



# EARTHLAB

knowledge. sustainability. chronology.

**Tel:** +27 (0) 10 222 0462  
**Email:** [invest@earthlabtech.com](mailto:invest@earthlabtech.com)  
**Address:** 12 Taylor Road  
32 Bali Starling Estate  
Honeydew Manor, Roodepoort,  
1724  
**Website:** [www.earthlabtech.com](http://www.earthlabtech.com)

## Company Profile

EARTHLAB Technical Division (Pty) Ltd.  
Incorporated under the laws of the Republic of South Africa  
Registration Number: 2012/114510/07  
Value Added Tax Number: 4660262702  
Export Number: 21457602  
Postal Address: PO Box 522893, Saxonwold, 2132

©EARTHLAB All Rights Reserved

## TABLE OF CONTENTS

1) INTRODUCTION .....	2
1.1) OUR OBJECTIVE .....	2
1.2) OUR VISION .....	2
1.3) OUR MISSION .....	2
2) CLIENTELE .....	2
3) TECHNICAL COMPETENCIES .....	2
4) PROFESSIONAL PERSONNEL .....	3
4.1) DEON DU PLESSIS .....	3
4.2) CHARL ZIETSMAN .....	4
4.3) THINUS JORDAAN .....	5
4.4) DANIE PRETORIUS .....	5
4.5) KHUMBULA MANGENA .....	7
4.6) BUYI MKWANAZI .....	7
4.7) PHILLIP SEOKAME .....	8
5) PROFESSIONAL ACQUAINTANCES' .....	8

## 1) INTRODUCTION

### 1.1) Our Objective

EARTHLAB is a consultancy organisation focussed on supplying of all geoscience, metallurgical, spatial/dimensional and project management needs within the exploration and mining industries. Complete solutions are provided through our geological, survey, metallurgical and project management services. Our expertise include mineral rights, exploration, ore body modelling, evaluation, due diligence, optimisation, competent person reports, mining geology, metallurgical consulting, process plant design and project management at all levels of the mining project life cycle. Multi commodity experience in each corner of the African continent has been gained by our team of high class professionals.

- i) We offer a return on investment for all our clients
- ii) We simplify our clients' complexities with our knowledge and experience
- iii) Our continuous progress is our clients' best solution

### 1.2) Our Vision

EARTHLAB's vision is to aid in the development, continual improvement and extraction of our Clients' Mineral Resources to make a positive economic and social impact in the country where we operate and to its people.

### 1.3) Our Mission

Our path leads to a lasting legacy.

## 2) CLIENTELE

- i) Royal Bafokeng Platinum
- ii) De Beers Consolidated Mines
- iii) Vedanta Resources plc - Zinc International
- iv) Konkola Copper Mines plc
- v) Eramet South Africa
- vi) Chiteta Mining Company Limited, Zambia
- vii) Stanhaus Mining
- viii) Caracle Creek International Consulting

## 3) TECHNICAL COMPETENCIES

- i) Mineral Rights and Statutory Compliance
- ii) Exploration Safety including Legal Appointments
- iii) Exploration Target Generation
- iv) Greenfields & Brownfields Exploration

- (1) Devise and Safely Execute Exploration Programmes successfully. These were from a mineral deposit occurrence to shaft sinking of capital intensive large mining projects.
  - (2) Logistics, geological mapping, drilling supervision, diamond core logging and sampling
  - (3) Soil Geochemical Sampling
- v) Spatial and Dimensional Surveying
  - vi) Geotechnical and Exploration Geophysics
  - vii) Specialised Geotechnical Logging
  - viii) Geological Database Management and Field Quality Assurance and Quality Control
  - ix) Geological Interpretation and development of Stratigraphic Sequence of Successions
  - x) Geological Interpolation and Structural Modelling
  - xi) Resource Estimation and Classification
  - xii) Development of Geological Standards and Procedures for the entire Exploration and Mineral Resource Value Chain.
  - xiii) Mineral Resource Management (Mining and Assay Quality Control, Grade Control and Metal Accounting)
  - xiv) Technical and Professional Report writing including Competent Persons Reports
  - xv) Specialized Studies in Exploration and Mining Projects for Open-pit and Underground Mining
- (1) Desktop studies
  - (2) Conceptual Studies
  - (3) Pre-Feasibility Studies
  - (4) Execution Projects
- xvi) Due Diligence and Audits
  - xvii) Project Management on Feasibility Studies and Business Development
  - xviii) Metallurgical Consulting and Process Plant Design including Execution

#### **4) PROFESSIONAL PERSONNEL**

##### **4.1) Deon du Plessis**

Deon du Plessis obtained a B.Sc. Honours in Geology in 1999 and completed a M.Sc. in Geology in 2008 from the University of the Free State. Deon is a registered professional natural scientist with the South African Council for Natural Scientific Professions.

