°27'28.29E	Erven
67	KOMATI	65	0	26°5'55.23S	29°27'26.19E	Erven
68	KOMATI	66	0	26°5'54.49S	29°27'25.5E	Erven
69	KOMATI	67	0	26°5'53.74S	29°27'24.81E	Erven
70	KOMATI	74	0	26°5'50.14S	29°27'26.15E	Erven
71	KOMATI	95	0	26°5'50.79S	29°27'25.3E	Erven
72	KOMATI	111	0	26°5'43.43S	29°27'29.89E	Erven
73	KOMATI	116	0	26°5'46.8S	29°27'26.79E	Erven
74	KOMATI	122	0	26°5'50.83S	29°27'30.46E	Erven
75	KOMATI	133	0	26°5'46.29S	29°27'32.17E	Erven
76	KOMATI	146	0	26°5'48.14S	29°27'35.53E	Erven
77	KOMATI	152	0	26°5'43.9S	29°27'34.05E	Erven
78	KOMATI	159	0	26°5'33S	29°27'39.84E	Erven
79	KOMATI	177	0	26°5'30.11S	29°27'45.03E	Erven
80	KOMATI	179	0	26°5'29.24S	29°27'43.85E	Erven
81	KOMATI	182	0	26°5'27.25S	29°27'44.41E	Erven
82	KOMATI	187	0	26°5'26.24S	29°27'47.84E	Erven
83	KOMATI	196	0	26°5'27.94S	29°27'49.52E	Erven
84	KOMATI	209	0	26°5'31.33S	29°27'46.56E	Erven
85	KOMATI	211	0	26°5'30.33S	29°27'47.46E	Erven
86	KOMATI	228	0	26°5'38.26S	29°27'51.72E	Erven
87	KOMATI	232	0	26°5'40.29S	29°27'53.63E	Erven

88	KOMATI	241	0	26°5'38.76S	29°27'51.06E	Erven
89	KOMATI	1	0	26°5'40.49S	29°27'26.4E	Erven
90	KOMATI	5	0	26°5'37.43S	29°27'27.83E	Erven
91	KOMATI	10	0	26°5'34.39S	29°27'30.39E	Erven
92	KOMATI	12	0	26°5'33.39S	29°27'32.17E	Erven
93	KOMATI	15	0	26°5'34.13S	29°27'34.24E	Erven
94	KOMATI	20	0	26°5'37.94S	29°27'30.54E	Erven
95	KOMATI	26	0	26°5'42.13S	29°27'26.92E	Erven
96	KOMATI	37	0	26°6'0.12S	29°27'32.42E	Erven
97	KOMATI	39	0	26°6'1.29S	29°27'29.6E	Erven
98	KOMATI	47	0	26°5'50.87S	29°27'23.54E	Erven
99	KOMATI	56	0	26°5'57.57S	29°27'29.81E	Erven
100	KOMATI	59	0	26°5'59.69S	29°27'30.39E	Erven
101	KOMATI	64	0	26°5'55.97S	29°27'26.89E	Erven
102	KOMATI	96	0	26°5'50.05S	29°27'24.6E	Erven
103	KOMATI	98	0	26°5'46.9S	29°27'25.31E	Erven
104	KOMATI	99	0	26°5'46.18S	29°27'25.94E	Erven
105	KOMATI	107	0	26°5'40.73S	29°27'30.94E	Erven
106	KOMATI	108	0	26°5'41.37S	29°27'31.77E	Erven
107	KOMATI	157	0	26°5'38.78S	29°27'33.89E	Erven
108	KOMATI	170	0	26°5'27.81S	29°27'43.3E	Erven
109	KOMATI	174	0	26°5'29.5S	29°27'45.59E	Erven
110	KOMATI	175	0	26°5'29.95S	29°27'46.17E	Erven
111	KOMATI	181	0	26°5'28.37S	29°27'42.67E	Erven
112	KOMATI	183	0	26°5'27.07S	29°27'45.09E	Erven
113	KOMATI	186	0	26°5'26.44S	29°27'47.2E	Erven
114	KOMATI	189	0	26°5'27.41S	29°27'46.78E	Erven
115	KOMATI	194	0	26°5'29.07S	29°27'47E	Erven
116	KOMATI	200	0	26°5'28.4S	29°27'48.53E	Erven
117	KOMATI	203	0	26°5'26.49S	29°27'48.94E	Erven
118	KOMATI	2	0	26°5'39.73S	29°27'27.08E	Erven
119	KOMATI	17	0	26°5'35.6S	29°27'32.47E	Erven
120	KOMATI	24	0	26°5'40.64S	29°27'28.3E	Erven
121	KOMATI	27	0	26°5'42.89S	29°27'26.23E	Erven
122	KOMATI	31	0	26°5'45.88S	29°27'23.47E	Erven
123	KOMATI	38	0	26°6'0.76S	29°27'31.39E	Erven
124	KOMATI	42	0	26°5'58.89S	29°27'27.48E	Erven
125	KOMATI	53	0	26°5'55.34S	29°27'27.72E	Erven
126	KOMATI	60	0	26°5'58.94S	29°27'29.69E	Erven
127	KOMATI	79	0	26°5'53.86S	29°27'29.64E	Erven
128	KOMATI	117	0	26°5'47.59S	29°27'26.08E	Erven
129	KOMATI	137	0	26°5'47.62S	29°27'32.12E	Erven
130	KOMATI	138	0	26°5'48.2S	29°27'31.37E	Erven
131	KOMATI	139	0	26°5'48.78S	29°27'30.61E	Erven
132	KOMATI	143	0	26°5'48.02S	29°27'34.09E	Erven
133	KOMATI	156	0	26°5'46.27S	29°27'37.62E	Erven
134	KOMATI	158	0	26°5'35S	29°27'37.1E	Erven
135	KOMATI	160	0	26°5'34.07S	29°27'42.89E	Erven
136	KOMATI	161	0	26°5'35.83S	29°27'43.74E	Erven
137	KOMATI	180	0	26°5'28.8S	29°27'43.26E	Erven
138	KOMATI	188	0	26°5'27.15S	29°27'47.53E	Erven
139	KOMATI	202	0	26°5'27.15S	29°27'48.8E	Erven
140	KOMATI	215	0	26°5'37.48S	29°27'53.87E	Erven
141	KOMATI	221	0	26°5'40.53S	29°27'55.59E	Erven
142	KOMATI	233	0	26°5'40.8S	29°27'54.11E	Erven
143	KOMATI	239	0	26°5'39.78S	29°27'52E	Erven
144	KOMATI	244	0	26°5'41.88S	29°27'55.77E	Erven
145	KOMATI	246	0	26°5'40.84S	29°27'56.88E	Erven
146	KOMATI	254	0	26°5'42.29S	29°27'52.36E	Erven
147	KOMATI	199	0	26°5'28.98S	29°27'48.41E	Erven

148	KOMATI	204	0	26°5'29.84S	29°27'47.96E	Erven
149	KOMATI	206	0	26°5'30.83S	29°27'48.14E	Erven
150	KOMATI	218	0	26°5'39.01S	29°27'55.31E	Erven
151	KOMATI	220	0	26°5'40.03S	29°27'56.25E	Erven
152	KOMATI	227	0	26°5'37.49S	29°27'52.73E	Erven
153	KOMATI	249	0	26°5'42.46S	29°27'56.35E	Erven
154	KOMATI	258	0	26°5'44.74S	29°27'53.22E	Erven
155	KOMATI	287	0	26°5'43.24S	29°27'44.19E	Erven
156	KOMATI	295	0	26°5'48.51S	29°27'46.47E	Erven
157	KOMATI	303	0	26°5'45.59S	29°27'51.97E	Erven
158	KOMATI	308	0	26°5'48.21S	29°27'48.55E	Erven
159	KOMATI	309	0	26°5'48.73S	29°27'47.86E	Erven
160	KOMATI	319	0	26°5'50.81S	29°27'43.95E	Erven
161	KOMATI	322	0	26°5'49S	29°27'42.25E	Erven
162	KOMATI	324	0	26°5'48.31S	29°27'37.73E	Erven
163	KOMATI	336	0	26°5'46.5S	29°27'41.77E	Erven
164	KOMATI	370	0	26°5'56.83S	29°27'36.09E	Erven
165	KOMATI	372	0	26°5'58.08S	29°27'35.83E	Erven
166	KOMATI	386	0	26°5'54.67S	29°27'38.46E	Erven
167	KOMATI	387	0	26°5'54.14S	29°27'39.14E	Erven
168	KOMATI	399	0	26°5'55.42S	29°27'39.16E	Erven
169	KOMATI	404	0	26°5'57.17S	29°27'39.54E	Erven
170	KOMATI	430	0	26°5'46.87S	29°27'52.98E	Erven
171	KOMATI	437	0	26°5'48.27S	29°27'52.9E	Erven
172	KOMATI	444	0	26°5'52.69S	29°27'47.13E	Erven
173	KOMATI	454	9	26°5'54.6S	29°27'36.06E	Erven
174	KOMATI	455	8	26°5'57.29S	29°27'32.71E	Erven
175	KOMATI	455	6	26°5'56.44S	29°27'31.97E	Erven
176	KOMATI	455	4	26°5'55.61S	29°27'31.21E	Erven
177	KOMATI	4	0	26°5'38.19S	29°27'28.47E	Erven
178	KOMATI	28	0	26°5'43.64S	29°27'25.54E	Erven
179	KOMATI	48	0	26°5'51.61S	29°27'24.24E	Erven
180	KOMATI	76	0	26°5'51.63S	29°27'27.54E	Erven
181	KOMATI	85	0	26°5'58.07S	29°27'32.29E	Erven
182	KOMATI	94	0	26°5'51.54S	29°27'26E	Erven
183	KOMATI	100	0	26°5'45.49S	29°27'26.56E	Erven
184	KOMATI	102	0	26°5'44.13S	29°27'27.82E	Erven
185	KOMATI	113	0	26°5'44.77S	29°27'28.66E	Erven
186	KOMATI	127	0	26°5'50.12S	29°27'28.34E	Erven
187	KOMATI	134	0	26°5'45.72S	29°27'32.93E	Erven
188	KOMATI	147	0	26°5'48.71S	29°27'34.73E	Erven
189	KOMATI	191	0	26°5'27.82S	29°27'45.23E	Erven
190	KOMATI	210	0	26°5'30.85S	29°27'47E	Erven
191	KOMATI	212	0	26°5'33.65S	29°27'49.02E	Erven
192	KOMATI	214	0	26°5'36.99S	29°27'53.4E	Erven
193	KOMATI	229	0	26°5'38.76S	29°27'52.2E	Erven
194	KOMATI	230	0	26°5'39.26S	29°27'52.68E	Erven
195	KOMATI	231	0	26°5'39.77S	29°27'53.16E	Erven
196	KOMATI	235	0	26°5'41.82S	29°27'53.93E	Erven
197	KOMATI	237	0	26°5'40.8S	29°27'52.96E	Erven
198	KOMATI	238	0	26°5'40.29S	29°27'52.48E	Erven
199	KOMATI	248	0	26°5'42.04S	29°27'56.82E	Erven
200	KOMATI	257	0	26°5'44.11S	29°27'54.06E	Erven
201	KOMATI	262	0	26°5'42.33S	29°27'50.95E	Erven
202	KOMATI	263	0	26°5'41.73S	29°27'50.4E	Erven
203	KOMATI	267	0	26°5'40.23S	29°27'48.27E	Erven
204	KOMATI	274	0	26°5'42.01S	29°27'47.64E	Erven
205	KOMATI	284	0	26°5'45.05S	29°27'45.88E	Erven
206	KOMATI	3	0	26°5'38.98S	29°27'27.78E	Erven
207	KOMATI	32	0	26°6'0.76S	29°27'27.39E	Erven

208	KOMATI	49	0	26°5'52.36S	29°27'24.93E	Erven
209	KOMATI	51	0	26°5'53.86S	29°27'26.32E	Erven
210	KOMATI	78	0	26°5'53.12S	29°27'28.94E	Erven
211	KOMATI	93	0	26°5'52.28S	29°27'26.7E	Erven
212	KOMATI	109	0	26°5'42.05S	29°27'31.16E	Erven
213	KOMATI	120	0	26°5'49.48S	29°27'29.18E	Erven
214	KOMATI	123	0	26°5'51.52S	29°27'31.09E	Erven
215	KOMATI	126	0	26°5'50.8S	29°27'28.99E	Erven
216	KOMATI	128	0	26°5'49.44S	29°27'27.72E	Erven
217	KOMATI	131	0	26°5'47.44S	29°27'30.66E	Erven
218	KOMATI	141	0	26°5'49.25S	29°27'32.48E	Erven
219	KOMATI	142	0	26°5'48.64S	29°27'33.28E	Erven
220	KOMATI	145	0	26°5'47.57S	29°27'35.45E	Erven
221	KOMATI	151	0	26°5'43.01S	29°27'32.85E	Erven
222	KOMATI	153	0	26°5'44.69S	29°27'35.1E	Erven
223	KOMATI	163	0	26°5'39.68S	29°27'46.41E	Erven
224	KOMATI	164	0	26°5'38.64S	29°27'45.57E	Erven
225	KOMATI	167	0	26°5'44.23S	29°27'39.31E	Erven
226	KOMATI	173	0	26°5'29.06S	29°27'45.01E	Erven
227	KOMATI	219	0	26°5'39.52S	29°27'55.78E	Erven
228	KOMATI	222	0	26°5'40.03S	29°27'55.11E	Erven
229	KOMATI	224	0	26°5'39.01S	29°27'54.15E	Erven
230	KOMATI	225	0	26°5'38.5S	29°27'53.67E	Erven
231	KOMATI	234	0	26°5'41.31S	29°27'54.58E	Erven
232	KOMATI	247	0	26°5'41.46S	29°27'57.04E	Erven
233	KOMATI	252	0	26°5'41.09S	29°27'51.23E	Erven
234	KOMATI	261	0	26°5'42.93S	29°27'51.52E	Erven
235	KOMATI	6	0	26°5'36.55S	29°27'27.36E	Erven
236	KOMATI	9	0	26°5'34.73S	29°27'29.36E	Erven
237	KOMATI	19	0	26°5'37.18S	29°27'31.22E	Erven
238	KOMATI	25	0	26°5'41.38S	29°27'27.61E	Erven
239	KOMATI	29	0	26°5'44.39S	29°27'24.85E	Erven
240	KOMATI	34	0	26°5'59.05S	29°27'34.53E	Erven
241	KOMATI	41	0	26°5'59.66S	29°27'28.15E	Erven
242	KOMATI	45	0	26°5'56.52S	29°27'25.49E	Erven
243	KOMATI	50	0	26°5'53.11S	29°27'25.62E	Erven
244	KOMATI	54	0	26°5'56.08S	29°27'28.41E	Erven
245	KOMATI	63	0	26°5'56.71S	29°27'27.59E	Erven
246	KOMATI	73	0	26°5'49.39S	29°27'25.44E	Erven
247	KOMATI	75	0	26°5'50.89S	29°27'26.84E	Erven
248	KOMATI	77	0	26°5'52.38S	29°27'28.24E	Erven
249	KOMATI	112	0	26°5'44.11S	29°27'29.25E	Erven
250	KOMATI	114	0	26°5'45.45S	29°27'28.03E	Erven
251	KOMATI	118	0	26°5'48.04S	29°27'27.85E	Erven
252	KOMATI	124	0	26°5'52.15S	29°27'30.26E	Erven
253	KOMATI	129	0	26°5'48.73S	29°27'27.08E	Erven
254	KOMATI	132	0	26°5'46.87S	29°27'31.41E	Erven
255	KOMATI	135	0	26°5'46.43S	29°27'33.7E	Erven
256	KOMATI	136	0	26°5'47.04S	29°27'32.87E	Erven
257	KOMATI	144	0	26°5'47.41S	29°27'34.84E	Erven
258	KOMATI	149	0	26°5'49.94S	29°27'33.13E	Erven
259	KOMATI	162	0	26°5'36.99S	29°27'46.67E	Erven
260	KOMATI	168	0	26°5'39.36S	29°27'39.43E	Erven
261	KOMATI	185	0	26°5'26.67S	29°27'46.5E	Erven
262	KOMATI	255	0	26°5'42.89S	29°27'52.93E	Erven
263	KOMATI	260	0	26°5'43.53S	29°27'52.09E	Erven
264	KOMATI	266	0	26°5'40.75S	29°27'47.59E	Erven
265	KOMATI	268	0	26°5'39.72S	29°27'48.93E	Erven
266	KOMATI	271	0	26°5'40.48S	29°27'49.65E	Erven
267	KOMATI	278	0	26°5'43.8S	29°27'46.15E	Erven

