

CURRICULUM VITAE

Name:	Liam Michael Whitlow
Nationality:	South African
Date of Birth:	22 August 1978
Profession:	Environmental Scientist
Professional Qualification/ Training:	BSc Honours Environmental Management; Rand Afrikaans University (now University of Johannesburg), 2000
	Higher Certificate in Project Management; Damelin Business School, 2001.
	ISO 14001 Auditor Training; BVQI, 2003.
	Environmental Monitoring- Fallout Dust Training; Dustwatch, 2014.
	Aquifer Hydraulics and Groundwater Monitoring Certificate Course; North West University, 2014.
	Carbon Footprint Analyst Course; Terra Firma Academy, 2017.
Professional Membership/ Registrations:	Registered Environmental Assessment Practitioner: Number 2019/222 Registered Professional Natural Scientist (SACNASP- #400148/08). Member of Land Rehabilitation Society of Southern Africa (LaRSSA).
Current Employer:	Environmental Impact Management Services (Pty) Ltd.

KEY EXPERIENCE

Liam holds a B. Sc. Hons degree in Environmental Management and has completed an additional B. Sc. honours course in applied limnology. In addition he has completed a higher certificate in Project Management with Damelin Business School and a course on ISO14001 Auditing Principles and Environmental Management Systems Auditor Training. Liam is a registered professional natural scientist with the South African Council for Natural Scientific Professions. Liam's professional experience, gained over more than 17 years, lies mainly with environmental impact assessments including project managing significantly large EIA's in the mining and infrastructure sectors. Liam's other experience includes ISO14001, Site Assessments, Water-use licensing, Environmental monitoring, and Environmental Management Plans. Liam's experience lies mainly within South Africa but he has been involved in projects in both Lesotho and Botswana.

CAREER SUMMARY

Period: January 2011- Current	Organisation: EIMS	Position: Director, Senior Environmental Assessment Practitioner
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Key Projects/Assignments	<p><u>Technical Director:</u> Responsible for the technical management of EIMS including the following aspects:</p> <ul style="list-style-type: none">• Technical review and direction for complex projects;• Quality control and assurance;• Staff management and performance review;• Client management; and• Marketing and business development. <p><u>Project Experience:</u></p> <ul style="list-style-type: none">• Transnet Multi-products Pipeline (~650km total length) in Gauteng, Mpumalanga and between Durban and Johannesburg, RSA. Project manager and Environmental Advisor to the New Multiproduct Pipeline (NMPP) Alliance for the monitoring of construction phase. 2009-2017.• Olifants River Water Resources Development Project, Steelpoort, Mpumalanga, RSA. EIMS was appointed to undertake the required environmental monitoring (noise, air quality, and water quality) for the construction of the Phase 1C of the bulk water pipeline. Project manager, 2012-2017.• GSW Dilokong Chrome Mine Due Diligence, Limpopo, RSA. Environmental lead to undertake an environmental due. 2017.• Tshipi é Ntle Manganese Mine Environmental Due Diligence, Kathu, Northern Cape, RSA. Project manager and senior consultant (in association with GSW) for an environmental review to inform a due diligence being undertaken. 2017.• Libra Due Diligence, Mpumalanga and Free State Province, RSA. Project manager and senior consultant to conduct a high level environmental review and due diligence study for the Anglo Libra project (incl various Anglo Coal assets) for Mindset Mining Consultants, 2016.• Sedgman Environmental Training, Pretoria, RSA. Compiled and presented a training workshop to Sedgman Engineers, focusing on the application and interpretation of the South African Environmental Laws, in relation to their operations and client profile. 2017.• EIA and EMP for the Transnet Richards Bay Coal Line: Overvaal Tunnel, Mpumalanga Province. Project manager, responsible for successful completion of the EIA. 2015-2016.• Tetra 4 Virginia Natural Gas Production, Water Monitoring, Free State, RSA. Project manager appointed to undertake surface and groundwater sampling to establish an environmental baseline and to monitor the actual impacts associated with the proposed natural gas production activities. 2015-2017.• Drafted the 2014-2019, 3rd Edition Environmental Management, Plan (compiled in terms of Section 11(2) of the National Environmental
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Management Act 1998 (act 107 of 1998), for the National Department of Energy. Project manager and report writer. 2014-2015.