As an undergraduate geology student Deon worked for Doe Run Exploration on a Mississippi Valley Type Lead-Zinc deposit where he conducted surface and decline mapping and logging of

exploration drill holes. This deposit is situated on the Bushy Park farm in the Northern Cape Province.

As a post-graduate student Deon worked for the Northern Cape Diamond Mining and Exploration Company on Diamondiferous Vaal and Orange River Gravel deposits on their open pit mining operations. Deon completed an Honours degree research project on characterising different gravel terraces using

sedimentological and geochemistry techniques. These deposits are situated down-stream of the Orange-Vaal River confluence in the Northern Cape Province. As a M.Sc. Student Deon was fully sponsored by the Coaltech 2020 research project Managed by the CSIR Miningtek. He's M.Sc. was a research project into the relationship between geological structures and dolerite intrusions in the Witbank Highveld Coalfield, South Africa. During the same period Deon worked for the CSIR Miningtek on the Task 1.1.3a Integration and Visualisation of Coaltech data and Task 2.2.1 of DEEPMINE Integration and Optimisation of Seismic techniques on Mponeng Gold Mining Shaft.

Deon officially entered the minerals exploration and mining industry in 2001. He started his career as Project Geologist with De Beers Consolidated Mines where he successfully executed an exploration programme and conducted resource modelling on lower Vaal River diamondiferous terrace deposits. Thereafter he joined De Beers' Mineral Resources Management department on the West Coast as Senior Geologist responsible for production and evaluation drilling.

In 2004 he started his career as a consulting geologist to Aquarius Platinum where he was working under the company's Competent Person and received one-on-one training in geological modelling, resource to reserve reconciliation and annual report writing of the publicised mineral resources and reserves for Aquarius South Africa. In January 2006 he joined Caracle Creek International Consulting as Project Geologist devising and managing exploration programmes and compiled structural and resource models for various deposits including Witwatersrand Gold, Bushveld Chrome and Orange River diamonds. In mid-2007 he was dedicated full time to Anglo American Platinum as Project Geologist responsible for the Styldrift Project Feasibility Study of the Bafokeng Rasimone Platinum Mine JV (BRPM JV). Deon joined Prysm Resources as an Associate Consulting Geologist in June 2008. Since 2010 until 2014 Deon became the Competent Person for Royal Bafokeng Platinum signing-off their publicised Mineral Resources underlying the BRPM JV. Today he has over 10 years of experience including the exploratory development, open cast and underground mining of multiple mineral commodities (base metals, coal, diamonds, platinum, gold and chrome).

For the past 10 (ten) years Deon has been enrolled in an international business and leadership development and training programme where he learnt most importantly the art of sales. As part of this programme he was exposed to many public speaking events and studied more than 100 recommended business development and leadership training books.

Deon is the founder of EARTHLAB Technical Division (Pty) Ltd., a consultancy established in July 2012 incorporated according to the laws of South Africa. Deon is the CEO and Chairman of EARTHLAB Technical Division.

Deon is also the founder of EARTHLAB DRC SARL, a consultancy established in November 2014 incorporated according to the laws (OHADA System) of the Democratic Republic of the Congo. Deon is the CEO and Finance Manager of EARTHLAB DRC.

#### **4.2) Charl Zietsman**

Charl Zietsman obtained his B.Sc. Honours degree in Geology in 2005 from the University of the Free State, his diploma in Geographical Information Systems in 2009 from UNISA and his

Graduate Diploma in Engineering concerning Mineral Evaluation in 2012 from the University of the Witwatersrand. Charl is a registered professional candidate natural scientist with the South African Council for Natural Scientific Professions.

He has worked in the minerals exploration industry since 2006. He started his career as an exploration geologist doing Greenfields exploration in Tanzania and Namibia as part of a consultancy team investigating the possibilities of gold occurrences within an epithermal and hydrothermal environment.

Charl joined Wesizwe Platinum in 2008 and was part of the exploration team that completed Wesizwe's Frischgewaagd flagship exploration programme one year in advance. In 2011 Charl joined Prysm

Resources as the exploration manager, managing the exploration programme for Royal Bafokeng Platinum. In 2011, a 70 000m diamond core drill programme was successfully completed.