268	KOMATI	279	0	26°5'44.41S	29°27'46.72E	Erven
269	KOMATI	282	0	26°5'46.25S	29°27'47.02E	Erven
270	KOMATI	283	0	26°5'45.66S	29°27'46.45E	Erven
271	KOMATI	293	0	26°5'46.75S	29°27'43.81E	Erven
272	KOMATI	297	0	26°5'47.46S	29°27'47.84E	Erven
273	KOMATI	302	0	26°5'44.83S	29°27'51.27E	Erven
274	KOMATI	304	0	26°5'46.11S	29°27'51.3E	Erven
275	KOMATI	321	0	26°5'49.61S	29°27'42.82E	Erven
276	KOMATI	335	0	26°5'45.99S	29°27'42.44E	Erven
277	KOMATI	344	0	26°5'50.34S	29°27'37.64E	Erven
278	KOMATI	360	0	26°5'51.49S	29°27'35.24E	Erven
279	KOMATI	366	0	26°5'54.43S	29°27'33.83E	Erven
280	KOMATI	396	0	26°5'53.84S	29°27'41.22E	Erven
281	KOMATI	419	0	26°5'57.95S	29°27'40.27E	Erven
282	KOMATI	421	0	26°5'59.2S	29°27'38.63E	Erven
283	KOMATI	429	0	26°5'47.5S	29°27'52.16E	Erven
284	KOMATI	454	5	26°5'53.1S	29°27'36.84E	Erven
285	KOMATI	454	7	26°5'53.95S	29°27'36.84E	Erven
286	KOMATI	213	0	26°5'36.74S	29°27'49.76E	Erven
287	KOMATI	226	0	26°5'37.99S	29°27'53.2E	Erven
288	KOMATI	245	0	26°5'41.42S	29°27'56.27E	Erven
289	KOMATI	251	0	26°5'43.32S	29°27'55.24E	Erven
290	KOMATI	256	0	26°5'43.49S	29°27'53.5E	Erven
291	KOMATI	259	0	26°5'44.13S	29°27'52.65E	Erven
292	KOMATI	275	0	26°5'42.52S	29°27'46.96E	Erven
293	KOMATI	290	0	26°5'47.15S	29°27'45.62E	Erven
294	KOMATI	298	0	26°5'46.93S	29°27'48.52E	Erven
295	KOMATI	299	0	26°5'46.41S	29°27'49.21E	Erven
296	KOMATI	312	0	26°5'47.75S	29°27'42.53E	Erven
297	KOMATI	317	0	26°5'50.77S	29°27'45.37E	Erven
298	KOMATI	320	0	26°5'50.21S	29°27'43.39E	Erven
299	KOMATI	327	0	26°5'46.77S	29°27'39.73E	Erven
300	KOMATI	329	0	26°5'45.75S	29°27'41.06E	Erven
301	KOMATI	332	0	26°5'44.21S	29°27'43.08E	Erven
302	KOMATI	356	0	26°5'52.28S	29°27'32.55E	Erven
303	KOMATI	359	0	26°5'50.75S	29°27'34.55E	Erven
304	KOMATI	394	0	26°5'52.79S	29°27'42.59E	Erven
305	KOMATI	395	0	26°5'53.32S	29°27'41.9E	Erven
306	KOMATI	401	0	26°5'56.47S	29°27'37.8E	Erven
307	KOMATI	402	0	26°5'58.44S	29°27'37.9E	Erven
308	KOMATI	423	0	26°5'51.27S	29°27'47.22E	Erven
309	KOMATI	454	3	26°5'53S	29°27'35.85E	Erven
310	KOMATI	454	10	26°5'54.03S	29°27'35.57E	Erven
311	KOMATI	455	5	26°5'56.03S	29°27'31.64E	Erven
312	KOMATI	207	0	26°5'31.34S	29°27'47.68E	Erven
313	KOMATI	216	0	26°5'37.99S	29°27'54.34E	Erven
314	KOMATI	223	0	26°5'39.52S	29°27'54.64E	Erven
315	KOMATI	236	0	26°5'41.31S	29°27'53.44E	Erven
316	KOMATI	273	0	26°5'41.5S	29°27'48.3E	Erven
317	KOMATI	281	0	26°5'45.61S	29°27'47.85E	Erven
318	KOMATI	288	0	26°5'46.23S	29°27'44.76E	Erven
319	KOMATI	296	0	26°5'47.99S	29°27'47.15E	Erven
320	KOMATI	326	0	26°5'47.28S	29°27'39.07E	Erven
321	KOMATI	334	0	26°5'45.47S	29°27'43.12E	Erven
322	KOMATI	340	0	26°5'48.55S	29°27'39.11E	Erven
323	KOMATI	346	0	26°5'51.54S	29°27'38.77E	Erven
324	KOMATI	347	0	26°5'52.15S	29°27'39.33E	Erven
325	KOMATI	349	0	26°5'52.19S	29°27'37.93E	Erven
326	KOMATI	351	0	26°5'50.98S	29°27'36.79E	Erven
327	KOMATI	357	0	26°5'51.77S	29°27'33.22E	Erven

328	KOMATI	362	0	26°5'52.52S	29°27'33.94E	Erven
329	KOMATI	363	0	26°5'53.03S	29°27'33.26E	Erven
330	KOMATI	389	0	26°5'53.09S	29°27'40.51E	Erven
331	KOMATI	406	0	26°5'55.91S	29°27'41.19E	Erven
332	KOMATI	413	0	26°5'54.16S	29°27'45.21E	Erven
333	KOMATI	418	0	26°5'57.32S	29°27'41.1E	Erven
334	KOMATI	432	0	26°5'45.6S	29°27'54.63E	Erven
335	KOMATI	438	0	26°5'48.91S	29°27'52.07E	Erven
336	KOMATI	440	0	26°5'50.17S	29°27'50.42E	Erven
337	KOMATI	443	0	26°5'52.06S	29°27'47.96E	Erven
338	KOMATI	454	2	26°5'53.33S	29°27'35.44E	Erven
339	KOMATI	454	4	26°5'52.62S	29°27'36.29E	Erven
340	KOMATI	300	0	26°5'45.88S	29°27'49.89E	Erven
341	KOMATI	311	0	26°5'49.78S	29°27'46.49E	Erven
342	KOMATI	315	0	26°5'49.56S	29°27'44.24E	Erven
343	KOMATI	323	0	26°5'48.4S	29°27'41.68E	Erven
344	KOMATI	330	0	26°5'45.23S	29°27'41.74E	Erven
345	KOMATI	333	0	26°5'44.96S	29°27'43.78E	Erven
346	KOMATI	339	0	26°5'48.04S	29°27'39.77E	Erven
347	KOMATI	341	0	26°5'49.06S	29°27'38.43E	Erven
348	KOMATI	342	0	26°5'49.13S	29°27'36.5E	Erven
349	KOMATI	352	0	26°5'50.37S	29°27'36.23E	Erven
350	KOMATI	355	0	26°5'52.79S	29°27'31.88E	Erven
351	KOMATI	358	0	26°5'51.25S	29°27'33.88E	Erven
352	KOMATI	365	0	26°5'54.06S	29°27'31.91E	Erven
353	KOMATI	376	0	26°5'55.67S	29°27'33.57E	Erven
354	KOMATI	377	0	26°5'55.06S	29°27'33E	Erven
355	KOMATI	393	0	26°5'52.27S	29°27'43.28E	Erven
356	KOMATI	405	0	26°5'56.53S	29°27'40.36E	Erven
357	KOMATI	417	0	26°5'56.68S	29°27'41.92E	Erven
358	KOMATI	422	0	26°5'51.91S	29°27'46.4E	Erven
359	KOMATI	424	0	26°5'50.65S	29°27'48.05E	Erven
360	KOMATI	431	0	26°5'46.23S	29°27'53.81E	Erven
361	KOMATI	435	0	26°5'47.01S	29°27'54.54E	Erven
362	KOMATI	454	1	26°5'53.63S	29°27'34.98E	Erven
363	KOMATI	455	7	26°5'56.84S	29°27'32.44E	Erven
364	KOMATI	264	0	26°5'41.77S	29°27'46.26E	Erven
365	KOMATI	291	0	26°5'47.91S	29°27'44.9E	Erven
366	KOMATI	305	0	26°5'46.63S	29°27'50.61E	Erven
367	KOMATI	313	0	26°5'48.35S	29°27'43.1E	Erven
368	KOMATI	328	0	26°5'46.26S	29°27'40.4E	Erven
369	KOMATI	345	0	26°5'50.94S	29°27'38.2E	Erven
370	KOMATI	368	0	26°5'55.63S	29°27'34.97E	Erven
371	KOMATI	385	0	26°5'55.19S	29°27'37.78E	Erven
372	KOMATI	392	0	26°5'51.52S	29°27'42.57E	Erven
373	KOMATI	397	0	26°5'54.37S	29°27'40.54E	Erven
374	KOMATI	398	0	26°5'54.89S	29°27'39.85E	Erven
375	KOMATI	400	0	26°5'55.94S	29°27'38.48E	Erven
376	KOMATI	409	0	26°5'54.01S	29°27'43.65E	Erven
377	KOMATI	411	0	26°5'52.76S	29°27'45.3E	Erven
378	KOMATI	412	0	26°5'53.53S	29°27'46.04E	Erven
379	KOMATI	425	0	26°5'50.02S	29°27'48.87E	Erven
380	KOMATI	427	0	26°5'48.75S	29°27'50.51E	Erven
381	KOMATI	428	0	26°5'48.13S	29°27'51.34E	Erven
382	KOMATI	433	0	26°5'44.98S	29°27'55.45E	Erven
383	KOMATI	436	0	26°5'47.64S	29°27'53.72E	Erven
384	KOMATI	441	0	26°5'50.8S	29°27'49.61E	Erven
385	KOMATI	454	6	26°5'53.69S	29°27'37.38E	Erven
386	KOMATI	454	8	26°5'54.27S	29°27'36.43E	Erven
387	KOMATI	242	0	26°5'42.73S	29°27'54.67E	Erven

388	KOMATI	243	0	26°5'42.3S	29°27'55.21E	Erven
389	KOMATI	269	0	26°5'39.2S	29°27'49.6E	Erven
390	KOMATI	272	0	26°5'41S	29°27'48.97E	Erven
391	KOMATI	277	0	26°5'43.2S	29°27'45.58E	Erven
392	KOMATI	280	0	26°5'45.01S	29°27'47.29E	Erven
393	KOMATI	286	0	26°5'43.84S	29°27'44.74E	Erven
394	KOMATI	289	0	26°5'46.46S	29°27'45.47E	Erven
395	KOMATI	301	0	26°5'45.36S	29°27'50.57E	Erven
396	KOMATI	307	0	26°5'47.68S	29°27'49.23E	Erven
397	KOMATI	314	0	26°5'48.95S	29°27'43.67E	Erven
398	KOMATI	316	0	26°5'50.16S	29°27'44.81E	Erven
399	KOMATI	318	0	26°5'51.41S	29°27'44.52E	Erven
400	KOMATI	325	0	26°5'47.79S	29°27'38.39E	Erven
401	KOMATI	337	0	26°5'47.02S	29°27'41.11E	Erven
402	KOMATI	350	0	26°5'51.58S	29°27'37.36E	Erven
403	KOMATI	354	0	26°5'53.31S	29°27'31.21E	Erven
404	KOMATI	361	0	26°5'52S	29°27'34.6E	Erven
405	KOMATI	364	0	26°5'53.55S	29°27'32.58E	Erven
406	KOMATI	371	0	26°5'57.45S	29°27'36.66E	Erven
407	KOMATI	373	0	26°5'57.47S	29°27'35.26E	Erven
408	KOMATI	388	0	26°5'53.62S	29°27'39.82E	Erven
409	KOMATI	390	0	26°5'52.57S	29°27'41.19E	Erven
410	KOMATI	391	0	26°5'52.04S	29°27'41.88E	Erven
411	KOMATI	403	0	26°5'57.8S	29°27'38.72E	Erven
412	KOMATI	408	0	26°5'54.65S	29°27'42.84E	Erven
413	KOMATI	410	0	26°5'53.38S	29°27'44.48E	Erven
414	KOMATI	414	0	26°5'54.8S	29°27'44.39E	Erven
415	KOMATI	416	0	26°5'56.06S	29°27'42.75E	Erven
416	KOMATI	420	0	26°5'58.58S	29°27'39.46E	Erven
417	KOMATI	190	0	26°5'27.64S	29°27'46.03E	Erven
418	KOMATI	192	0	26°5'28.64S	29°27'46.41E	Erven
419	KOMATI	201	0	26°5'27.77S	29°27'48.66E	Erven
420	KOMATI	208	0	26°5'31.84S	29°27'47.24E	Erven
421	KOMATI	217	0	26°5'38.5S	29°27'54.83E	Erven
422	KOMATI	240	0	26°5'39.27S	29°27'51.53E	Erven
423	KOMATI	250	0	26°5'42.9S	29°27'55.78E	Erven
424	KOMATI	253	0	26°5'41.69S	29°27'51.8E	Erven
425	KOMATI	265	0	26°5'41.26S	29°27'46.93E	Erven
426	KOMATI	270	0	26°5'39.97S	29°27'50.31E	Erven
427	KOMATI	276	0	26°5'42.59S	29°27'45.01E	Erven
428	KOMATI	285	0	26°5'44.44S	29°27'45.31E	Erven
429	KOMATI	292	0	26°5'47.33S	29°27'44.35E	Erven
430	KOMATI	294	0	26°5'49.03S	29°27'45.79E	Erven
431	KOMATI	306	0	26°5'47.16S	29°27'49.92E	Erven
432	KOMATI	310	0	26°5'49.26S	29°27'47.18E	Erven
433	KOMATI	331	0	26°5'44.72S	29°27'42.41E	Erven
434	KOMATI	338	0	26°5'47.53S	29°27'40.44E	Erven
435	KOMATI	343	0	26°5'49.74S	29°27'37.07E	Erven
436	KOMATI	348	0	26°5'52.78S	29°27'38.5E	Erven
437	KOMATI	353	0	26°5'49.77S	29°27'35.67E	Erven
438	KOMATI	367	0	26°5'55.02S	29°27'34.4E	Erven
439	KOMATI	369	0	26°5'56.22S	29°27'35.52E	Erven
440	KOMATI	374	0	26°5'56.87S	29°27'34.69E	Erven
441	KOMATI	375	0	26°5'56.27S	29°27'34.13E	Erven
442	KOMATI	384	0	26°5'55.72S	29°27'37.09E	Erven
443	KOMATI	407	0	26°5'55.28S	29°27'42.01E	Erven
444	KOMATI	415	0	26°5'55.42S	29°27'43.57E	Erven
445	KOMATI	426	0	26°5'49.39S	29°27'49.69E	Erven
446	KOMATI	439	0	26°5'49.54S	29°27'51.25E	Erven
447	KOMATI	434	0	26°5'46.34S	29°27'55.26E	Erven

448	KOMATI	455	0	26°5'57.72S	29°27'33.2E	Erven
449	KOMATI	442	0	26°5'51.43S	29°27'48.78E	Erven
450	KOMATI	455	3	26°5'55.27S	29°27'30.92E	Erven
451	KOMATI	455	1	26°5'54.49S	29°27'30.2E	Erven
452	KOMATI	455	2	26°5'54.88S	29°27'30.5E	Erven
453	GELUK	26	0	26°5'52.64S	29°30'18.3E	Farm
454	KOMATI POWER STATION 56	27	0	26°5'57.82S	29°27'49.26E	Farm
455	GOEDEHOOP	46	0	26°7'40.51S	29°25'26.47E	Farm
456	BROODSNEYERSPLAATS	25	0	26°3'52.68S	29°29'36.26E	Farm
457	BLINKPAN	606	0	26°4'54.58S	29°28'9.62E	Farm
458	BROODSNEYERSPLAATS	25	7	26°5'28.7S	29°29'12.17E	Farm Portion
459	KOPPIES KRAAL HS	56	12	26°6'4.95S	29°28'42.81E	Farm Portion
460	GOEDEHOOP	46	3	26°7'8.79S	29°27'28.85E	Farm Portion
461	KOPPIES KRAAL HS	56	0	26°5'57.94S	29°27'55.33E	Farm Portion
462	GELUK	26	7	26°6'29.9S	29°28'45.35E	Farm Portion
463	GELUK	26	27	26°6'38.56S	29°28'27.27E	Farm Portion
464	KOPPIES KRAAL HS	56	2	26°5'55.3S	29°27'2.25E	Farm Portion
465	BROODSNEYERSPLAATS	25	39	26°5'17.64S	29°29'4.47E	Farm Portion
466	KOPPIES KRAAL HS	56	1	26°5'54.02S	29°27'2.07E	Farm Portion
467	KOPPIES KRAAL HS	56	6	26°6'9.44S	29°27'13.98E	Farm Portion
468	BROODSNEYERSPLAATS	25	11	26°5'21.76S	29°28'51.79E	Farm Portion
469	KOMATI POWER STATION 56	27	21	26°5'59.32S	29°27'15.81E	Farm Portion
470	KOPPIES KRAAL HS	56	10	26°5'47.5S	29°27'13.57E	Farm Portion
471	KOPPIES KRAAL HS	56	11	26°5'34.96S	29°27'19.57E	Farm Portion
472	BROODSNEYERSPLAATS	25	38	26°5'16.88S	29°29'5.29E	Farm Portion
473	KOMATI POWER STATION 56	27	24	26°5'59.58S	29°27'3.5E	Farm Portion
474	BLINKPAN	606	0	26°4'50.6S	29°28'7.51E	Farm Portion

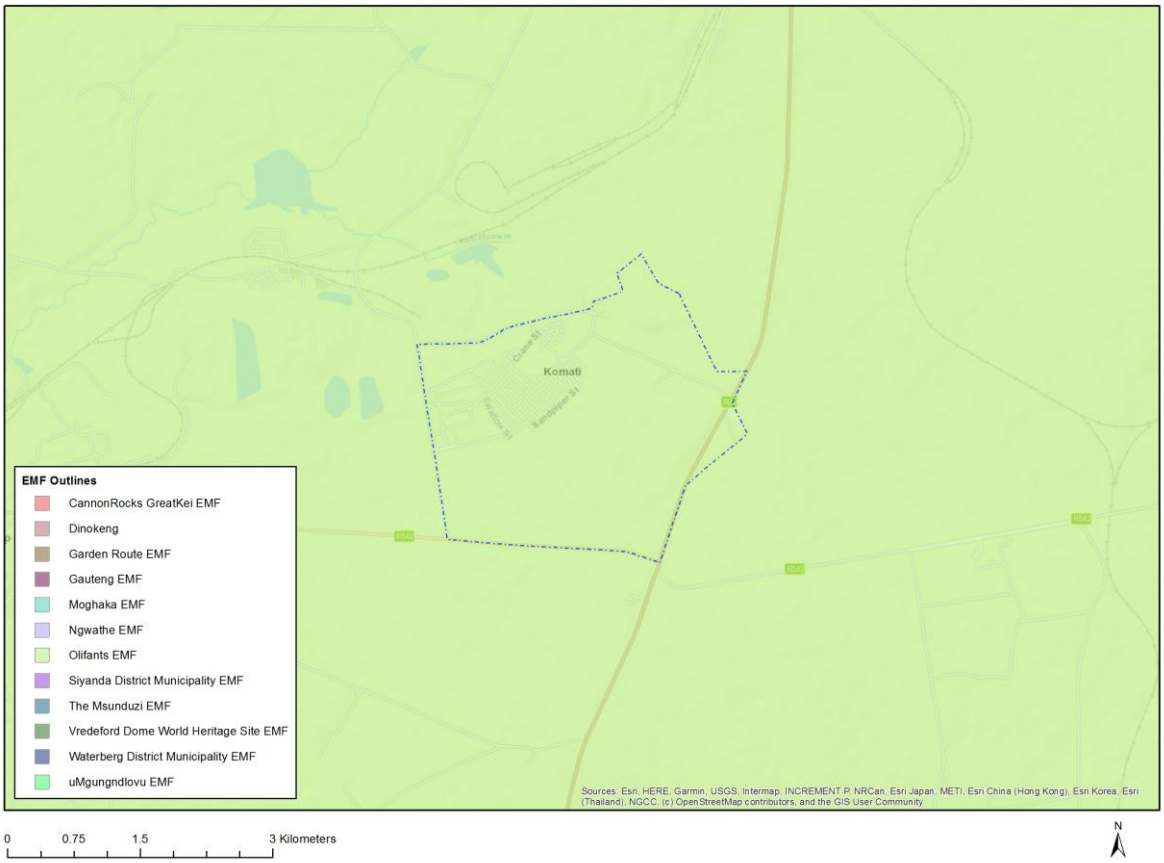
Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/2/759	Solar PV	Approved	18.8