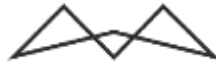
- Environmental Advisory to the Government Technical Advisory Centre, Public Private Partnership Unit. Environmental lead in a team of consultants providing consulting services to report to the GTAC on the lessons learn from past PPP's and to suggest means of improving the process for future PPP's. 2015.
- Eskom Lambda 400-765kV Sub-station and Associated Transmission Lines, Mpumalanga, RSA. Project manager and Environmental Assessment Practitioner for EIA. 2010-2012.

Mine Closure and Financial Provisioning:

- Determined Financial Provisions in accordance with the 'Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision' provided by a Mine (DMR Guideline): Mooiplaats Colliery 2018; Exxaro Paardeplaats Coal Mine- Update 2018.
- Final Rehabilitation, Decommissioning and Closure Plan (FRDCP) prepared in accordance with the requirements of the NEMA Financial Provisioning Regulations (2015) (NEMA GNR 1147): Tetra 4 Virginia Natural Gas Project, 2017; Motuoane Gas Hennenman Exploration Right-2017; Motuoane Gas Ladysmith Exploration Right- 2017; Sungu Sungu Dannhauser Exploration Right- 2016; Kangala Colliery- Eloff Phase 3 Pit-2020; Anker Coal Elandsfontein Colliery-2021.
- Review of closure plans and financial provisions for closure as a component of Due Diligence and/or Competent Persons Reports: Environmental Review for 5 large Coal mining operations held by Exxaro- 2018; Environmental Review for Dilokong Chrome Mine- 2017; Environmental Review for Tshipi Mine- 2017; Environmental Review on numerous large coal mines held by Anglo Coal-2016.

Environmental Monitoring:

- Project manager and senior environmental scientist for the construction phase environmental monitoring on the Olifants River Water Resources Project Phase 2C (bulk water pipeline). The project included monitoring of water (point and diffuse), air quality (PM10 and fallout dust), and noise to ensure and guide compliance with the environmental specifications of the construction phase EMPR.
- Project manager and senior environmental scientist for the water resource monitoring of the Tetra4 Virginia Natural Gas Production Project. This includes specialist low-flow sampling of dissolved gases in the groundwater as well as general water quality parameters in both regional ground and surface water resources.
- Project Director for the routine water resource (surface and groundwater) monitoring being undertaken for the United Manganese of the Kalahari



	(UMK), manganese mine in Northern Cape. Responsible for technical and quality review and oversight.	
Period: January 2002-December 2010	Organisation: EIMS	Position: Senior Environmental Assessment Practitioner
Key Projects/Assignments	<p>Project Manager and Environmental Assessment Practitioner for the following:</p> <ul style="list-style-type: none"> • Environmental applications, including EIAs, and mining permit applications, for various (7 Packages including N1, N3, N12, R21, and R24) Gauteng road upgrades as part of the Gauteng Freeway Improvement Project. EIMS was also appointed to undertake the role of Independent ECO's for certain GFIP Packages • EIA for OCGT Peaking Power Station within the Coega IDZ. • EIA for spent nuclear fuel storage facility at Pelindaba. • EIA for nuclear waste smelter at Pelindaba. • EIA and water-use licensing for an underground ash disposal facility in Mpumalanga Province. • EIA for the proposed upgrade of the effluent collection and treatment facilities at the South African Nuclear Energy Corporation, Pelindaba. • EIA for proposed Garona to Aries 400KV Transmission line. • EIA for numerous Golf Estates. • EIA for Market Street Underpass as part of the Provincial government Precinct and City Square (Johannesburg) CBD. • EIA's for numerous residential developments. • Scoping report for the Eskom Janus substation in Limpopo Province. • EIA's for low-cost housing developments in the East Rand, Ekurhuleni Metropolitan Council as part of the Regional Professional Team. • Environmental exemption process for a World Summit on Sustainable Development project, Moroka Dam, Gauteng Province. • Numerous environmental exemption applications for housing developments. • Environmental Scoping studies for Sentech telecommunication masts in Eastern Cape Province. • Environmental Studies for telecommunication facilities for Vodacom. • Environmental Studies for 150+ telecommunication facilities for Cell C and Siemens in five provinces. • Environmental Studies for Eskom Telecommunications. 	