Through his career Charl has achieved over and over by delivering a high quality and high standard exploration product. Charl is the co-founder and Operations Director of EARTHLAB Technical Division.

#### **4.3) Thinus Jordaan**

Dr. Jordaan graduated with a B.Sc. Honours in Geology in 1976 and in 1990 with a Ph.D. in Geology all degrees from the University of the Free State. As a sedimentologist Thinus has specialised in basin analysis, and stratiform and sediment hosted mineral deposits.

He started his career with Anglo American Corporation where he conducted gold and base metal exploration in Turkey and West Africa. He had a key role in the resource definition drilling of the Sodiola Hill gold deposit. Later on he was conducting exploration on diamonds and heavy mineral sand deposits on the West Coast of Southern Africa and did target generation and project management on the Zambia Copper Belt. Thinus belongs to professional institutes including the Geological Societies of South Africa and Namibia, South African Council for Professional Natural Scientists, International Association of Sedimentologists and the Society of Economic Geologists. Thinus has gained more than 35 years of experience in mining and exploration projects mostly in southern Africa, West Africa and Middle East. Specialising in placer and palaeo-placer mineralisation mostly gold and nuclear fuels, and the energy sector in general. Accomplished in setting up and managing remote operations, dealing with local authorities, and assuring compliance of such operations to relevant statutory and technical requirements. Recently Thinus worked for AMER as a Consulting Geologist designing prospecting work programmes, budgets, mineral resource assessments, due diligence studies and logistics programmes. His project assessments and report writing included prospecting permits on bauxite, gold and diamonds.

Prior to working for AMER, Dr. Thinus held the position of Technical Director for Cominco Resources in the Republic of Congo coordinating resource evaluation of the Hinda phosphate deposit.

Thinus has executed the second phase of the Springfield Coal diamond drilling supervision project for Earthlab. The Springfield Coal Project is held by Konkola Copper Mines plc of Vedanta Resources located in southern Zambia. Thinus forms part of the team updating and re-writing the production, exploration and project geology and mineral resource Standards & Procedures for Royal Bafokeng Platinum.

#### **4.4) Danie Pretorius**

Danie holds BSc (Honours) Geology as well as the South African Graduate Diploma for Engineers where he chose Geostatistics as one of his courses. He has close to 30 years of

experience in Geology predominantly in the gold sector but also including uranium, nickel, silver, copper and coal. Danie's experience includes both production and exploration geology including extensive experience in target generation, Feasibility Studies as well as resource and reserve reporting and evaluations. Danie began his career with Gold Fields where he progressed to Ore Resource Specialist before choosing to gain international experience in the Philippines before moving back to Gold Fields. He left Gold Fields to join Aflase Gold and Uranium and stayed with them during the transition to Uranium One. He left Uranium One to join Brinkley Mining as Exploration Manager and was then approached by the former Chief Operating Officer of Aflase Gold & Uranium to join him at Holgoun Energy, a new coal and uranium exploration group, where he held the position of Group Geologist. Due to financial difficulties during the down turn in the world economy, Danie took the opportunity when approached by Cizinani Recruitment Agency to assist First Uranium as Manager Geology and Valuation in consolidating and converting old historical data into current indicative electronic models for both production and brown fields exploration.

Completing his contract with First Uranium Danie took the opportunity to do consulting work as a geologist. He has experience in desk top studies and processing/modeling of drill hole data in various

African countries; Liberia iron ore, Zimbabwe gold and base metals and Tanzania gold and uranium deposits. He was approached by Ralph Bagahrati during August 2011 to join AMER a Dubai based company with prospecting rights in various countries as a consultant. Most of the work for AMER is done in the Republic of Guinea on gold, bauxite iron ore and base metals involving desk top studies, drilling programs and 3D modeling of ore bodies.

After completing his contract with AMER during September 2012 he did a six month contract starting November 2012 for an Australian investor in Zambia. The contract entailed finding 1.5 million tons of manganese at a quality above 40% on their limited prospecting license areas. March 2013 he completed his contract.

Since March 2013 Danie is involved with verifying various metals and diamonds in African countries for potential international buyers. Since joining Earthlab Danie has been instrumental in the developing phase of the Shantumbu Copper Exploration project in the Lusaka district of Zambia for Chiteta Mining Company from Bangalore, India.