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_46,_67,_78,_80,_92,_103,_122,_129.pdf

Environmental screening results and assessment outcomes

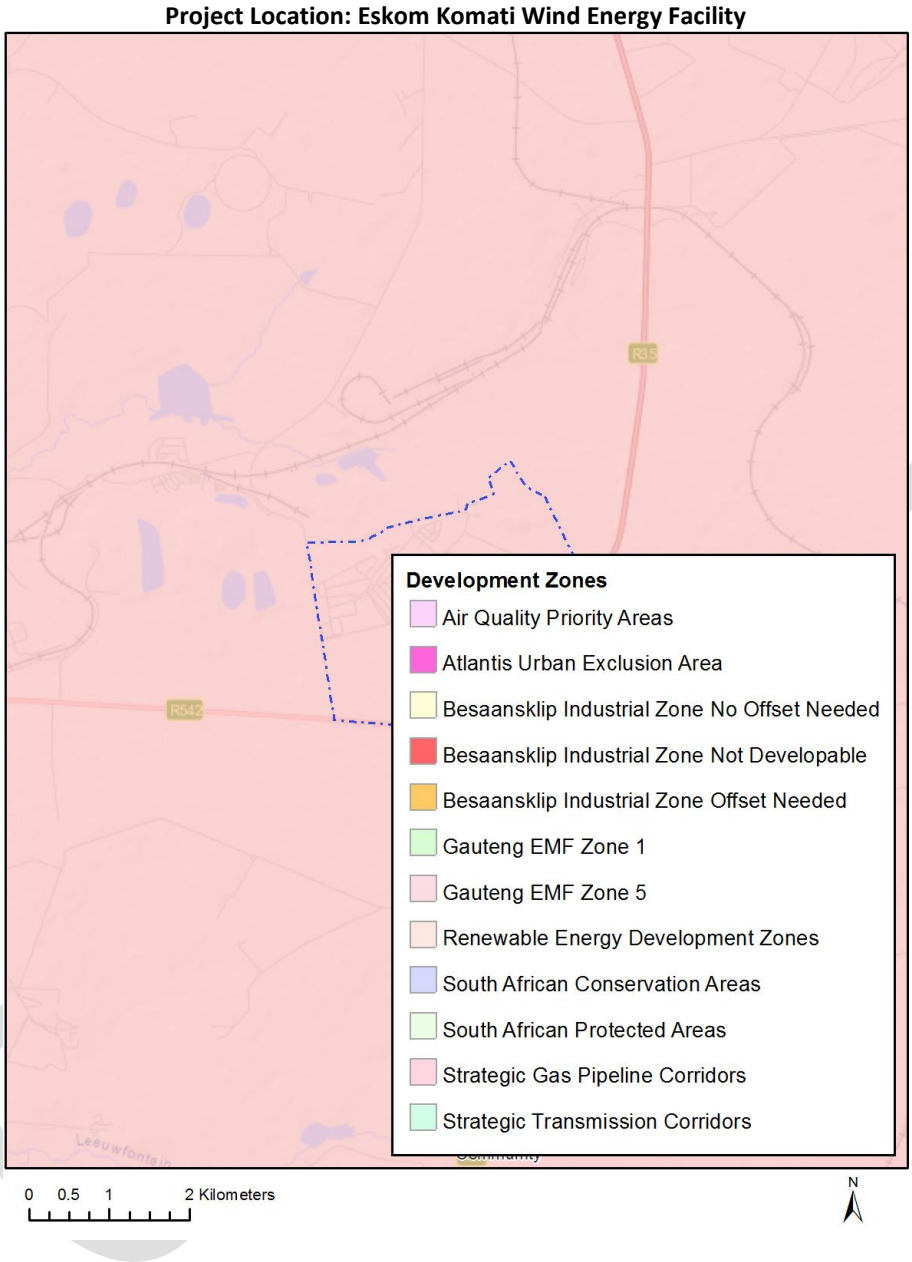
The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Utilities Infrastructure|Electricity|Generation|Renewable|Wind**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Air Quality-Highveld Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/HIGHVELD_PRIORITY_AREA_AQMP.pdf
Strategic Gas Pipeline Corridors -Phase 8: Rompco Pipeline Corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Avian (Wind) Theme				X
Bats (Wind) Theme		X		
Civil Aviation (Wind) Theme		X		
Defence (Wind) Theme				X
Flicker Theme	X			
Landscape (Wind) Theme	X			
Paleontology Theme	X			
Noise Theme	X			
Plant Species Theme			X	
RFI (Wind) Theme		X		
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

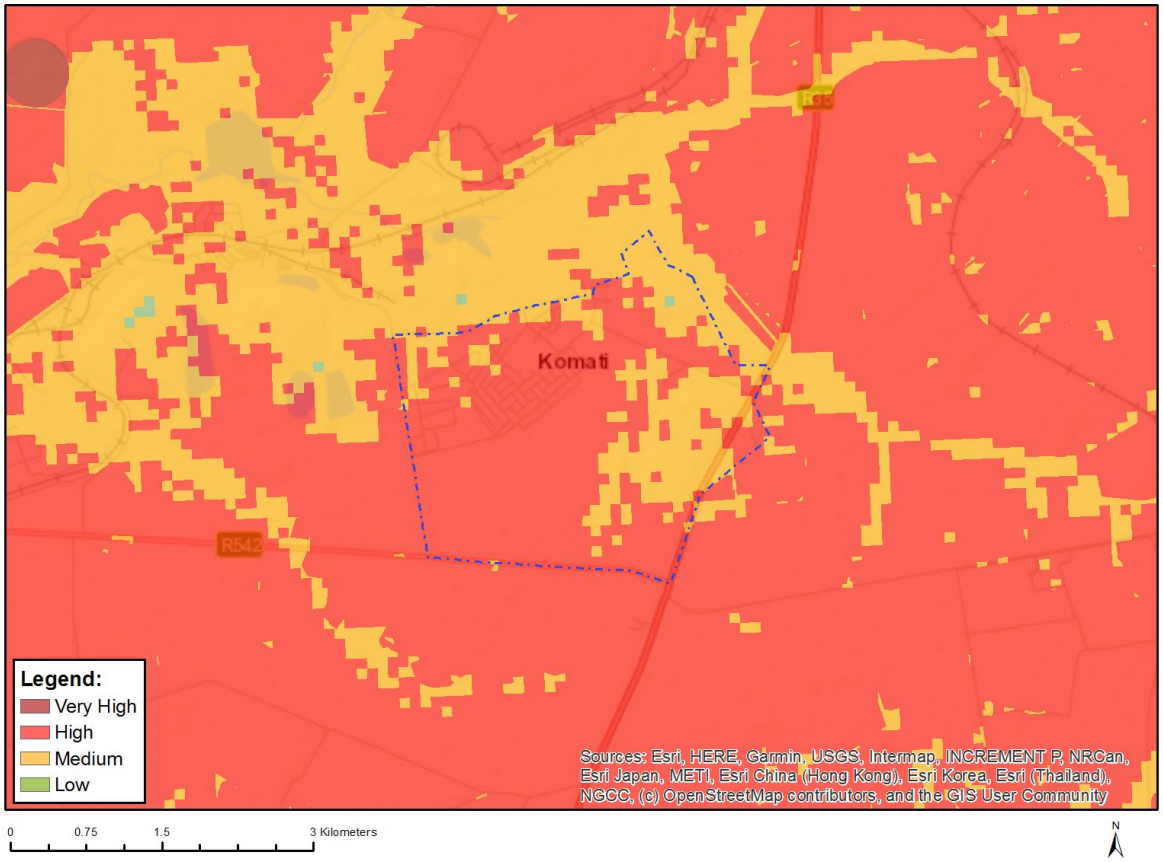
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_WindAndSolar_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf

6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Avian Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Avifauna_Assessment_Protocols.pdf
8	Civil Aviation Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf
9	Defense Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Defence_Installations_Assessment_Protocols.pdf
10	RFI Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
12	Flicker Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
13	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
14	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
15	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
16	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
17	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

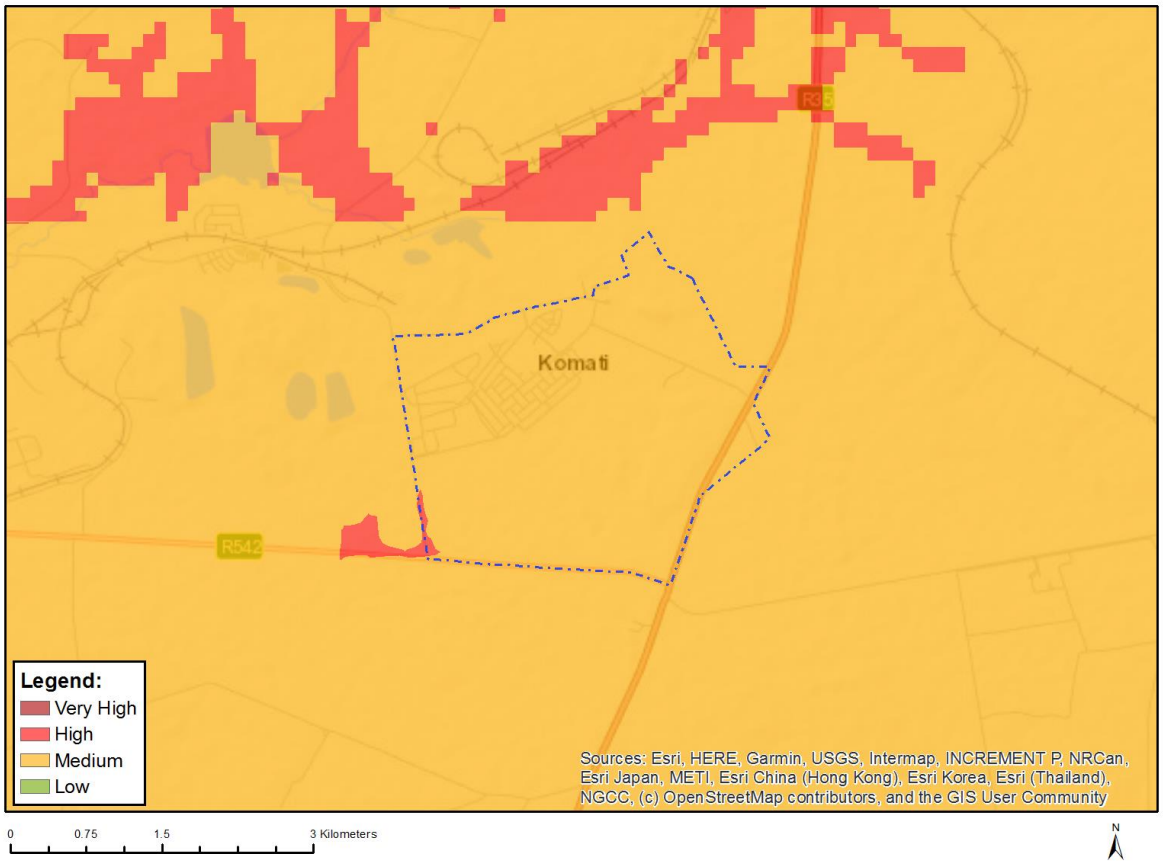


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



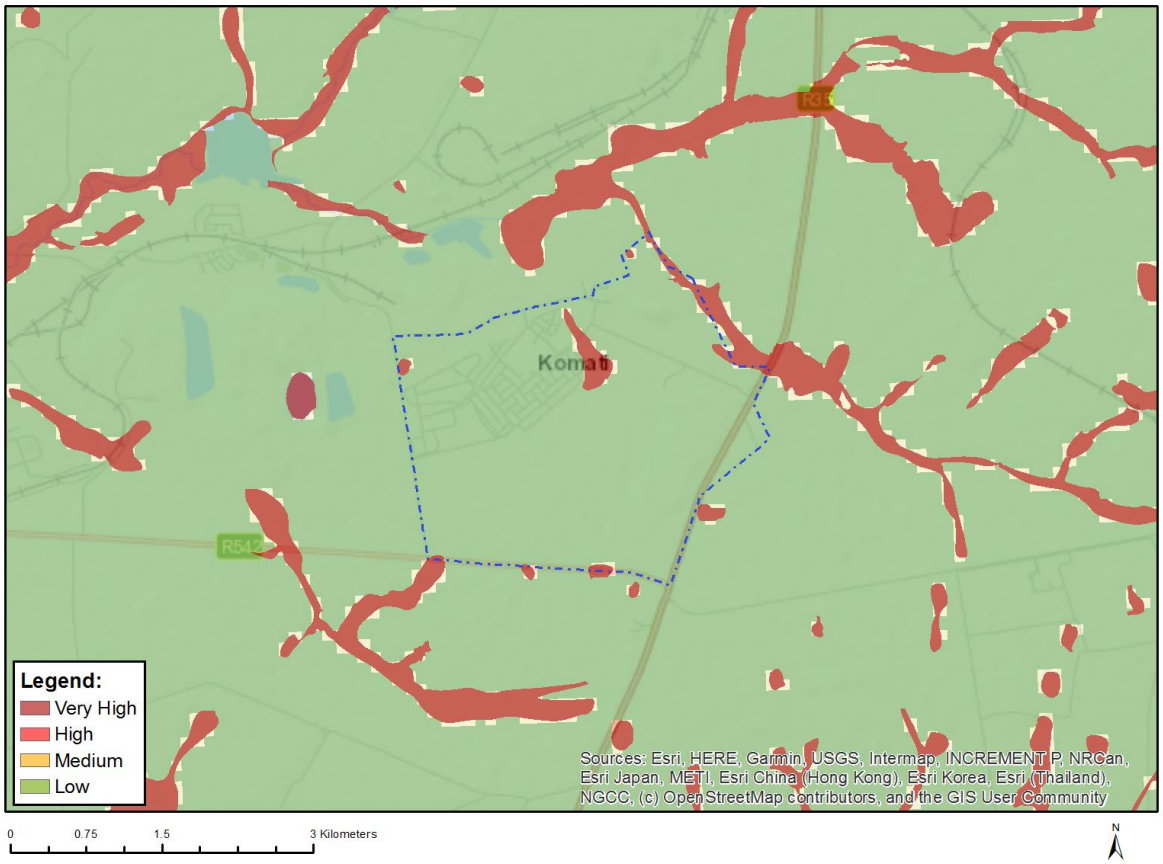
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Mammalia-Felis nigripes
Medium	Aves-Tyto capensis
Medium	Aves-Hydroprogne caspia
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

