

CURRICULUM VITAE (CV)



Professional Expertise	Geology, Mining and Geotechnical Engineering specialist
Name of Expert:	Eng. Wilson Shamwela Moono (Fellow – EIZ)
Date of Birth:	17 October 1959, Lusaka
Country of Citizenship/Residence	Zambian

Education:

M. Sc. Engineering Geology and Rock Mechanics/Geotechnical, Newcastle UK -1991

B. Min. Sc. Geology University of Zambia - 1985

Employment record relevant to the assignment:

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
2015 todate	Eng. Wilson Moono – associates Consultants Moka Environmental and Geotechnical Consultants African mining Consultants	Zambia	Principal and Managing Consultant for Eng. Wilson associate and Moka Geotechnical and Environmental consultants. Associate of African Mining Consultants
2003-2015	Copperbelt University(Positions held): • Lecturer • Head of Mining Engineering Department • Acting Dean – school of Mines and Mineral sciences	Zambia	Lecturer in Rock Mechanics, Soil Mechanics, Engineering Geology and Environmental Geology, ground control instrumentation, Numerical modeling in mining engineering
2001 to 2003	Mopani Copper Mines plc (Positions held): • Senior Rock Mechanics Engineer	Zambia	Mine scheduling, rock support excavation design and costing, production stope stability monitoring and dilution

	Head of Mine technical department Mufulira mine site		control. Subsidence monitoring and dumps stability monitoring and environmental protection.
1985 - 2000	ZCCM Limited – Mufulira Division (Positions held): - Exploration and Mining Geologist - Geotechnical Engineer - Rock Mechanics Engineer - Chief Geotechnical Engineer - Senior Rock Mechanics Engineer	Zambia	Underground geological mapping, exploration drilling, logging and core sampling. Reserve calculation Rock support design and installation. Excavation design and stability monitoring

Membership in Professional Associations:

- Fellow of the Engineering Institution of Zambia (Fellow - EIZ)
- Registered Engineer – Engineers’ Registration Board (ERB)
- Member, International Society for Rock Mechanics

Language Skills (indicate only languages in which you can work): English

PREVIOUS ASSIGNMENTS

Detailed Tasks Assigned on Consultant’s Team of Experts:	Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks
Geotechnical and Environmental Assessment of the new Musakashi tailings dam	Client: NFCA – Chambishi Mine, Kalulushi Date: 10 th January, 2018 Main Activities - Geotechnical assessment of the stability of the dam wall - Design review - Risk assessment of the dam wall - Environmental impact in case of failure
Stability assessment of the 173m level Ore Drive at Ramp1	Client: Lubambe Mine, Chililabombwe Date: 30 th October, 2017 Main Activities: - Assess the stability of the Ore Drive - Identify the causes - Model the drive to assess failure possibility - Cost evaluation - Make recommendations on solutions
Mining blasting impact assessment	Client – RUIDA INVESTMENT - Chifumpa Mine, Kasempa Date: 26 – 30 th October 2017 Main Activities

	• Assessment of damage to houses alleged to have been caused by mine blasting • Carry out trial blasting test and record vibrations and noise in the affected village • Soil testing for houses construction material
Environmental monitoring for SEOB – Chambishi mine	Client – NFCA Chambishi mine. New mine development project for China nonferrous Mining and Construction Company. Date: June 2017 to July 2018 Main Activities (One year contract) to monitor: • Noise related to underground mining blasting operations • Domestic and exploration Borehole ground water levels • Domestic Borehole water quality • Blasting related ground vibrations and surface infrastructure damage
Geotechnical assessment of the proposed solar site: Chipata west	Client – IDC sub contract – World Bank Funded solar projects in Zambia. Chief Geotechnical Engineer under African Mining Consultants: Date: August 2017 Main activities • Geological assessment, • Trial pit sighting and geotechnical logging • Soil testing, assessment • Evaluation of engineering parameters • Soil and rock conditions assessment
Geotechnical assessment of the proposed solar site: Mumbwa, Mufulira and Chisamba	Client – IDC sub contract – World Bank Funded solar projects in Zambia. Chief Geotechnical Engineer under African Mining Consultants Date: April to June 2017 Main activities • Geological assessment, • Trial pit sighting and geotechnical logging • Soil testing, assessment • Evaluation of engineering parameters • Soil and rock conditions assessment
Geotechnical assessment of the South East orebody project for NFCA – Chambishi mine	Client – NFCA Chambishi mine. New mine development project for China nonferrous Mining and Construction Company Date: May 2017 Main activities • Geotechnical core logging and rock quality assessment • Underground mapping • Rock strength testing • Geotechnical analysis including numerical modeling • Geological mapping
Geotechnical assessment of mining ore drive at Lubambe mine	Client – Lubambe Mine – Evaluation of geotechnical condition and effectiveness of the rock support in the mining ore drives Date: April 2017 Main activities • Geotechnical core logging and rock quality assessment • Underground mapping • Rock strength testing • Geotechnical analysis including numerical modeling • underground geological mapping