	<p>Environmental Site Assessment and Remediation:</p> <ul style="list-style-type: none"> Participation in several Environmental Site Assessments in Gaborone (Botswana) and Mpumalanga. <p>Strategic Environmental Assessment:</p> <ul style="list-style-type: none"> Participation in the compilation of the Strategic Environmental Assessment for the Hartbeespoort Dam area. <p>ISO 14001 Environmental Management Systems and Auditing</p> <ul style="list-style-type: none"> Participation in the compilation of the ISO 14001 system (legal register) for Coega Development Corporation, Eastern Cape Province. Participation in the compilation of the ISO 14001 system (legal register) for Matimba Power Station in Limpopo Province. <p>Mining Related Permits and Rights</p> <ul style="list-style-type: none"> Environmental Management Programme and EIA for the Cranemere Gas Exploration Project in the Eastern Cape Province. EIA and EMPR for the proposed Loopspruit Coal Mine, Mpumalanga Province. Project Manager for in excess of 40 mining permit applications for the Transnet New Multi-products Pipeline, Inland and Trunkline (between Johannesburg and Durban). Applications submitted in 4 different provinces. Project Manager for 5 Mining Permit Applications for the South African National Roads Agencies Gauteng Freeway Improvement Project. <p>Numerous NEMA Section 24(G) Rectification applications for a broad spectrum of developments</p>
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LANGUAGE CAPABILITY

Language	Speak	Read	Write
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Good

DECLARATION

I confirm that the above information contained in the CV is an accurate description of my experience and qualifications and that, at the time of signature.



 Recoverable Signature

X 

Liam Whitlow

Director

Signed by: 6f6103b0-585d-4fda-855e-bdf53a161a41

Signature of Staff Member

Date

CURRICULUM VITAE

Name:	Gideon Petrus Kriel
Nationality:	South African
Date of Birth:	1 September 1983
Profession:	Environmental Scientist
Professional Qualification/ Training:	M.Env.Sci Water Sciences; North West University (Potchefstroom Campus), 2008
	Implementation of Environmental Management Systems (ISO 14001); Centre for Environmental Management, North-West University (Potchefstroom Campus), 2007.
	Bringing Data Into GIS (ArcGIS); GIMS (now ESRI SA), 2008.
	Tools for Wetland Assessment; Rhodes University, 2013
Professional Membership/ Registrations:	Registered Professional Natural Scientist (SACNSP- #400202/09) – Environmental Sciences
	Registered Environmental Assessment Practitioner (EAPASA- #2019/1451)
	Water Institute of Southern Africa (WISA) Member (21161)
Current Employer:	Environmental Impact Management Services (Pty) Ltd.

KEY EXPERIENCE

GP holds an M.Env.Sci (Water Sciences) Cum Laude from the North-West University (Potchefstroom Campus) and has been employed as an Environmental Consultant since 2007. GP is a Registered Professional Natural Scientist (South African Council for Natural and Scientific Professions) and a Registered Environmental Assessment Practitioner (Environmental Assessment Practitioner). He has delivered presentations locally and internationally concerning the use of bio-indicators for the determination of water quality, and has experience in a wide variety of environmental management projects including: Environmental Impact Assessments, Basic Assessments, Geographic Information Systems (GIS), Environmental Compliance Monitoring, Environmental Awareness Training, Aquatic Ecological Assessments, Drinking and Waste Water Treatment Process Audits, Wetland Delineation and Assessments, ISO 14001 Aspect Registers, Water Use Licence Applications, Waste Management Licence Applications and Integrated Waste and Water Management Plans (IWWMP).