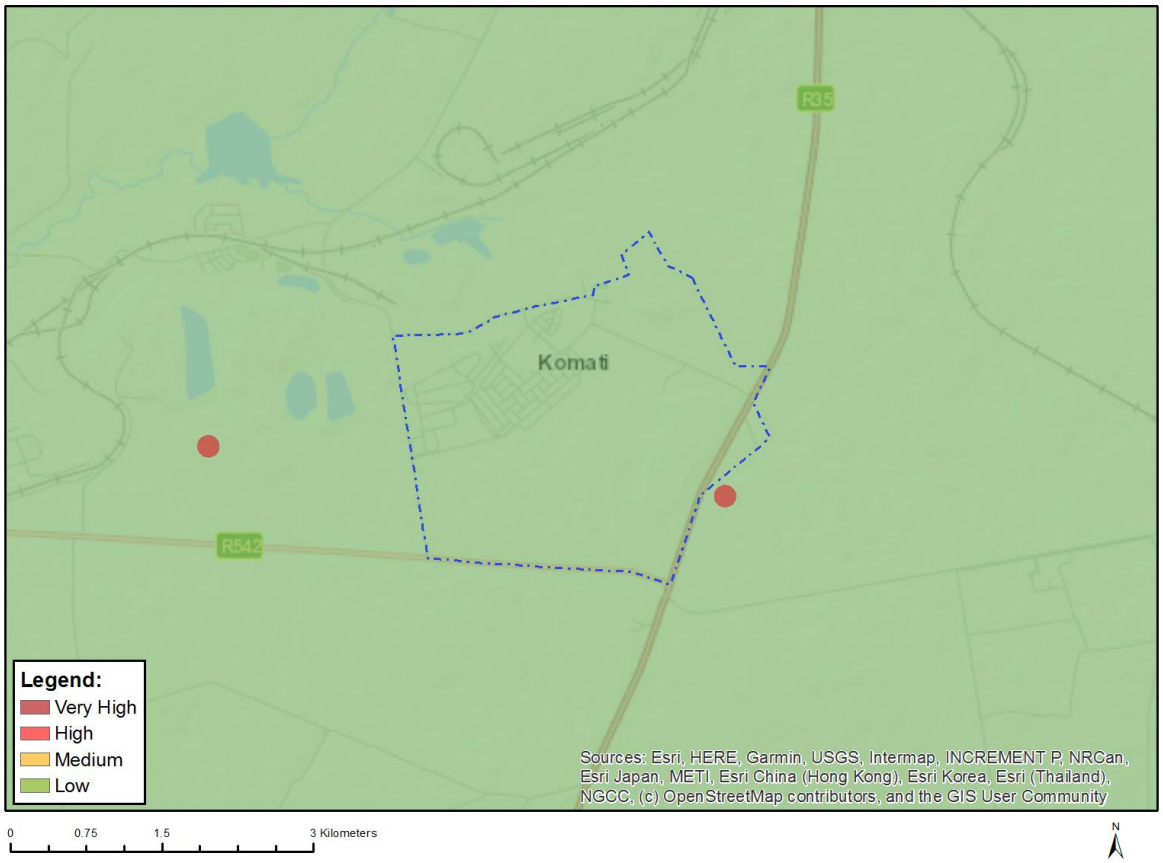


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

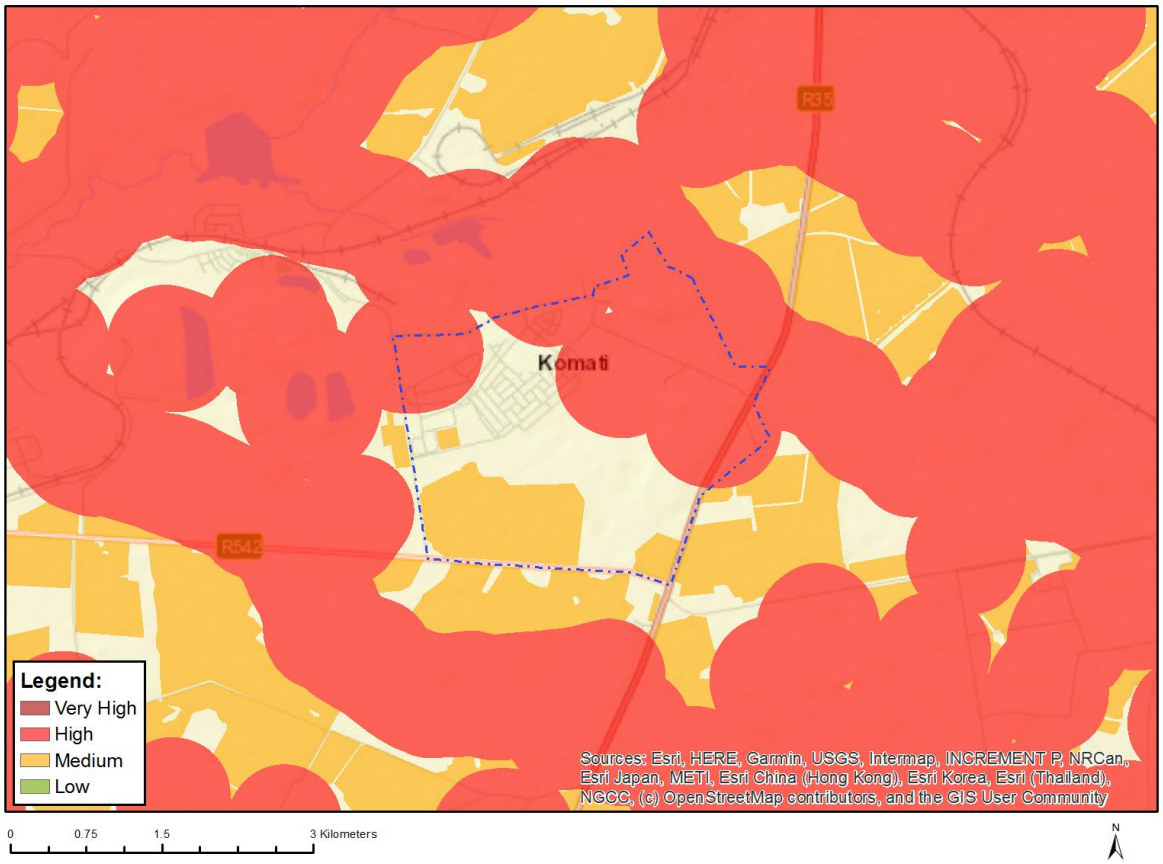
MAP OF RELATIVE AVIAN (WIND) THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Area Outside Sensitivities

MAP OF RELATIVE BATS (WIND) THEME SENSITIVITY

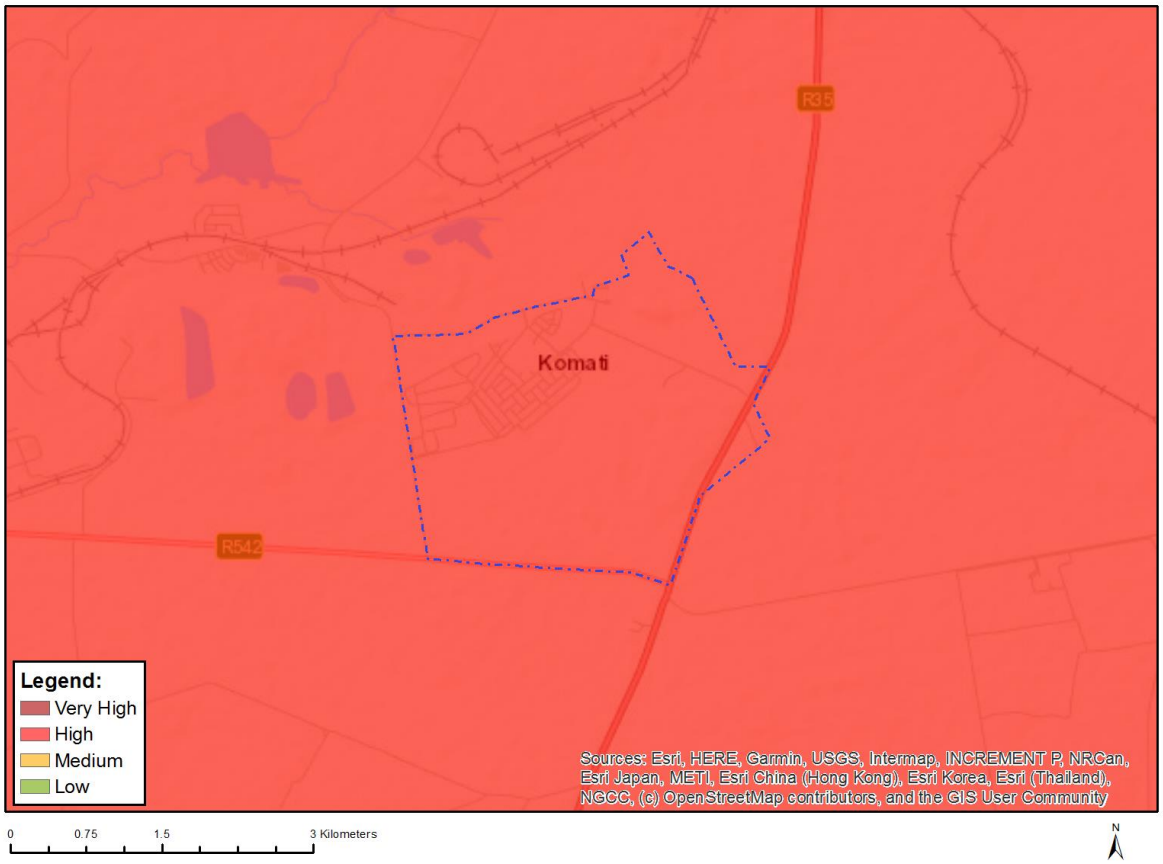


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of a river
High	Wetland
High	Within 500 m of a wetland
Medium	Croplands

MAP OF RELATIVE CIVIL AVIATION (WIND) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

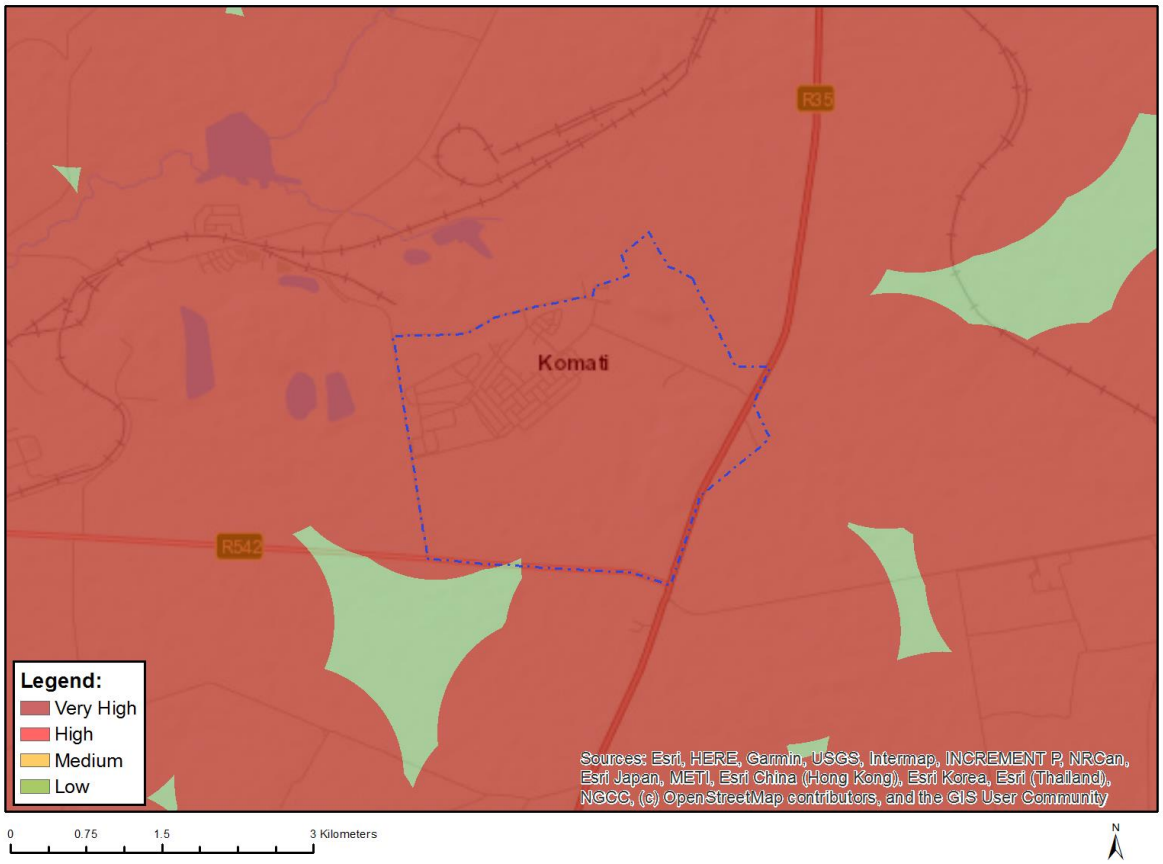
MAP OF RELATIVE DEFENCE (WIND) THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE FLICKER THEME SENSITIVITY

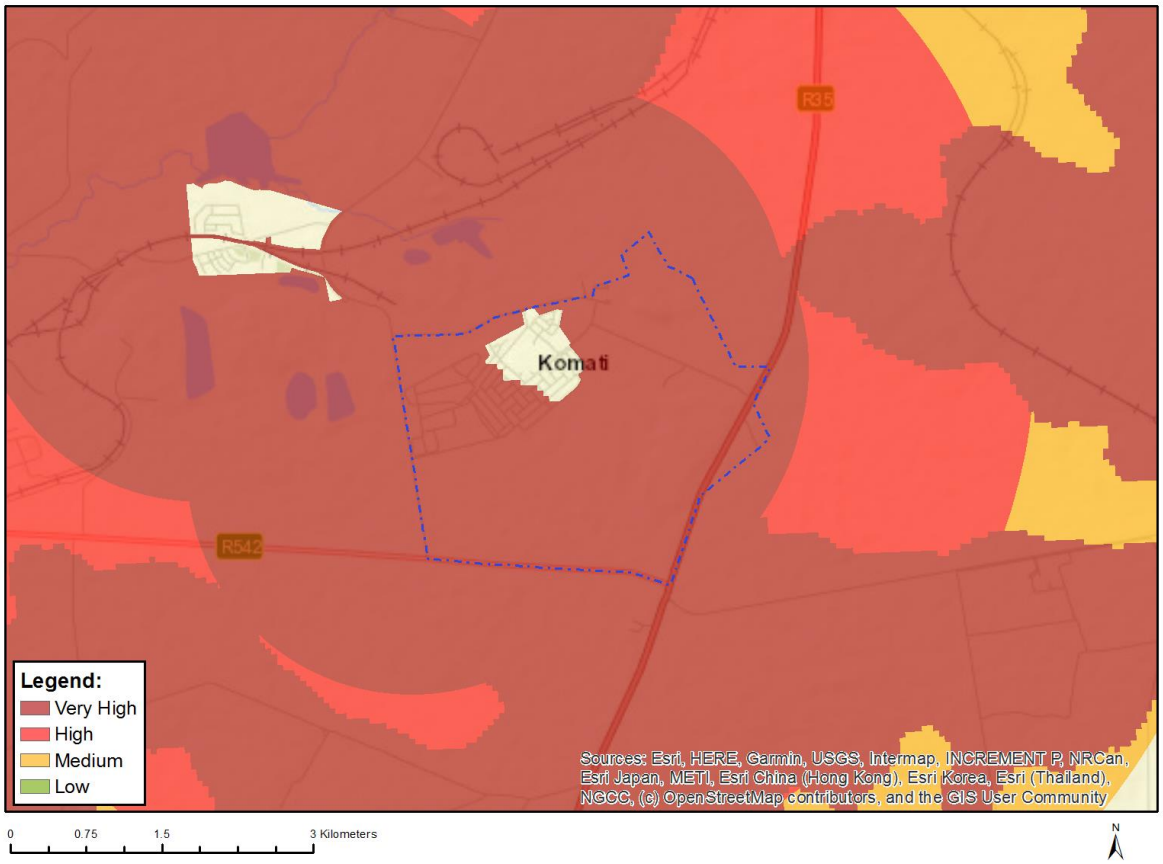


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Area of low sensitivity
Very High	Potential temporarily or permanently inhabited residence

MAP OF RELATIVE LANDSCAPE (WIND) THEME SENSITIVITY

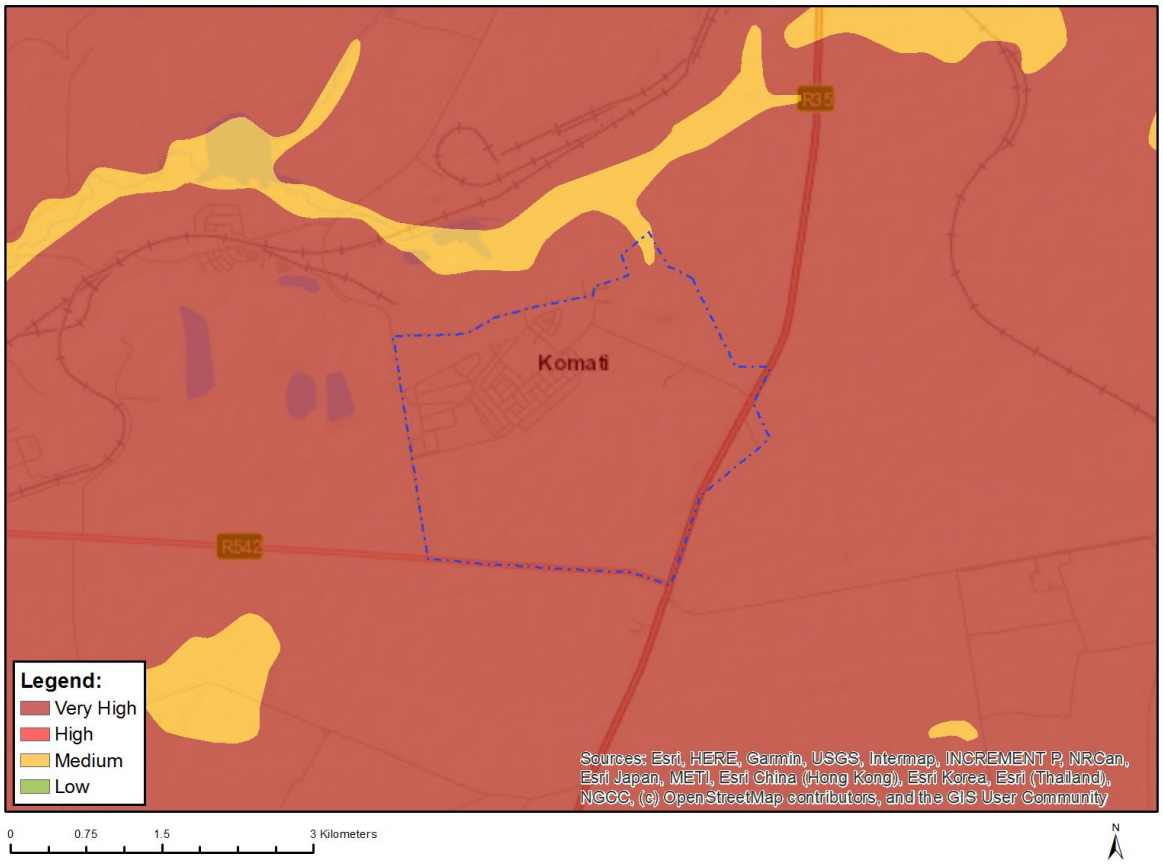


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Within 2 km of a town or village
Very High	Mountain tops and high ridges