#### **4.5) Khumbula Mangena**

Khumbula Mangena obtained a B.Sc. General with a Geology major in 1999 from the University of Zimbabwe. Khumbula is an active member of the Geological Society of South Africa.

He has worked in the mining and minerals exploration industry since 2000. He started his career as Mine Geologist on the Zimbabwe Mining Development Co-operation's Sabi Gold mine. After several years of gaining production and ore body evaluation experience Khumbula had been promoted to Resource Geologist for the Sabi Gold Mine. Subsequently he gained experience in prospecting for gold and chrome in the Belingwe Greenstone Belt and the Great Dyke.

In 2007 he joined Herod Consulting responsible for lithological, geotechnical core logging and database management. During this time he was involved in underground mining and sonic drilling projects and spent eight months on the Modikwa Platinum Mine in the eastern Bushveld Complex. He has also worked for Caracle Creek International Consulting in a similar capacity in 2010 and joined Prysm Resources in January 2011. Khumbula was crucial in the development of Royal Bafokeng Platinum's Brownfields and Greenfields exploration programmes. Khumbula has joined the exploration team in the developing phases of the Shantumbu Copper Exploration Project for Chiteta Mining Company as field geologist conducting surface mapping and supervising drill rigs.

Khumbula has always been highly regarded by his peers and his superiors for his incredible knowledge base and his dedication to the geoscience profession.

#### **4.6) Buyi Mkwanzazi**

Buyi Mkwanzazi obtained her B.Sc. Geological Science degree at the University of KwaZulu-Natal.

She completed her studies in 2006. She moved to Rustenburg and worked for Herold Consulting as a logging geologist from 2008 to 2010 concerning lithological, structural, alteration, geotechnical logging and conducted sampling of the mineralisation envelopes. In 2011 she joined Prysm Resources also as the logging geologist and got a promotion to be a senior logging geologist in 2012.

She has done a significant amount of logging on diamond drilled core from the western Bushveld Complex and had been exposed to different reef facies concerning the Merensky and UG2 reefs. Buyi's detail logging experience has added significant value to the delineation of the Merensky and UG2 facies and domains for incorporation into the Pre-Feasibility Study resource models of Royal Bafokeng Platinum. Buyi has been involved in the developing of the new geotechnical logging standard for Royal Bafokeng Platinum. Buyi also spent time at the Gamsberg project orientated core logging project of Vedanta Zinc International.

Platinum & Base Metals has been the only commodity types she has been exposed to, but she is highly regarded by i.e. Royal Bafokeng for the quality of work delivered and could easily adapt to other mineral commodities. She is known for her passion and enthusiasm and she is a well organised person.

#### **4.7) Phillip Seokame**

Phillip Seokame obtained his B Sc. Degree in Mining Geology from the University of the Witwatersrand 2008 and his B.Sc. Honours degree in Exploration Geology from the University of the Western Cape in 2010.

Phillip started his career with the Department of Mineral Resources concerning Mine Economics. His main focus was the adjudication of Mining and Prospecting Right applications and compliance inspections and relevant report writing. He joined Bastillion Resources in a consulting capacity where he was involved in high level target generation, evaluation and geological research projects.

During his time at Bastillion he also conducted diamond drilled core logging and sampling. He has experience in surface geological mapping, sampling and drill crew supervision. Phillip also paid a visit to Kenya where he was exposed to prospecting for Rare Earth Elements.

Phillip is a keen learner and has a passion for Brownfields exploration projects. Phillip has done detailed geotechnical logging for De Beers and Vedanta Zinc International on orientated diamond core drilled holes.

Phillip was part of the field team executing the Springfield Coal Project of Konkola Copper Mines plc in southern Zambia and was instrumental in the early stages of interpreting the coal seams for correlation purposes.

#### **5) PROFESSIONAL ACQUAINTANCES'**

- i) Dr. John Hancox (Sedimentologist and Competent Person)
- ii) Ms. Sheridan Lambert (Geostatistical Analyst)
- iii) Dr. Johann Claassens (Geometallurgy and Extractive Metallurgy)
- iv) Mr. Ian Hunt (Geostatistician and Hydrogeologist)
- v) Mr. Martin Stander (Senior Mining Engineer)
- vi) Mr. Stephen Redford (Mineral Economist / Mining Engineer)
- vii) Baba Group SAS (Exploration Drilling)
- viii) Quiklog Geophysics and Gap Geophysics (Exploration Geophysics)