CAREER SUMMARY

Period: July 2007- Current	Organisation: EIMS	Position: Senior Environmental Assessment Practitioner
Key Projects/Assignments	<u>Senior Consultant:</u> Responsible for the following aspects: <ul style="list-style-type: none"> • Technical review and direction; 	



- Quality control and assurance;
- Client management; and
- Marketing and business development.

Project Experience:

- Environmental Impact Assessment for the proposed Zonk'izizwe Mixed Use Development in Midrand, Gauteng.
- Basic Assessments for the road upgrades for the Johannesburg Roads Agency (JRA).
- Environmental Impact Assessment for the proposed Thabeng Eco Reserve and Golf Estate, near Ohrigstad, Limpopo.
- Basic Assessment for the proposed TATA Steel KZN Clean Energy Project, Richards Bay, KwaZulu-Natal.
- Basic Assessment for the proposed IFM Clean Energy Project, Mooi Nooi, North-West Province.
- Compilation of ISO 14001 Aspect/Impact registers for Clover (Pty) Ltd.
- Basic Assessment for the proposed N17 Phase 2 project: Addition of Auxiliary Lanes Between the Rondebult Road Interchange and the Proposed Trichardt Road Interchange.
- Basic Assessment for the Proposed Early Warning System for the South African Nuclear Energy Corporation of South Africa (NECSA).
- Environmental Impact Assessment for the Proposed Water and Effluent Collection and Treatment Infrastructure Upgrade for the Nuclear Energy Corporation of South Africa (NECSA).
- Basic Assessment for the proposed Residential Development on Portions 16 & 17 of the Farm Wilgespruit 190 IQ, Wilgeheuwel, Roodepoort.
- Independent Environmental Control Officer for the Eye of Africa Golf Estate, Gauteng.
- Independent Environmental Control Officer for the Department of International Relations Head Office Construction, Pretoria.
- Water Use License Application for the Upgrade of the Low Level Bridge on Hyperion Drive, North Riding, Johannesburg.
- Diatom Water Quality Assessments for the Upgrade of the Low Level Bridge on Hyperion Drive, North Riding, Johannesburg.
- Basic Assessment for the Proposed Rand Water 1400mm diameter L17 Bulk Water Pipeline, Brakpan, Gauteng.
- Wetland Delineation for Anglo Platinum Potgietersrus Platinum Limited near Mokopane, Limpopo.



- Independent Environmental Control Officer for the Knock-down and Rebuild of the Shell Range River Service Station, Gillview, Johannesburg.
- Independent Designated Environmental Officer for the Refurbishment of the South African National Roads Agency Limited (SANRAL) Dalpark Operations Centre, Brakpan.
- Waste Licence Application for the Proposed Water and Effluent Collection and Treatment Infrastructure Upgrade for the Nuclear Energy Corporation of South Africa (NECSA).
- Prospecting Rights Applications on behalf of the African Exploration Mining and Finance Corporation (Pty) Ltd for a variety of projects in Limpopo, Free State and North-West Provinces.
- Environmental Impact Assessment and Waste Management Licence Application for the Lusikisiki Sewer and Sewer Treatment Plant, Lusikisiki, Eastern Cape.
- Diatom Monitoring for the Lusikisiki Sewer and Sewer Treatment Plant, Lusikisiki, Eastern Cape.
- Appointed as a Blue Water Services Inspector for the 2012 Blue Water Services Audits by the Department of Water Affairs.
- Basic Assessment for the formalisation of Masibambane, Masibulele, Ilinge, Dacawa Gwentshe, Velwano, Mathemba Vuso in Mdantsane for the Buffalo City Metropolitan Municipality.
- Environmental Impact Assessment for the Proposed Sunny South Housing Development for the Buffalo City Metropolitan Municipality.
- Basic Assessment and Water Use Licence for the Mqonjwana Access Road for the Mbizana Local Municipality.
- Independent Environmental Control Officer for the East London Industrial Development Zone (ELIDZ): Infrastructure Services for the Zone 1B West Residential Development.
- Heritage Impact Assessment and Public Participation for the Proposed Reconstruction of Fleet Street, East London for the Buffalo City Metropolitan Municipality.
- Environmental Monitoring (Water Quality) for Phase 2 CD of the Olifants River Water Resources Development Project for Basil Read.
- Basic Assessment and Water Use Licence Application for the Proposed Sidwadeni River Access Road near Mthatha, Eastern Cape on behalf of the South African National Roads Agency (SOC) Limited.
- Basic Assessment and Water Use Licence Application for the Proposed Mngazi River Access Road near Port St Johns, Eastern Cape on behalf of the South African National Roads Agency (SOC) Limited.