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

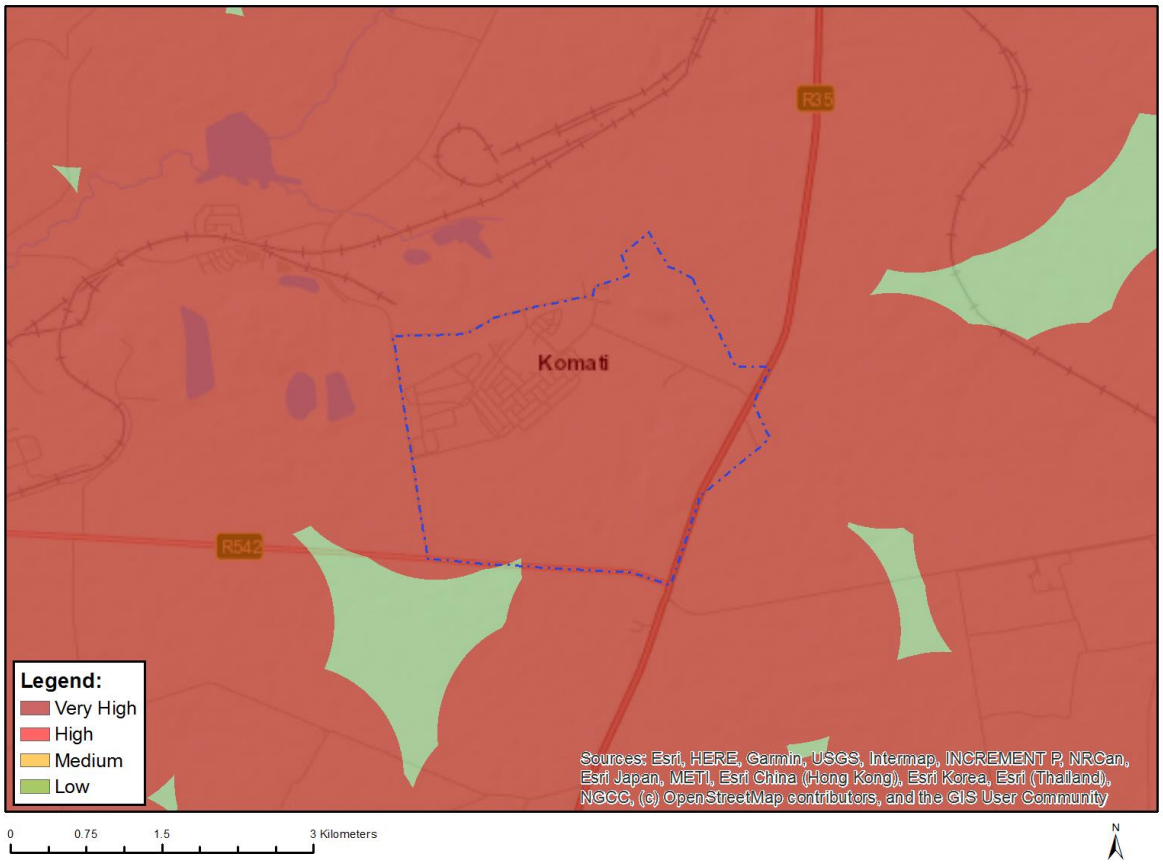


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE NOISE THEME SENSITIVITY

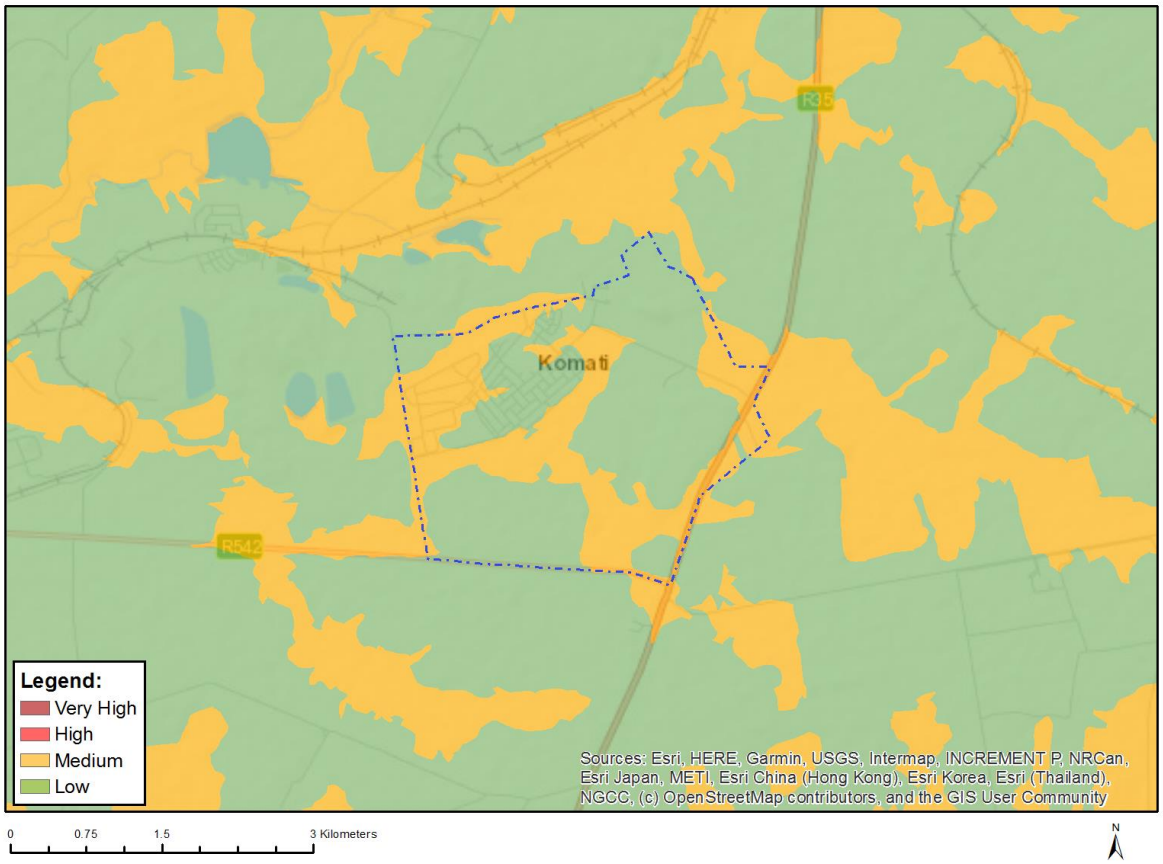


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Area of low sensitivity
Very High	Potential temporarily or permanently inhabited residence

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



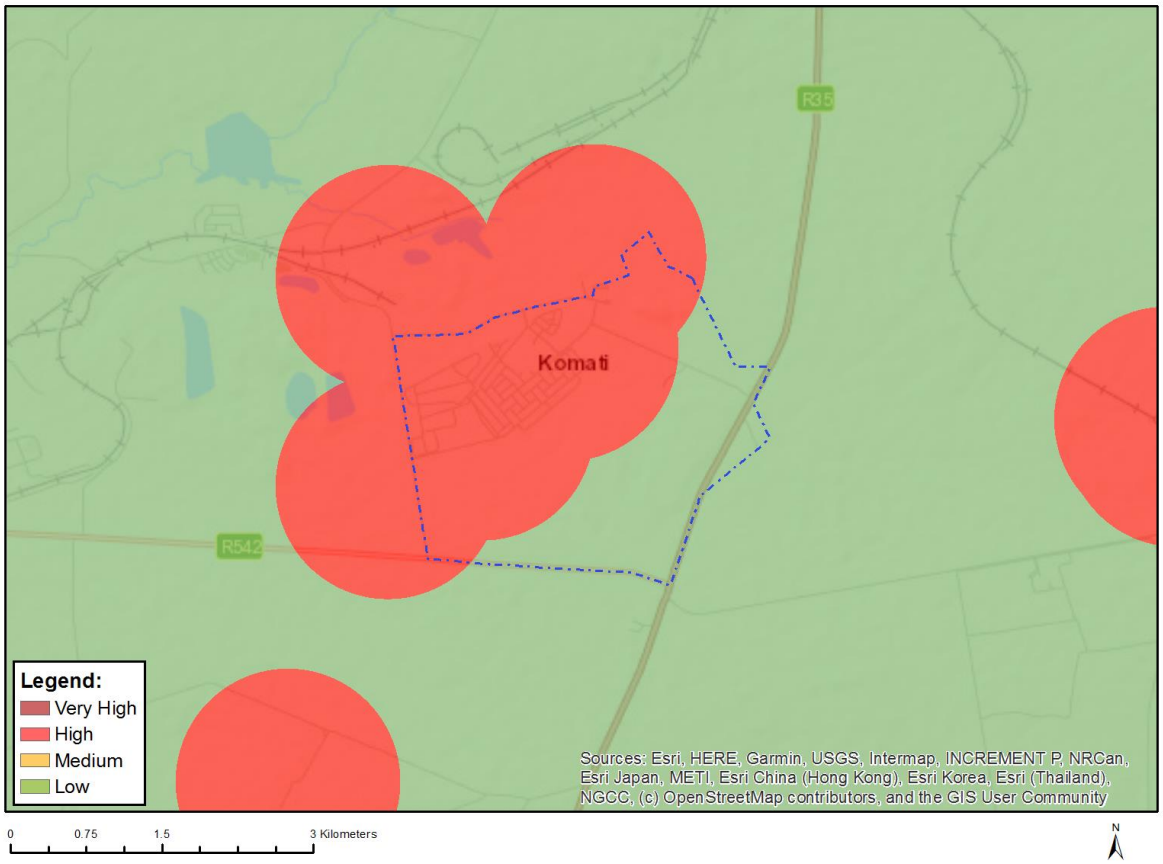
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 41
Medium	Sensitive species 691
Medium	Pachycarpus suaveolens

MAP OF RELATIVE RFI (WIND) THEME SENSITIVITY

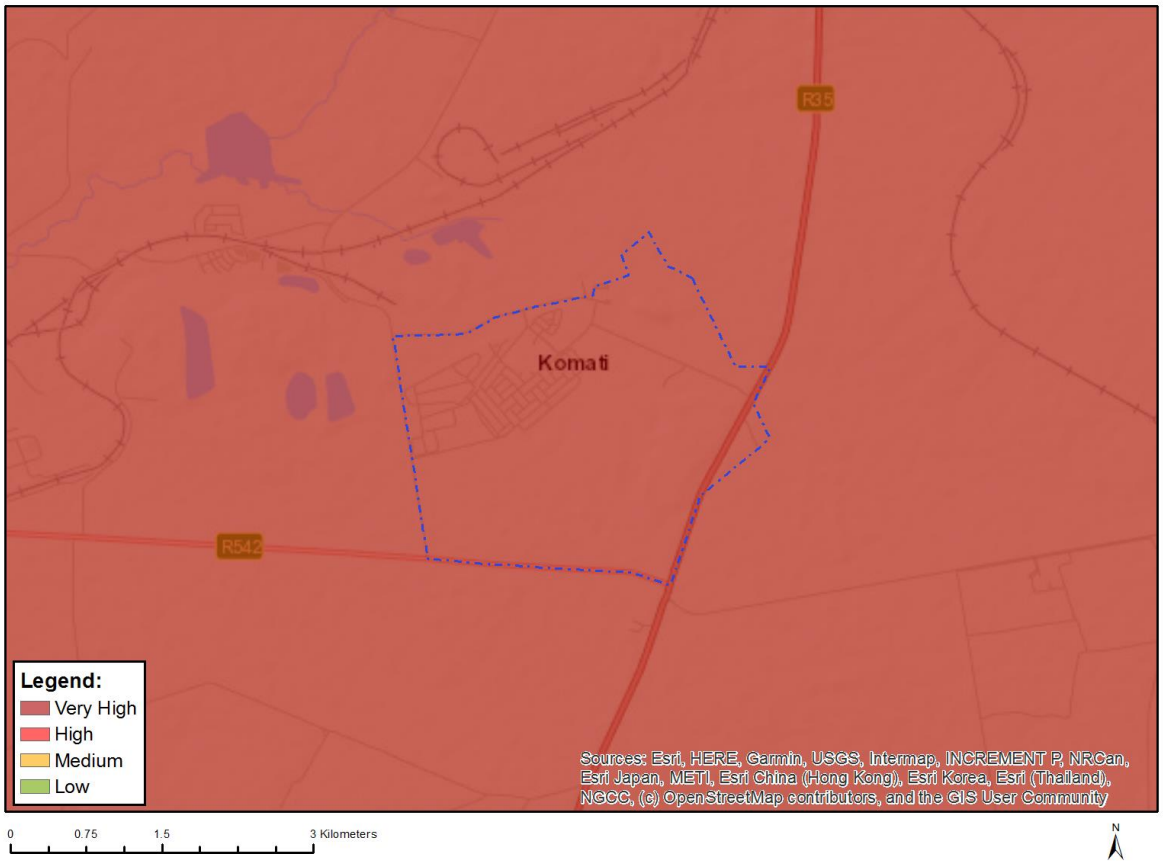


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 1 km of a telecommunication facility;None;More than 60 km from a Weather Radar installation
Low	Low sensitivity for telecommunications;None;More than 60 km from a Weather Radar installation

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 2
Very High	Vulnerable ecosystem

APPENDIX

D PROOF OF PUBLIC PARTICIPATION

APPENDIX

D-1 PROOF OF NEWSPAPER ADVERTS

PROPOSED RELOCATION OF HUMAN REMAINS AT WESTOE DAM NEAR EMVELO (FORMELY AMSTERDAM) WITHIN MSUKALIGWA LOCAL MUNICIPALITY OF GERT SIBANDE DISTRICT IN MPUMALANGA PROVINCE

Notice is given in terms of Section(s) 35 and 36 of the National Heritage Resources Act (Act 25 of 1999); and Regulations relating to the management of human remains as set-out by the National Health Act, 2003 (Act 61 of 2003) as well as the relevant local regulations to the: Provincial Administration of the province in which the graves are located; the South African Heritage Resource Agency (SAHRA) or their legislated provincial agency and the relevant local municipality for approval to exhume and re-enter the graves in a local cemetery or at a new location as per request of the deceased's families.

The remains are currently buried at the area zoned for Westoe Dam. These human remains will be exhumed from their current place of burial and reburied in the Municipal Cemetery or at a new location as per request of the deceased's families.

To be registered/identified as the interested/affected parties, including all persons and communities descendent from the buried individuals, all persons or communities concerned or who have interests with the graves that are located in and around Westoe Dam can submit written comments/objections to the Heritage Assessment Practitioner mentioned below within 60 days of the date of publication of this notice.

Heritage Assessment Practitioner
Ms Nokusho Ngobeni
Vhubvo Consultancy
Tel: 011 312 2878
Cell: 078 171 9127
E-mail: pp@vhubvo.co.za
This advert is prepared on behalf of Department of Water and Sanitation

II003004

GS College's Standerton Campus achieved 620 points in the intercollege debate competition.

GS College holds intercollege debate competition

Ofentse Mkase

ERMELO - GS College held its 2022 intercollege debate competition at its Ermelo campus on June 3.

Six GS College campuses took part in the competition: Standerton, Ermelo, Evander, Balfour, Sibanesetfu and Perdekop.

"Government is wasting money on child support grants, which promotes unplanned and unwanted pregnancies", was the topic debated.

Each campus was represented by three speakers.

Standerton Campus won the competition with a total of 620 points, followed by Ermelo with 610 and Evander with 605.

According to GS College's spokesman, Mr Oscar Kubeka, three individuals from the winning campuses will represent Mpumalanga at the provincial debate level.

"These are Ms Buhle Masango of Evandor Campus, who was the best speaker with an average of 1 070 points, Ms Nombuleko Skosana of Standerton Campus and Ms Innocent Mathebula of Ermelo Campus," Mr Kubeka said.

KENNISGEWING VAN REGISTRASIE AS 'N BELANGHEBBENDE EN GEAFFEKTEERDE PARTY VIR DIE VOORGESTELDE ONTWIKKELING VAN 'N SONKRAGOFWEKKINGSFASILITEIT EN BATTERY-ENERGIEBERGINGSTELSEL FASILITEIT BY DIE KOMATI KRAGSTASIE, MPUMALANGA PROVINSIE

Kennis word gegee ingevolge Regulasie 41(2) van GNR 326 soos gewysig (07 April 2017) gepubliseer kragtens artikel 24 en 24D van die Wet op Nasionale Omgewingsbestuur (No. 107 van 1998) (NEMA) vir indiening van aansoeke om omgewingsmagtigings (EA) ten opsigte van aktiwiteite geïdentifiseer ingevolge GNR 327 soos gewysig (7 April 2017).
Kennis word gegee ingevolge artikel 39 of 41(4) van die Nasionale Waterwet (No. 36 van 1998) (NWA) vir die indiening van 'n Watergebruiklisensie-aansoek (WUL-aansoek) en Artikel 38 (1) & (8) van die Wet op Nasionale Erfenishulpbronne (No. 25 van 1999).

AGTERGROND EN LIGGING
Eskom Holdings SOC Ltd (Eskom) stel voor om 'n sonkragopwekkingsfasiliteit by die Komati-kragstasie te vestig. Die voorgestelde sonkragfotovoltaïese (PV) en battery-energiebergingstelsel (EESS) fasiliteite sal ontwikkel word op plaas Komati Kragstasie No 56 IS in Wyk 4, Steve Tshwete Plaaslike Munisipaliteit, Nkangala Distriksmunisipaliteit, Mpumalanga Provinsie. Die voorgestelde sonkrag-PV, BESS en gepaardgaande infrastruktuur vereis 'n omgewingsmagtiging (EA) en watergebruikmagtiging in terme van die Nasionale Omgewingsbestuurswet, Wet 107 van 1998 (NEMA), geassosieerde Omgewingsimpakbepaling (OIB) Regulasies, 2014 soos gewysig en Nasionale Waterwet, Wet 36 van 1998 (NWA) onderskeidelik. Weens die aard van die projekdrempels, word van Eskom verwag om 'n Omvang- en OIB-proses en Watergebruiklisensie-aansoek (WULA) te volg om die nodige magtigings te verkry voor die aanvang van die voorgestelde projek. Benewens Suid-Afrikaanse wetgewing, sal omgewings- en maatskaplike impakbepaling onderneem word ingevolge die vereistes van die Wêreldbankgroep. Dit sal in lyn gebring word met die vereistes van die Wêreldbank se omgewings- en maatskaplike raamwerk; Wêreldbankgroep Omgewings-, Gesondheids- en Veiligheidsriglyne vir beide algemene en sektor; die Internasionale Finansieringskorporasie Prestasiestandaarde; en Goeie Internasionale Nywerheidspraktyke.

OMGEWINGSTOEPASSING
Die verwagte gelyste aktiwiteitsnommers wat met die voorgestelde projekte geassosieer word, word hieronder gelys, onderhewig aan bevestiging van die Departement van Bosbou, Visserye en die Omgewing (DFFE):
- NEMA EIA-regulasies: GNR 327 Aktiwiteit 11, 14 en 23;
- NEMA EIA-regulasies: GNR 325 Aktiwiteit 1 en 15;
- NEMA EIA-regulasies: GNR 324 Aktiwiteit 4, 10 en 12.

WATERGEBRUIK-LISENSIE AANSOEK
A WULA sal onderneem word ingevolge Artikel 40 van die NWA vir die relevante Artikel 21-watergebruike wat met die PV, BESS en gepaardgaande infrastruktuur geassosieër word. Regeringskennisgewing (GN) 40713, Regulasie No. 267 (GN R.267) gedateer 24 Maart 2017, oor regulasies rakende die prosedurele vereistes vir watergebruiklisensie-aansoeke en appêlle, sal gevolg word.

REGISTRASIE EN INDIENING VAN KOMMENTAAR
WSP Group Africa (Pty) Ltd (WSP) is deur Eskom as die onafhanklike Omgewingsevalueringspraktisyn (OEP) aangestel om om die onderskeie prosesse te behartig. Partye wat formeel as belanghebbende en geaffekteerde partye (I&APs) wil registreer om meer inligting te ontvang en/of hul kommentaar oor die voorgestelde projek te lewer, word versoek om hul volledige kontakbesonderhede aan OEP te stuur en hul direkte en/of indirekte sake-, finansiële, persoonlike of ander belang in die projek. Enige kommentaar oor die voorgestelde projek moet by die OEP ingedien word via die besonderhede hieronder verskaf. Geregistreerde I&APs sal aan alle toekomstige projekverwante korrespondensie gestuur word en individueel in kennis gestel word van bykomende geleenthede om aan die proses deel te neem.

WATERGEBRUIKLISENSIEAANSOEK KOMMENTAARTYDPERK
Geregistreerde I&APs kan ook skriftelike kommentaar aangaande die WULA indien vir die voorgestelde aktiwiteite. Ingevolge Artikel 41(4) van NWA sal die WULA-kommentaartydperk 60 dae wees vanaf 10 Junie 2022 tot 9 Augustus 2022.

OEP besonderhede: Megan Govender (T) 011 361 1410 (E) Megan.Govender@wsp.com (A) Posbus 98867, Sloane Park, 2152

WSP sal sekere persoonlike inligting oor jou as 'n belanghebbende en geaffekteerde party verwerk (B&GP) vir doeleindes om jou registrasie moontlik te maak as 'n B & GP en vir doeleindes om jou besonderhede op ons databasis te stoor. WSP gebruik hierdie besonderhede om jou te kontak oor ander toekomstige projekte. WSP sal altyd jou persoonlike inligting verwerk in ooreenstemming met die Wet op die Beskerming van Persoonlike Inligting 4 van 2013. Jy is geregtig om jou regte as 'n datasubjek uit te oefen en ons te laat weet as jy as 'n B&GP gederegistreer wil word of as jy nie meer wil hê dat jou kontakbesonderhede op ons databasis ingesluit moet word nie.

II003012

NOTICE OF REGISTRATION AS AN INTERESTED AND AFFECTED PARTY FOR THE PROPOSED ESTABLISHMENT OF A SOLAR PHOTOVOLTAIC AND BATTERY ENERGY STORAGE SYSTEM FACILITY AT THE KOMATI POWER STATION, MPUMALANGA PROVINCE

Notice is given in terms of Regulation 41(2) of GNR 326 as Amended (07 April 2017) published under section 24 and 24D of the National Environmental Management Act (No. 107 of 1998) (NEMA) for submission of applications for Environmental Authorisations (EA) in respect of activities identified in terms of GNR 327 as Amended (7 April 2017).
Notice is also given in terms of Section 40 of the National Water Act (36 of 1998) (NWA), for the submission of Water Use Licence Application (WULA) and Section 38 (1) & (8) of the National Heritage Resources Act (Act 25 of 1999).

BACKGROUND AND LOCATION
Eskom Holdings SOC Ltd (Eskom) proposes to establish a solar electricity generating facility at the Komati Power Station. The proposed Solar Photovoltaic (PV) and Battery Energy Storage System (BESS) facilities will be developed on farm Komati Power Station No 56 IS in Ward 4, Steve Tshwete Local Municipality, Nkangala District Municipality, Mpumalanga Province. The proposed Solar PV, BESS and associated infrastructure require an environmental authorisation (EA) and water use authorisation in terms of National Environmental Management Act, Act 107 of 1998 (NEMA), associated Environmental Impact Assessment (EIA) Regulations, 2014 as amended and National Water Act, Act 36 of 1998 (NWA) respectively. Due to the nature of the project thresholds, Eskom is required to follow a Scoping & EIA process and Water Use licence Application (WULA) to acquire the necessary authorisations prior to the commencement of the proposed project. In addition to South African Legislation, Environmental and Social Impact Assessment will be undertaken in terms of the World Bank Group requirements. This will be aligned to the requirements of the World Bank Environmental & Social Framework; World Bank Group (WBG) Environmental, Health and Safety Guidelines (EHSG) both for general and sector; the International Finance Corporation (IFC) Performance Standards; and Good International Industry Practices (GIIP).

ENVIRONMENTAL APPLICATION
The following listed activities are triggered, subject to confirmation from Department of Forestry, Fisheries and the Environment (DFFE):
- NEMA EIA Regulations: GNR 327 Activity 11, 14 and 24;
- NEMA EIA Regulations: GNR 325 Activity 1 and 15;
- NEMA EIA Regulations: GNR 324 Activity 4, 10 and 12.

WATER USE LICENCE APPLICATION
A WULA will be applied for in terms of Section 40 of the NWA for the relevant Section 21 water uses associated with the PV, BESS and associated infrastructure. Government Notice (GN) 40713, Regulation No. 267 (GN R.267) dated 24 March 2017, on regulations regarding the procedural requirements for water use licence applications and appeals, will be followed.

REGISTRATION AND SUBMISSION OF COMMENTS
WSP Group Africa (Pty) Ltd (WSP) was appointed as the independent Environmental Assessment Practitioner (EAP) by Eskom to manage the permitting process. Parties wishing to formally register as interested and affected parties (I&APs) in order to receive more information and/ or raise their comment(s) on the proposed project, are requested to forward their full contact details to the EAP and disclose their direct and/or indirect business, financial, personal or other interest in the project. Any comments on the proposed project should be submitted to the EAP via the details provided below. Registered I&APs will be forwarded all future project related correspondence and notified individually of additional opportunities to participate in the process.

WATER USE LICENCE APPLICATION COMMENT PERIOD
Registered I&APs may also lodge written comments regarding WULA for the proposed activities on the details mentioned above. In terms of Section 41 (4) of NWA the WULA comment period will be 60days from 10 June 2022 to 09 August 2022.

EAP Details: Megan Govender (T) 011 361 1410 (E) Megan.Govender@wsp.com (A) PO Box 98867, Sloane Park, 2152

WSP will be processing certain personal information about you as an interested and affected party (I & AP) for purposes of enabling your registration as an I & AP and for purposes of storing your details on our database, if you consent for us to do so. WSP uses these details to contact you about other projects in the future. WSP will always process your personal information in accordance with the Protection of Personal Information Act 4 of 2013. You are entitled to exercise your rights as a data subject and let us know if you wish to be deregistered as an I & AP or if you no longer want your contact details to be included on our database.

II003011

Woltemade stabbing

Suspect granted R2 000 bail

Chrisuné Vermeulen

The suspect in connection with Nelly Voyiya's murder was granted R2 000 bail.
The Witbank Magistrate's Court granted Gilbert Voyiya R2 000 bail on Friday, June 3 in connection with the gruesome murder of his wife, Nelly Voyiya.
The family of the victim was bitter and disappointed about the court's decision to grant the suspect bail in the backdrop of the rise in cases of Gender-Based Violence and Femicide (GBVF) in the country.
"What saddens me is that the justice system supports perpetrators instead of victims and their families," said the late Nelly's sister, Thembi Shabangu.
WITBANK NEWS reported on the tragic death of Nelly that was murdered on April 19, in morning rush-hour traffic in Woltemade Street after being stabbed several times while she was on her way to work.
"The husband later handed himself over to the police in Standerton after fleeing the scene and was taken to Witbank Police Station where he was officially charged with murder," the article stated.
While delivering the bail verdict, the court said the accused does not have any previous convictions or pending criminal cases.
The court further said that the state does not have evidence that the accused is a flight risk or that he will undermine the interest of justice. Voyiya was successful in showing the court that there were exceptional circumstances to be granted bail.
The African National Congress Women's League Provincial treasurer, Leah Mabuza said if women do not stand together to fight the Criminal Procedure Act of 1977, they will not win any cases against men.
The case is remanded to August 5 for further investigations.
Post mortem results and a photo album of the crime scene are still outstanding.

One of the many posters that was present the day of the Nelly Voyiya court case on Friday June 3.


Phindile Deborah Lusenga has not been seen since May 20. Photo supplied

Phindile went to visit her boyfriend and has not returned home

Police officers from Phola Police Station have tried their best in finding Phindile Deborah Lusenga, and request the public to help.
It is alleged that Lusenga was last seen by her sister on Friday, May 20 at their home in Phola.
Phindile's sister alleges that the 28-year-old said that she was going to visit her boyfriend in Middelburg.
Lusenga apparently met her boyfriend on Facebook, and none of her friends and family knows of the boyfriend.
Since that Friday, she has not been seen and both her phones have apparently been switched off. According to the information given to the police, she was last seen wearing white trousers with peach sneakers and a black and white striped t-shirt.
A missing person's case was opened at Phola Police Station and Detective Sergeant Alucia Mathebula is investigating the matter.
Anyone who can provide information that can assist in finding the 28-year-old can contact the Phola SAPS on 013 643 8601 or 076 605 4760.

Man wat in Wattlestraat met mes gesteek is, bekommerd oor misdaad

Mnr. Julian Piek se arm is met vier steke geheg.

Zita Goldswain

Die 20-jarige man wat verlede week in Wattlestraat met 'n mes gesteek is, het gesê hy is bekommerd oor misdaad in eMalahleni en veral in Hoëveldpark.
Mnr. Julian Piek het gesê dit is die tweede keer in vier maande dat hy beroof is.
Piek, wat in Carolina bly het die naweek vir sy ma kom kuier waar hy op Vrydag, 3 Junie oorval en van sy geld beroof is.
"Ek het saam met my ma werk toe geloop en op pad terug het ek 'n swart BMW sonder nommerplate opgemerk wat stadig aangery gekom het. 'n Man het uitgeklim en my gevra vir geld en my selfoon. Ek wou nog omdraai toe die man my duik en ons begin stoei. Ek het hard probeer om my geld vas te hou, want dit was my laaste," het Piek vertel.
Die rower het na bewering Piek se baadjie met 'n mes oopgesny, die geld gevat en Piek toe in die arm gesteek.
Piek is sowat vier maande gelede ook in Middelburg beroof.
"Ek is moedeloos. Dit voel net asof misdaad heeltemal ons lewens oorgeneem het en die polisie niks daaraan doen nie. Ek hoop die rowers word gevang voordat hulle iemand doodsteek vir net 'n paar rand."
Polisiewoordvoerder kaptein Eddie Hall het gesê mense moet paraat wees en liefs nie probeer om alleen te loop nie, dit maak nie saak watter tyd van die dag of aand nie.
Piek se arm is met vier steke geheg.

situated on the northern part of the property.
Number of erven in proposed township according to proposed zoning:
Two (2) erven, proposed zoning "Commercial" including Liquor Enterprise, Place of Amusement, Place of Refreshment, Place of Instruction, Drive-thru Restaurant and Builders Yard, subject to certain conditions.
Plans and/or particulars of this application may be inspected during normal office hours at the following address:
Directorate Development Planning, 3rd Floor, Civic Centre, Mandela Avenue, eMalahleni, 1039.
Contact details of relevant Municipal officials:
Ms. D. Mkhabela
(013 690 6354)/
Mr. V. Manyoni
(013 690 6480)
Any person or persons having any objection against the approval of this application must lodge such written objections, together with a proper motivation, in a format as contemplated in Sections 103 and 104 of the eMalahleni Spatial Planning and Land Use Management By-Law, 2016, with the Municipal Manager, PO Box 3, eMalahleni, 1039 and the undersigned, by not later than 10 August 2022.
Name of agent:
Origin Town and Regional Planning (Pty) Ltd
Physical address of Agent:
306 Melk Street,
Nieuw Muckleneuk,
0181
Postal address:
PO Box 2162,
Brooklyn Square,
0075
Contact details of Agent:
Telephone:
(012) 346-3735,
Fax 012 346 4217
or E- mail:
plan@origintrp.co.za
Date of first publication:
10 June 2022
Date of second publication:
17 June 2022
OS016452

EMALAHLENI PLAASLIKE MUNISIPALITEIT KENNISGEWING VAN AANSOEK VIR DIE STIGTING VAN `N DORP, IN TERME VAN ARTIKEL 59 VAN DIE eMALAHLENI RUIMTELIKE BEPLANNING EN GRONDGEBRUIK-BESTUUR BYWET, 2016, GELEES TESAME MET DIE BEPALINGS VAN DIE WET OP RUIMTELIKE BEPLANNING EN GRONDGEBRUIK-BESTUUR, 2013 (WET NR. 16 VAN 2013) PHOLA UITBREIDING 18
Ons Origin Stads en Streeks Beplanning (Edms) Bpk, die gemagtigde agent van die eienaar van Gedeelte 20 van die plaas Prinshof 2-IS gee hiermee kennis in terme van Artikel 59 van die eMalahleni Ruimtelike Beplanning en Grondgebruikbestuur Bywet, 2016, gelees tesame met die bepalings van die Wet op Ruimtelike Beplanning en Grondgebruikbestuur, 2013 (Wet nr. 16 van 2013) dat `n aansoek ingedien is by die eMalahleni Plaaslike Munisipaliteit vir die stigting van die voorgestelde dorp soos beskryf hieronder.
Naam van voorgestelde dorp:
Phola Uitbreiding 18
Volle naam van aansoeker:
Origin Stads en Streeks Beplanning (Edms) Bpk,
Beskrywing van grond waarop dorp gestig gaan word: `n Deel van Gedeelte 20 van die plaas Prinshof 2-IS
Ligging van voorgestelde dorp:
Die eiendom is geleë noord van die N12 hoofweg by die kruising van die N12 en die R545. Die eiendom is wes van die R545 geleë direk wes van bestaande dorp Phola. Die voorgestelde dorp is geleë op die noordelike deel van die eiendom.
Aantal erwe in dorp volgens voorgestelde sonerings:
Twee (2) erwe, voorgestelde sonering "Kommersieel" insluitend Drankonderneming, Vermaaklikheidsplek, Ververssingsplek, Plek van Onderrig, Deurry-Restaurant en Bouerswerf, onderhewig aan sekere voorwaardes.
Planne en/of besonderhede van die aansoek mag gedurende normale kantoorure besigtig word by die volgende adres:
Direktoraat Ontwikkelings Beplanning, 3de vloer, Burgersentrum, Mandelastraat, eMalahleni, 1039
Kontakbesonderhede van betrokke Munisipale Amptenare is soos volg:
Me. D. Mkhabela
(013 690 6354)/
Mnr. V. Manyoni
(013 690 6480)
Enige persoon of persone wat enige beswaar het teen die toestaan van die aansoek, moet sodanige geskrewe beswaar volledig motiveer, soos vereis in Afdeling 103 en 104 van die eMalahleni Ruimtelike Beplanning en Grondgebruikbestuur Bywet, 2016, en indien by die Munisipale Bestuurder, Posbus 3, eMalahleni, 1039 sowel as die ondergetekende, nie later as 10 Augustus 2022 nie.
Naam van agent:
Origin Stads en Streeks Beplanning (Edms) Bpk,
Fisiese adres van Agent:
Melkstraat 306,
Nieuw Muckleneuk,
0181
Posadres:
Posbus 2162,
Brooklyn Square,
0075
Kontakbesonderhede van Agent:
Telefoon:
(012) 346 3735,
Faks: (012) 346 4217
of E-pos:
plan@origintrp.co.za
Datum van eerste publikasie:
10 Junie 2022
Datum van tweede publikasie:
17 Junie 2022
OS016453

EMALAHLENI PLAASLIKE MUNISIPALITEIT KENNISGEWING VAN AANSOEK VIR VERGUNNINGSGEBRUIK IN TERME VAN ARTIKEL 26 VAN DIE EMALAHLENI GRONDGEBRUIK-BESTUUR SKEMA, 2010
Ek, Maraine Conroy van die Firma J Rossouw Stadsbeplanners & Medewerkers (Edms) Bpk synde die gemagtigde agent van die geregistreerde eienaar van Gedeelte 2 van Erf 3150, Dorp Kriel gee hiermee kennis in terme van Artikel 26 van die eMalahleni Grondgebruik-bestuur Skema, 2010 van aansoek, tot die eMalahleni Plaaslike Munisipaliteit vir die vergunningsgebruik van bogemelde eiendom geleë op die hoek van Bokmakierie Laan and Nagtegal Laan, Kriel, vir die doeleindes van die bou van `n 25 m geelhoutboom telekommunikasiemas en basisstasie vir ATC Suid-Afrika.
Ingevolge die Grond-gebruikbestuur skema is die grond as volg gesoneer: Besigheid 3.
Enige beswaar of kommentaar insluitend gronde vir genoemde beswaar/ of kommentaar met volledige kontakbesonderhede, moet skriftelik binne `n tydperk van 28 dae vanaf 10 Junie 2022 aan die Munisipale Bestuurder, Posbus 10, eMalahleni 1035, gerig word.
Volledige besonderhede en planne lê ter insae gedurende gewone kantoorure by die kantoor van die Munisipale Bestuurder, eMalahleni Plaaslike Munisipaliteit, Ontwikkelingsbeplanning, 3de Vloer, Burgersentrum, Mandelarylaan, 1035,
Tel: 013 690 6354/
013 690 6480/
013 690 6220
vir `n tydperk van 28 dae vanaf 10 Junie 2022.
Adres van Applikant:
J Rossouw Stadsbeplanners & Medewerkers (Edms) Bpk,
Steekbaardstraat 708,
Garsfontein Uitbreiding 10,
Pretoria,
Posbus 72604,
Lynnwoodrif, 0040.
Tel no: **010 010 5479**
of Faks: **086 573 3481**
of E-pos:
jrossouw@jrtpa.co.za
OS016465

NOTICES! KENNISGEWINGS

EMALAHLENI LOCAL MUNICIPALITY

Tel: 013 690 6707/6538
Email: **mthombenip@emalahleni.gov.za or buthanel@emalahleni.gov.za**

NOTICE: ON THE DAM WINTER FLEA MARKET

Date : 25 June 2022

eMalahleni Local Municipality will be hosting its first flea market under the theme "On the Dam winter Flea Market". The municipality would like to invite all informal traders, SMMEs, Co-operative in different sectors and big businesses to participate in the Flea Market. The stalls will be sold at different prices for different vendors to accommodate small and big businesses as follows: Big businesses – **R1000**, Food outlets – **R500**, SMMEs – **R200,** Co-operatives - **R100,** and Informal Traders – **R50.**

The municipality will host the flea market as follows:
Date : 25 June 2022
Time : 09h00
Venue: eMalahleni Recreation Resort

Residents and visitors to the municipality will access stalls for good food, souvenirs, art and craft work, etc. at a reasonable price. Jumping castles will also be available for kiddies' entertainment and free music. **Entrance fee will be reduced to R30 per adult and R15 per child**.