- Independent Environmental Control Officer for the East London Industrial Development Zone (ELIDZ): Proposed MMOEM Facilities.
- Amalinda Fairlands Feasibility Study for the Buffalo City Metropolitan Municipality (CS Consulting).
- Independent Environmental Control Officer for the Lusikisiki Sewer and Sewer Treatment Plant, Lusikisiki, Eastern Cape.
- Independent Environmental Control Officer for the Noblesfontein Wind Energy Facility near Victoria West, Northern Cape Province.
- Independent Environmental Control Officer for the Reconstruction of Fleet Street, East London, Buffalo City Metropolitan Municipality, Eastern Cape Province.
- Transnet Freight Rail NEMA Section 24G Rectification Application – Coega Station to Tankatara Level Crossing, Coega, Eastern Cape.
- Independent Environmental Control Officer for the Sunny South Housing Development for the Buffalo City Metropolitan Municipality.
- Vincent-Berea Local Spatial Development Framework, CS Consulting (Buffalo City Metropolitan Municipality), East London, Eastern Cape.
- Participatory Based Planning Support to Informal Settlements Upgrading Projects In Buffalo City Metropolitan Municipality, CS Consulting, Eastern Cape.
- Molopo Free State Wetland Delineations, Virginia, Free State.
- Puma Energy Fuel Depot Wetland Delineation, Nelspuit, Mpumalanga.
- Mdantsane Roads Cluster 2 Environmental Control Officer, Buffalo City Metropolitan Municipality.
- Giuricich Chemical Removal at Vodacom Site, East London.
- Internal Environmental Management System Audits (ISO 14001) for the East London Distribution Centre and Ladismith Plant for Parmalat South Africa.
- Environmental Control Officer for the Eskom Albany-Mimosa 66KV Distribution Line near Alicedale, Eastern Cape.
- Environmental Impact Assessment for the Proposed Algoa Basin Oil & Gas Production Project for Aberdeen Offshore Engineering.
- Basic Assessment for the Proposed Ablution Facilities Along the Coast for Nyandeni Local Municipality.
- Environmental Control Officer for the Eskom Wittekleibosch-Dieprivier 132kV Power Line and Switching Station, Tsitsikamma, Eastern Cape.
- Specialist Walkdown and Site Specific EMPR for the Eskom Ankerlig-Omega Power line, Western Cape.