The application forms for the stalls can be request via email and will also be made available at Municipal offices at Development Planning 3rd floor, Economic Development and Tourism Unit (LED).

For more information contact the Economic Development and Tourism Unit on 013 690 6538/6707 or email to **mthombenip@emalahleni.gov.za or buthanel@emalahleni.gov.za.**

NB: COVID 19 regulations will be observed. The stall fee listed above must be paid 5 days prior to flea market day at ground floor Main Municipal Building. Proof of payment and completed forms must be forwarded to the above mentioned emails or at Development Planning 3rd floor Economic Development and Tourism Unit.

H.S MAYISELA
MUNICIPAL MANAGER
W/10June2022/Stadraad Winter Flea Market/LB/LO460054

VACANCIES BETREKKINGS

ISAZISO SOKUBHALISA NJENGEQEMBU ELINENTSHISEKELO FUTHI ELITHIMANDELE NGESIHLOKO SOKUSUNGULWA KUKA-A I-SOLAR PHOTOVOLTAIC KANYE NOHLELO LOKUGCINA AMANDLA EBHATHINI INDAWO E-KOMATI POWER STATION, ESIFUNDAZWENI SASEMPUMALANGA

Isaziso sinikezwe ngokoMthethonqubo 41(2) we-GNR 326 njengoba uchitshiyelwe (07 April 2017) oshicilelwe ngaphansi kwesigaba 24 kanye no-24D soMthetho Wokuphathwa Kwemvelo Kazwelonke (No. 107 ka 1998) (NEMA) ukuze kuthunyelwe izicelo zokugunyazwa kwezeMvelo. (EA) mayelana nemisebenzi ehlonzwe ngokwe-GNR 327 njengoba Ichitshiyelwe (7 April 2017).
Isaziso siphinde sinikeziwe ngokweSigaba 40 soMthetho Wamanzi Kazwelonke (36 ka-1998) (NWA), sokwethulwa kweSicelo Selayisense Yokusebenzisa Amanzi (WULA) kanye neSigaba 38 (1) & (8) soMthetho Wezamagugu Kazwelonke. (25 ka-1999).

IKAMUVA NENDAWO
I-Eskom Holdings SOC Ltd (Eskom) ihlongoza ukusungula indawo ephehla ugesi welanga eSiteshini Samandla SaseKomati. Izinsiza ezihlongozwayo zeSolar Photovoltaic (PV) kanye neBattery Energy Storage System (BESS) zizothuthukiswa epulazini iKomati Power Station No 56 IS kuWadi 4, kuMasipala Wendawo waseSteve Tshwete, kuMasipala Wesifunda saseNkangala, esifundazweni saseMpumalanga. I-Solar PV ehlongozwayo, i-BESS kanye nengqalasizinda ehlobene nayo idinga ukugunyazwa kwemvelo (EA) kanye nokugunyazwa kokusetshenziswa kwamanzi ngokoMthetho Kazwelonke Wokuphathwa Kwemvelo, uMthetho we-107 ka-1998 (NEMA), ohambisana neMithethonqubo Yokuhlola Impatho Yendawo ka-2014 njengoba uchitshiyelwe kanye Nomthetho Kazwelonke. Umthetho Wamanzi, uMthetho wama-36 ka-1998 (NWA) ngokulandelana. Ngenxa yesimo semikhawulo yephrojekthi, u-Eskom kudingeka ukuthi alandele inqubo ye-Scoping & EIA kanye nesicelo selayisensi Yokusebenzisa KwaManzi (WULA) ukuze athole ukugunyazwa okudingekayo ngaphambi kokuqala kwephrojekthi ehlongozwayo. Ngaphezu koMthetho waseNingizimu Afrika, Ukuhlolwa Komthelela Wezemvelo kanye Nomphakathi kuzokwenziwa ngokwezidingo zeQembu LeBhange Lomhlaba. Lokhu kuzohambisana nezidingo zeBhange Lomhlaba Lezemvelo & Nohlaka Lwezenhlalakahle; I-World Bank Group (WBG) Iziqondiso Zemvelo, Ezempilo Nokuphepha (EHSG) kokubili jikelele kanye nomkhakha; Izilinganiso Zokusebenza Zenhlangano Yezezimali Yamazwe Ngamazwe); kanye Nemikhuba Emihle Yemboni Yamazwe Ngamazwe.

ISICELO SEZEMVELO
Le misebenzi elandelayo esohlwini iqalwa, kuncike ekuqinisekisweni koMnyango Wezamahlathi, Izinhlanzi kanye Nezemvelo.
- NEMA EIA Imithethonqubo: GNR 327 Umsebenzi 11, 14 and 24;
- NEMA EIA Imithethonqubo: GNR 325 Umsebenzi 1 and 15;
- NEMA EIA Imithethonqubo: GNR 324 Umsebenzi 4, 10 and 12.

ISICELO SELAYISENSE YOKUSEBENZISWA KWAMANZI
I WULA izofakwa isicelo ngokweSigaba 40 se-NWA ngokusetshenziswa kwamanzi okufanelekile kweSigaba 21 esihlobene ne-PV, BESS kanye nengqalasizinda ehlobene. Isaziso Sikahulumeni (GN) 40713, Umthethonqubo No. 267 (GN R.267) samhla zingama-24 kuNdasa (March) wezi-2017, mayelana nemithethonqubo ephathelene nezinqubo zenqubo yokufaka izicelo zelayisensi yokusebenzisa amanzi kanye nezikhalazo, sizolandelwa.

UKUBHALISA KANYE NOKUTHUNYELWA KWEMIVO
I-WSP Group Africa (Pty) Ltd (WSP) yaqokwa njengoMsebenzi Ozimele Wokuhlola Imvelo (EAP) ngu-Eskom ukuze alawule inqubo yezimvume. Abantu abafisa ukubhalisa ngokusemthethweni njengama-I&APs (I&APs) ukuze bathole ulwazi olwengeziwe kanye/noma baveze ukuphawula kwabo ngephrojekthi ehlongozwayo, bayacelwa ukuba bathumele imininingwane yabo egcwele ku-EAP futhi badalule ngokuqondile kanye/ noma ibhizinisi elingaqondile, lezezimali, elomuntu siqu noma okunye okuthakaselayo kuphrojekthi. Noma yimiphi imibono ngephrojekthi ehlongozwayo kufanele ithunyelwe ku-EAP ngemininingwane enikezwe ngezansi. Ama-I&APs abhalisiwe azodluliselwa kuzo zonke izincwadi zesikhathi esizayo ezihlobene nephrojekthi futhi aziswe ngabanye ngamathuba engeziwe okubamba iqhaza kulolu hlelo.

ISIKHATHI SOKUFAKA ISICELO SOKUSEBENZISWA KWAMANZI
Ama-I&APs abhalisiwe angaphinde afake imibono ebhaliwe mayelana ne-WULA ngemisebenzi ehlongozwayo ngemininingwane eshiwo ngenhla. NgokweSigaba 41 (4) se-NWA isikhathi sokuphawula kwe-WULA sizoba yizinsuku ezingama-60 kusukela zi-10 kuNhlangula (June) 2022 kuya ku-09 kuNcwaba (August) 2022.

Imininingwane ye-EAP: Megan Govender (T) 011 361 1410 (E) Megan.Govender@wsp.com (A) PO Box 98867, Sloane Park, 2152

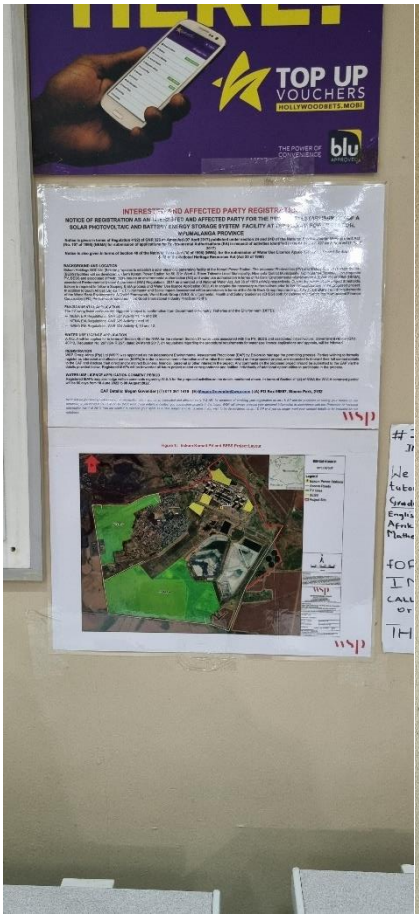
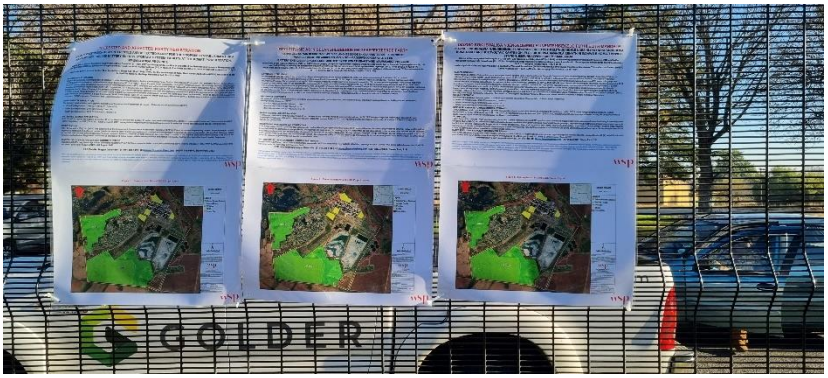
I-WSP izocubungula ulwazi oluthile lomuntu siqu olumayelana nawe njengenhlangano enentshisekelo nethintekayo (I & AP) ngezinjongo zokwenza ukubhaliswa kwakho njenge-I & AP kanye nezinjongo zokugcina imininingwane yakho kusizindalwazi sethu, uma uvuma ukuba senze kanjalo. . I-WSP isebenzisa le minininingwane ukuze ixhumane nawe mayelana namanye amaphrojekthi esikhathini esizayo. I-WSP izohlala icubungula ulwazi lwakho lomuntu siqu ngokuhambisana noMthetho Wokuvikela Ulwazi Lomuntu Siqu 4 ka-2013. Unelungelo lokusebenzisa amalungelo akho njengesihloko sedatha futhi usazise uma ufisa ukukhishwa ukubhaliswa njenge-I & AP noma uma cha. usefuna imininingwane yakho yokuxhumana ifakwe kusizindalwazi sethu

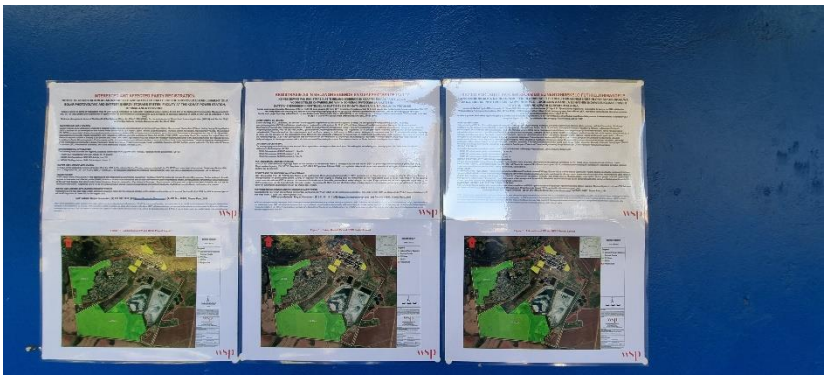
W/10June/Eskom WSP Zulu 20X4/SV/LO460019

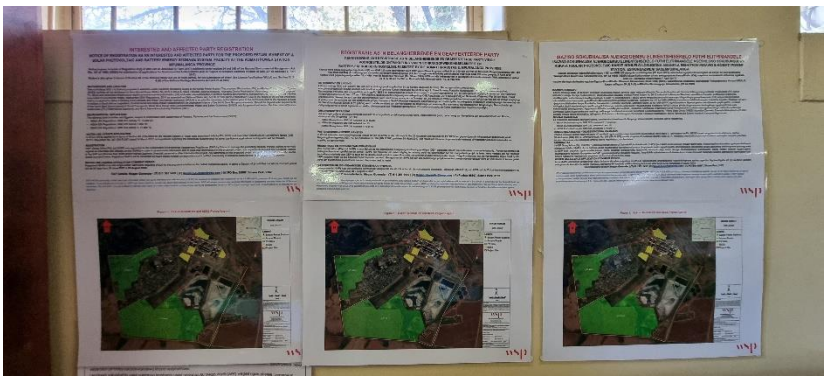
APPENDIX

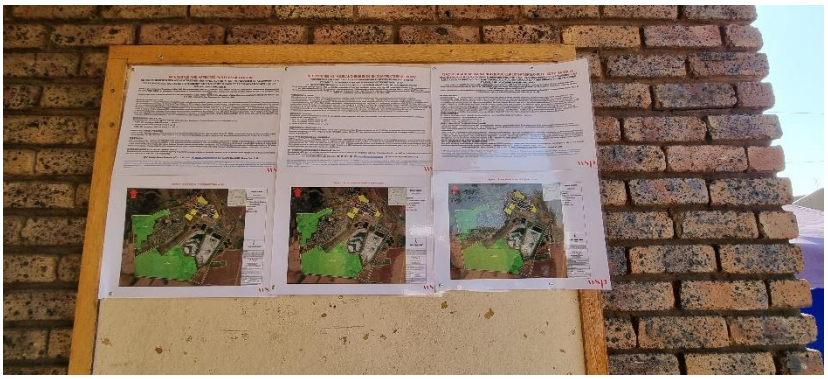
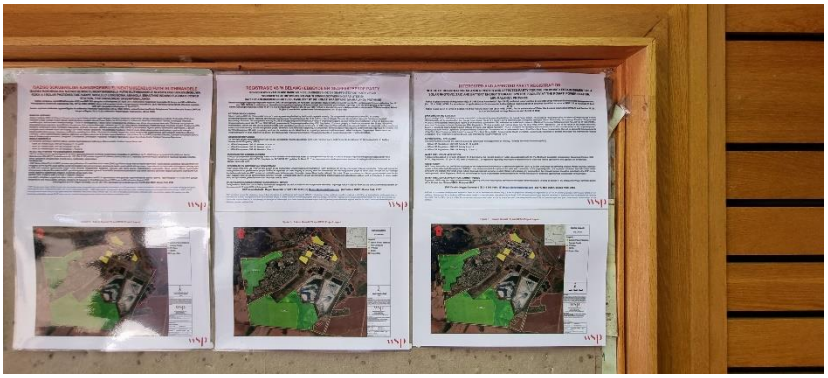
D-2 PROOF OF SITE NOTICES

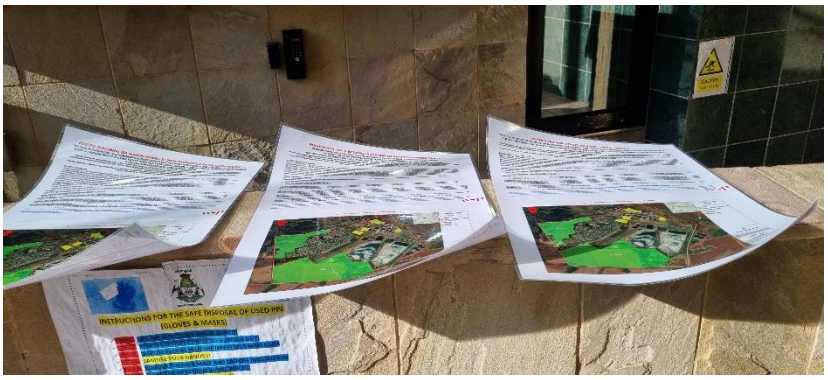
Table 1: Site Notice Locations

LOCATION	CO-ORDINATES	PHOTOGRAPHS
OK Foods Store, Komati	26°05'36" S 29°27'49" E	 
Komati Paypoint and Library	26°05'42" S 29°27'44" E	 