- Wetland Assessment for the Lichtenburg Hospital Basic Assessment Process for PH Bagale (on behalf of the Department of Health).
- Update of the Integrated Waste and Water Management Plan Eskom Lethabo Power Station, Free State.
- Basic Assessment for the Upgrade of the Loop 16 (Gariep) Road for ACWA Power, Groblershoop, Northern Cape.
- Prospecting Rights Application and Basic Assessment for Black Mountain Mining, Aggeneys, Northern Cape.
- Basic Assessment for the Eskom Riverbank IPP Projects, Eastern Cape.
- Environmental Control Officer for the SANRAL N2 Section 15 from Buffalo River (km 2,94) to Breidbach Intersection (km 9,8) and the R63 from Alexandra Road (km 0) to Bhisho, Eastern Cape.
- Environmental Control Officer for the Greenfields section of the SANRAL N2 Wild Coast Toll Highway (Southern Section), Eastern Cape.
- Basic Assessment for the Upgrading to a Surface Standard Portion of Road DR08606 +1-12KM, Eastern Cape Department of Roads and Public Works, Eastern Cape.
- Transnet TM2 Aquatic Monitoring Programme.
- Prospecting Right Applications and Basic Assessment Processes for Black Mountain Mining near Aggeneys, Northern Cape.
- Eskom Amathole Stormwater Environmental Control Officer, Eastern Cape.
- Update of the ACWA Bokpoort Concentrated Solar Plant Integrated Waste and Water Management Plan, Northern Cape.
- Update of the Rirhanzdu Rehabilitation Strategy and Implementation Plan, Mpumalanga.
- Basic Assessment and Water Use Licence Application for the Proposed Megamor Park Extension, Meisieshalt, East London for Umbra Trading 11.
- Creation of the Ekurhuleni Metropolitan Municipality Parks GIS Layer.
- Enviro-legal review for Bax Kaplan Russel for a Waste Processing Facility in Wilsonia, East London.
- Enviro-Legal Review: Demonstration of On-Site Faecal Sludge Treatment In East London, Impilo Yabantu Services (Pty) Ltd.
- Umgeni Raw Water Management Audit for SizweNtsalubaGobodo, Pietermaritzburg.
- Umgeni Waste Water Management Audit for SizweNtsalubaGobodo, Pietermaritzburg.



- Competent Persons Report (Environmental) for the Ntshovelo Mining Resources (Pty) Ltd Welgemeend Colliery.
- Umgeni Potable Water Management Audit for SizweNtsalubaGobodo, Pietermaritzburg.
- Cambridge Pedestrian Bridge Enviro-legal Interpretation for CBM Consulting Engineers.
- Komati Power Station Legal Audit for Eskom.
- Beaconhurst Drive Enviro-legal Interpretation for CBM Consulting Engineers.
- Port of Ngqura Tank Farm Infrastructure Specialists Services for Transnet Group Capital.
- Prospecting Rights Application and Basic Assessment for Black Mountain Mining, Northern Cape.
- Independent Environmental Control Officer for the East London Industrial Development Zone (ELIDZ): GW1 Facilities in Zone 1A.
- Basic Assessment and Water Use Licence Application for the Proposed Summerpride Erf 107 Residential Development, East London.
- Harmony Target 1 & 2 Performance Assessment Audits, Welkom
- Harmony President Steyn North (Steyn 3_ 7 & 9) Performance Assessment Audits, Welkom.
- City of Ekurhuleni Tsakane Sewer Pump Station Basic Assessment, Ekurhuleni.
- Eskom Duvha Power Station Legal Compliance Audit.
- Buffalo City Metropolitan Municipality Eastern Beach Sewer Upgrade Environmental Officer, East London.
- Transnet Group Capital Coega Kop Quarry Water Use Licence Application.
- SCAW Dimbaza Foundry Groundwater Monitoring, Dimbaza.
- Mulilo Struisbult PV2 Grid Connection Basic Assessment, Copperton.
- Mulilo Struisbult PV2 EMPr Amendment, Copperton.
- Tosaco Offshore Exploration Environmental Impact Assessment.
- Azinam Offshore Block 2B Stakeholder Engagement.
- TGS Orange Basin Offshore Reconnaissance Basic Assessment.
- GIS work for a large amount of projects from 2007 - Present including the following: the identification and mapping of sensitivities and interested and affected parties, the delineation of site boundaries, the identification of alternative development sites, geo-referencing of old maps and technical drawings, production of informative maps for Basic Assessments,



	Environmental Impact Assessments and Environmental Compliance Monitoring.
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LANGUAGE CAPABILITY

Language	Speak	Read	Write
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

DECLARATION

I confirm that the above information contained in the CV is an accurate description of my experience and qualifications at the time of signature.

Signature of Staff Member

17 October 2022

Date