LOCATION	CO-ORDINATES	PHOTOGRAPHS
Blinkplan Police Station (Community Service Centre)	26°05’58” S 29°27’01” E	 
Solar Site B Boundary Point	26°06’07” S 29°27’02” E	

LOCATION	CO-ORDINATES	PHOTOGRAPHS
Solar Site Boundary A	26°06’36” S 29°27’09” E	 
Komati Power Station Entrance	26°05’22” S 29°28’04” E	
Hendrina Public Library	26°09’38” S 29°42’58” E	

LOCATION	CO-ORDINATES	PHOTOGRAPHS
		
Eastdene Public Library	25°46’17” S 29°28’48” E	
		
Gerard Sekoto Library	25°46’24” S 29°27’20” E	

LOCATION	CO-ORDINATES	PHOTOGRAPHS
Nkangala District Municipality	25°47’00” S 29°26’31” E	 

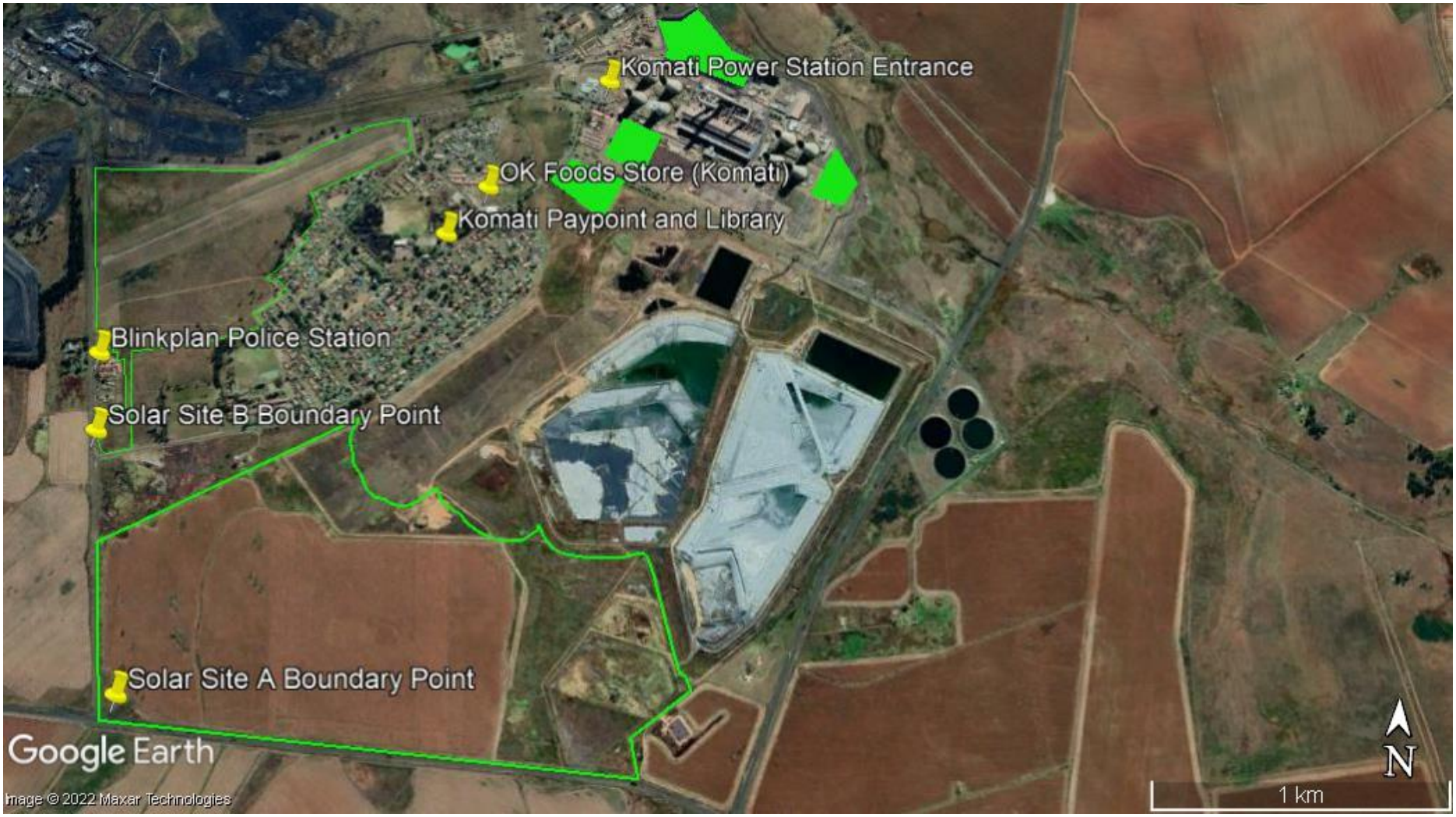


Figure -1: Location of Site Notices placed around the project boundary

APPENDIX

D-3 FOCUS GROUP MEETING REGISTER AND NOTES

Proposed Komati Power Station Solar PV, BESS Facilities And Associated Infrastructure
Focus Group Meeting, Komati Power Station – 09 June 2022 - 10:00am
Attendance register & COVID–19 Health Screening Questionnaire

The safety of our employees, visitors, tenants or members of public that may come into contact with us, remain our first priority. To prevent the spread of COVID-19 and reduce the potential risk of exposure to our employees, contractors and visitors, we are conducting a simple screening questionnaire. Your participation is important to help us take precautionary measures to protect you and everyone in this premises, thank you for your participation and effort.

Effective immediately, all visitors entering our offices or controlled areas, are required to complete the WSP Visitors COVID-19 Health Screening Questionnaire.

If any questions are answered with a "YES", or your temperature is above 37.5°C, access to our controlled premises will subsequently be denied, and you will be asked to reschedule your meeting or make alternative arrangements.

Attendees			COVID -19 Screening							
Name & Surname	**Company / Affiliation**	**Contact details**	**Temperature**	**Cough?**	**Shortness of breath?**	**Fever?**	**Fatigue?**	**Respiratory Issues?**	**Have you had contact in the last 14 days, with someone who is suspected or confirmed to have COVID 19?**	**Signature**
Ndlovu Zekhethelo	Eskom	0729246723	30,4	No	No	No	No	No	No	[signature]
MEGAN GOVENDER	WSP	0832285288	36	No	No	No	No	No	No	[signature]
Nomsa Dlamini	Ward Com	0827531767		NO	NO	NO	NO	NO	NO	[signature]
SASAVONA BALOYI	Eskom	0832980560		NO	No	No	no	NO	No	[signature]
[illegible]	Villa Rosa	0828796452		NO	No	NO	NO	No	NO	[signature]
Othaniel Sibambo	B&K Komati	071 613 1498		No	No	No	No	No	No	[signature]
SIMPHIWE Mnisi	Fambelt Komati	0788233924		YES	NO	NO	NO	NO	NO	[signature]

Proposed Komati Power Station Solar PV, BESS Facilities And Associated Infrastructure
Focus Group Meeting, Komati Power Station – 09 June 2022 - 10:00am
Attendance register & COVID–19 Health Screening Questionnaire

Attendees			COVID -19 Screening							
Name & Surname	Company / Affiliation	Contact details	Temperature	Cough?	Shortness of breath?	Fever?	Fatigue?	Respiratory Issues?	Have you had contact in the last 14 days, with someone who is suspected or confirmed to have COVID 19?	Signature
Tumelo Mathulwe	WSP	011 254 4800	32°C	NO	NO	NO	NO	NO	NO	
Mokgadi MVAMBO	Eskom	0611672690		No	No	No	No	No	No.	
Justice Ramagoma	Eskom	0822619361		no	no	no	no	no	no	
Deidre Hobst	Eskom	0836601147	36	No	No	No	No	No	No	
Felicia Sano	Eskom	0832974328		No	No	No	No	No	No	
Matthews Zevane	Church Rep.	0724219835	32	NO	NO	NO	NO	NO	No	
Anna-Marth Ott	MCCT	0834582865	36	No	NO	NO	NO	No	No	

MEETING NOTES

JOB TITLE	Eskom Komati Power Station Solar PV and BESS ESIA
PROJECT NUMBER	41103965
DATE	09 June 2022
TIME	10h00
VENUE	SSB Hall – Komati Power Station
SUBJECT	Focus Group Meeting
CLIENT	Eskom Holdings SOC (Ltd)
PRESENT	**In person:** Deidre Herbst (DH) – Eskom Felicia Sono (FS) – Eskom Justice Ramagoma (JR) – Eskom Mokgadi Mvambo (MM) – Eskom Sasavona Baloyi (SB) – Eskom Zekhethelo Ndlovu (ZN) – Eskom Anna Marth Ott (AO) – Stakeholder (MCCT) Alta de Bruin (AB) – Stakeholder (Villa Rosa Guesthouse) Mathews Zwane (MZ) – Stakeholder (Church Representative) Nomsa Dlamini (ND) – Stakeholder (Community Representative) Othaniel Sibembo (OS) – Stakeholder (B&K Komati) Simphiwe Mnisi (SM) – Stakeholder (Komati Farmbelt) Wickus de Bruin (WB) – Stakeholder (Villa Rosa Guesthouse) Megan Govender (MG) – WSP Tumelo Mathulwe (TM) – WSP **On-line:** Collins Nyamadzawo (CN) – Mpumalanga Green Cluster Agency Matjaka Ketsi (MK) – Mpumalanga Green Cluster Agency Stephen Horak (SH) - WSP

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MATTERS ARISING	ACTION
NOTE: These notes constitute a summary of the key discussion points made during the meeting. They are not intended to reflect the exact discussions held.	
1.0 WELCOME AND INTRODUCTIONS MM welcomed everyone to the meeting. MM clarified the evacuation route should the need arise.	
2.0 JUST ENERGY TRANSITION PROJECT MM presented the Just Energy Transition Plan (Refer to Appendix A for a copy of the presentation) with the following to be noted: — Eskom will shut down many of its fossil-fired power plants due to ageing fleet, environmental compliance requirements, decarbonisation goals and overall end of plant life. — Komati is one of the power stations that will be shut down as it will reach its end of life in September 2022. — Shutting down of the power station will have a socio-economic impact on existing employees, and surrounding communities. Eskom has therefore explored options for the repurposing and repowering of the power station — Renewable energy requires using vast amounts of land surface area, therefore there could be competition for usable land in transitioning to cleaner sources of fuel. — Solar PV and wind are the preferred main technologies to be used for the re-purposing of Komati with the addition of batteries (BESS) and the repurposing of the generators that are in good condition to synchronous condensers units. — A Gas Power Plant was also considered as one of the technologies. — The retiring process will include the dismantling and removal of several buildings, structures, and dams, as well as the decontamination and rehabilitation of waste and dirty areas. — The move away from coal-fired power stations will have a significantly positive impact on the environment. — However, the demolition of cooling towers and other distinctive features of the “old coal power station” may be perceived as negative from a sense of place perspective. DH: The focus of the meeting today is on the Solar PV and BESS project, however the presentation by MM puts the entire project into perspective. This is the first Environmental Impact Assessment being undertaken. There are several other projects however the EIAs will have to be done individually. This will unfortunately result in repetition of meetings however we will try to align the meetings and projects as much as possible.	
3.0 SOLAR PV AND BESS EIA MG: WSP was appointed to undertake the Environmental Authorisation Process for the Komati Solar PV, Battery Energy Storage System (BESS) and Associated Infrastructure. The aim of today’s focus group meeting is to present the project and listen to the input stakeholders may have regarding the project. MM presented the Komati Power Station Solar Photovoltaic, Battery Energy Storage System Facilities and Associated Infrastructure Project (Refer to Appendix B for a copy of the presentation) with the following to be noted: — Just Energy Transition Plan is aimed at mitigating the negative social impacts resulting from the shutting down of the Komati Power Station. The solar energy generating facility is one of several initiatives Eskom is proposing. — Solar energy facility is made up of Solar Photovoltaics energy facility as well as BESS facilities — The land earmarked for this development is owned by Eskom — The PV facility will have a capacity of up to 100 MW. Solar PV modules will convert solar radiation directly into electricity. They will be elevated above the ground and will be mounted on either fixed tilt systems or tracking systems.	

— There are four BESS facilities proposed. The BESS storage capacity will be up to 150MW. — It is proposed that Lithium Battery Technologies will be considered as the preferred battery technology however the specific technology will only be determined following the appointment of an Engineering, Procurement and Construction (EPC) contractor. The BESS components will arrive on site pre-assembled. — Additional associated infrastructure will be confirmed once the Conceptual Design is complete. — The general project area falls within a Critical Biodiversity Areas. — The Project Area does not fall within any Strategic Transmission Corridors or Renewable Energy Development Zones (REDZ). — Due to the nature of the project thresholds, the proposed project will require a Scoping & EIA process to obtain an environmental authorisation in terms of the National Environmental Management Act. A Water Use Licence (WUL) in terms of the National Water Act will also be required. The WUL application processes will be undertaken concurrently with the S&EIA process as far as possible. — In addition to South African Legislation, the Environmental and Social Impact Assessment (ESIA) will be undertaken in terms of the World Bank Group requirements. The assessment will be aligned to the requirements of the World Bank Environmental & Social Framework; relevant World Bank Group Environmental, Health and Safety Guidelines; the International Finance Corporation Performance Standards; and Good International Industry Practices. — Specialist studies are required to support the ESIA, and several have been commissioned already. — Public Participation will be undertaken for the project in line with legislative requirements. This will include formally announcing the project, holding a focus group meeting (this meeting), hosting public meetings and providing the Draft Scoping and Environmental Impact Assessment Reports for public review. These reports will contain information about the project including specialist inputs and environmental and socio-economic impacts. — The EIA will take approximately eighteen months to undertake including public participation and authority review timeframes.	
4.0 DISCUSSION AO: What happens in Komati will impact the whole country therefore it is important to repurpose the power station otherwise we will have an economic crisis on our hands. How do we go about getting a REDZ allocated to the area? Hendrina is the next power station to be decommissioned and the power stations fall outside the REDZ. MG: We will investigate this and provide you with feedback outside of this meeting. AO: It was mentioned that the BESS parts will arrive already assembled. This is a concern as we need to be creating jobs in the area. We would like to establish a local manufacturing facility for solar plants including the manufacturing of batteries in the Komati area. How do we go about doing this? This will mitigate the negative impact of the closure of the Komati Power Station. The other concern is baseload as this will still be needed for major industries. We do not want the green energy to take away the base load required for major industries. MG: Your comment is noted and we will provide you with feedback outside of this meeting. AB: A local manufacturing facility must be in Komati and not in Middelburg. The problem is here in Komati. There is a need to create work for the people here. AO: There are several ideas of what can be done at Komati and how it can be used as an example. A training centre can be set up in the area. It was mentioned that the Secunda FET is excellent and training is going to be moved there. This was mentioned in the presentation made by Res4Africa, an Italian Organisation, that has funding for re-skilling. The other aspect to consider is that re-skilling is focussed on the illiterate community. There are already literate skilled people that need to be re-skilled. The type of training to be provided will need to be looked at. There will be more momentum if the skilled community is up-skilled. AB: They must come here to Komati first because the people of the area have no work. AO: The worst thing would be if Eskom imported pre-assembled panels and batteries from China.	MG to provide AO with feedback

AB: Eskom must make use of the local businesses Eskom does not make use of local guest houses. Eskom uses businesses outside of Komati. AO: This Project needs to be linked to the Master Steel Plan and localisation initiatives that are being driven for the region. CN: Regarding the issue of localisation and producing batteries and solar panels, has Eskom decided on the battery technology that will be used and the battery manufacturer that will be used? It has been noted that the solar panels will occupy 75 hectares of the available land which is only a quarter of the available land. What is the reasoning behind the 100 MW cap when there is still ample land to install additional solar panels? DH: Eskom are going the route of appointing an EPC contractor. They will determine the procurement of the BESS and solar panels. Eskom will provide you with additional feedback outside of this meeting after consulting with the engineers. MG: Additional feedback outside of this meeting on the layout of the project and the utilisation of the land will be provided. TM: Is there anyone else that should be made aware of the project? DH: There was a Socio-Economic study and stakeholder engagement undertaken by UrbanEcon. The stakeholder databases generated from that project has been shared with WSP to include in the stakeholder database for this project. AO: Could a copy of the UrbanEcon study be made available? DH: Ms Beauty Mazibuko will be requested to make the final report available. There was a draft report and finalisation was planned for June 2022. AO: The scope of the UrbanEcon study was not wide enough. The study seemed to only look at the Komati area and not at the bigger municipal area. This will be necessary to get an idea of the actual economy of the municipality. DH: WSP will also be undertaking their own Socio-Economic Study and will be drawing from the report undertaken from UrbanEcon. WSP can address your comments in their study, if it falls within their scope and if it has not been done so already within the UrbanEcon Report. OS: Eskom needs to consider the local community for job opportunities within the project. Eskom should include local businesses such as guesthouses and transport companies that can be used for this project. If possible, Eskom should also give vendor numbers for small businesses in the area. SM: How are the solar structures going to operate, will there be any noise from the solar panels? MG: There is no operational noise emitting from the solar panels. However, there is a full suite of specialists appointed to assess how the project will impact the environment as well as the community. The specialists appointed include noise, air quality, surface and ground water quality and ecology. The noise specialist study will highlight any impacts this would mainly be during the construction phase. The specialist studies as well as the impacts identified will be made available for the public to review and provide any comments or concerns, they may have. SM: As a community, we are used to a Power Station that utilises coal and we have been skilled in this manner. Now that there is a transition to a different technology, we as the community would like to be upskilled so that when new jobs arises from this project, we will have the required skill set. As noted by others, local businesses should be used where possible.	MG to provide CN with feedback DH to request the final UrbanEcon report from Beauty Mazibuko

MEETING NOTES

AB: What are the project timeframes? The community cannot wait three years for the project to start, there are no jobs. Training should start now. AO: What re-skilling will be done? Unless there is an end goal of a job opportunity, there is no point in re-skilling people. On the other hand, for businesses to survive, they need to be able to take their own future in their hands and continuous handouts will also not help. Meeting concluded.	