Stability analysis for tailings dump	Client: Bolo Mining Investments Limited Task: Geotechnical assessment of the tailings dump power project Location: Chambishi Mine area, Kalulushi, Zambia Date: 28th October, 2016 Main activities: • Geotechnical assessment of the stability of the tailings dump. • Geological and Geotechnical field assessment • Identification of aquifer zones and general surface and underground water drainage system around the tailings dump. • Environmental assessment of the tailings dump impact on the surrounding environment • Report compilations and recommendations
Geotechnical and Geological Consultancy – solar power Project – Lusaka (Sub Consultant to knight P’iesoid consultants)	Client: Industrial Development Corporation (IDC) Task: Geological and hydrological studies – EIA for IDC solar power project Location: MFEZ in Lusaka Date: April 2016. Major task – geological assessment for the project. Main activities: • Geological field assessment • Identification of aquifer zones and general surface and underground water drainage system. • Review of previous consultants reports • Geological / geotechnical assessment and evaluation of the area • Report compilations and recommendations
Project Reviewer for the Resettlement Action Plan closure report. Lubambe Copper Mine in Chililabombwe	Client: Lubambe Mine Task: Evaluate the success and failures of the RAP for Lubambe Mine. Review the project performance and make recommendation on the outcomes and improvements where necessary to lead to full closure of RAP Location: Lubambe Mine – Chililabombwe Date: February 2016 Main activities: • Planning and scheduling of the review • Review of all technical data as compiled by previous consultants and mine reports • Conducting Interviews for both mine management and relocatees • Final assessment and report writing and presentation
DUMPS ISPECTIONS	Clients: 1. Luanshya Copper Mines, 2012, 2014 and 2016. Luanshya 2. Sino Metals Leach (Z) limited, 2005 to 2015. Chambishi, Kalulushi 3. NFCA, Chambishi mine, dumps inspections from 2005 to 2014. Chambishi, Kalulushi Main activities: • Physical inspections of the dumps on stability related issues • Assessment of dumps drainage • Pollution assessment for both ground water and surface runoff • Pollution assessment of fugitive dust • Environmental assessment of dumps in general to the surrounding areas • Assessment of legal compliances • Assessment of cost liabilities and progressive rehabilitation • Report compilations
	Client: ZESCO

GENERAL CONSULTANCIES (Sub Consultant to Scott Wilson Consultants)	Name of assignment or project: Detailed geotechnical investigation of the Lunzua Small Hydropower Station – Mbala Year: September 2010 Location: Mbala, Zambia Main project features: Detailed geotechnical investigation Positions held: Geotechnical Engineer / Geologist Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to applicable BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
GENERAL CONSULTANCIES (Sub Consultant to Scott Wilson Consultants)	Client: ZESCO Name of assignment or project: Geotechnical review of the Lusiwasi Small Hydropower station Year: August 2010 Location: Serenje Main project features: Positions held: Geotechnical Engineer Activities performed: • Desk study of previous geotechnical reports. • Site visit inspection works. • Preparation of field reports. • Preparation of final geotechnical report.
GENERAL CONSULTANCIES (Sub Consultant to Scott Wilson Consultants) Geotechnical assessment of the Lunzua Small Hydropower Station Expansion project	Client: ZESCO Name of assignment or project: Geotechnical investigation of the Lunzua Small Hydropower Station Year: October 2009 Location: Mbala Main project features: Geotechnical investigation Positions held: Geotechnical Engineer / Geologist Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to applicable BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
NFCA South East Orebody	Client: China Non Ferrous Metals (NFCA – Chambishi mine) Year: Sept. 2010 Location: Chambishi mine Main Project Features: EIA for South East Copper mine project Activities Performed: • Geological and geotechnical assessment • Hydrological studies

Geotechnical	Client: MOPANI COPPER MINES Plc Name of assignment or project: Geotechnical investigation of the New Shaft foundation site at Mopani SOB, Soil tests and Geotechnical logging Year: September 2010 Location: Kitwe Main project features: Positions held: Geotechnical Engineer Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to applicable BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
Geotechnical consultant – Lead Consultant for Copperbelt University	Client: LUBAMBE MINE Name of assignment or project: Uniaxial strength testing of Lubambe Mine Rock Core Drill samples Year: September 2012 Location: Chililabombwe Main project features: Uniaxial strength testing Activities performed: • Undertaking uniaxial strength tests. • Collation of raw laboratory data. • Data processing and interpretation of results. • Report compilation.
Geotechnical assessment of the Lisiwasi hydro power upgrade project	Client: ZESCO Name of assignment or project: Geotechnical assessment of Rock cores for Lisiwasi Hydropower station upgrade project Year: October 2011 Location: Kitwe Main project features: Geotechnical Assessment of rock cores Positions held: Geotechnical Engineer Activities performed: • Core handling and documentation. • Core sampling and preservation. • Core logging. • Compilation of report.
Core Logging and rock strength testing for Limestone Quarry	Client: MOPANI MINE Task: Geotechnical tests for the Lusaka limestone Year: December 2012 Location: Lusaka Main project features:

	Positions held: Geotechnical Engineer Activities performed: • Preparation of samples for testing. • Analysis of test results. • Compilation of report.
Rock Testing and Logging	Client: CHIBULUMA MINE Task: Geotechnical assessment of Rock cores Year: November 2011 Location: Copperbelt Laboratory, Kitwe Main project features: Positions held: Geotechnical Engineer Activities performed: • Core handling and documentation. • Core sampling preservation. • Core logging. • Compilation of report.
Rock Testing and Logging	Client: NDOLA LIME Task: Geotechnical assessment of Rock cores for Ndola lime project Year: November 2011 Location: Wade Adams Laboratory Main project features: Geotechnical Assessment Positions held: Geotechnical Engineer Activities performed: • Core handling and documentation. • Core sampling preservation. • Core logging. • Compilation of report.
Geotechnical	Client: GRINERKA LIMITED Task: Geotechnical assessment for Rock core at for Grinerka Exploration project Year: October 2011 Location: Wade Adams Laboratory, Kitwe Main project features: Geotechnical assessment Positions held: Geotechnical Engineer / Geologist Activities performed: • Core handling and documentation. • Core sampling preservation. • Core logging. • Compilation of report.
Geotechnical	Name of assignment or project: Geotechnical investigations of the C7 conveyor belt foundation site, Soil testing and logging – KCM, Konkola mine Year: August 2009

	Location: Konkola Mine, Chililabombwe Client: Konkola Copper Mines Plc Main project features: Geotechnical investigations Positions held: Geotechnical Engineer Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to applicable BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
Geotechnical	Client: GOVERNMENT OF THE REPUBLIC OF ZAMBIA Task: Geotechnical investigation of the Mufuchani Bridge site at Kafue River – with JKL Associates Year: May 2009 Location: Kitwe Main project features: Geotechnical Investigations Positions held: Geotechnical Engineer Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to applicable BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
Geotechnical	Client: ZCCM-IH Task: Geotechnical investigation of Old Zambia Railways compound in Mufulira Year: February 2009 Location: Mufulira Main project features: Geotechnical investigations Positions held: Geotechnical Engineer Activities performed: • General planning for required investigations including influence zoning, methods of investigation, extent of investigations in terms of depth. • Ground investigations including excavations, logging, sampling, field tests, laboratory testing (soils classification, composition, density tests, strength tests (CBR, triaxial, etc). All tests conforming to BS Standards. • Preparation of field reports, final borehole logs and interpretation of data from the investigation for appropriate inclusion into final reports.
Soils analysis	Client: KONKOLA COPPER MINES PLC Task: Soil testing and analysis at old Bancroft Power Generation set Foundation site. KCM Deep mining project

	Year: November 2008 Location: Konkola Copper Mine Main project features: Soil testing and analysis Positions held: Geotechnical Engineer Activities performed: Soil testing, analysis and report writing.
Environmental	Client: FIRST QUANTUM MINERALS LIMITED Task: Environmental Protection Fund (EPF) review for FQML – Bwana Mkubwa mine site - Statutory requirement Year: April 2009 Location: Bwana Mkubwa Mine, Ndola Main project features: Review of Environmental Management Plans (EMPs), Environmental Monitoring data, etc. Positions held: EPF Auditor Activities performed: Review of relevant environmental documentation (EMPs, EIS, etc.), Site visits, interviews with key personnel and preparation of EPF Report.
Environmental	Client: FIRST QUANTUM MINERALS LIMITED Task: Environmental Impact Statement (EIS) update for FQML – Bwana Mkubwa mine site - Statutory requirement Year: March 2009 Location: Bwana Mkubwa Mine Site, Ndola Main project features: Updating EIS Positions held: Consultant Activities performed: Review of relevant environmental documentation (EMPs, EIS, etc.), Site visits, and interviews with key personnel and compilation of an updated EIS.
Environmental	Client: KONKOLA COPPER MINES Task: Review of the Environmental Management Plans for KCM (with Mwata Consultants) Year: April 2008 Location: KCM Integrated Business Units (IBU) Main project features: Review of EMPs Positions held: Mining and Geological Consultant Activities performed: Review of relevant environmental documentation (EMPs, EIS, etc.), Site visits, interviews with key personnel and compilation of updated EMPs for KCM mine sites.

TECHNICAL REPORTS :

ENVIRONMENTAL STUDIES AND ASSESSMENT CONSULTANCIES

1. Environmental Protection Fund (EPF) for Non-Ferrous China Africa (NFCA) Independent Audit, 2007

2. Environmental Protection Fund (EPF) for Sino-Metals Leach (Z) Independent Audit, 2007
3. Environmental Protection Fund (EPF) for Mopani Mines Mufulira site Independent Audit, 008
4. Final Environmental Management Plan review, for KCM, 2008 in conjunction with Mwata Consultants.
5. Environmental Impact Statement Upgrading, for Bwana Mkubwa Mine Ltd 2008
6. Environmental Protection Fund (EPF) for Bwana Mkubwa Mine Ltd, Independent Audit, 2009
7. Environmental Project Brief for CHOVU-CHOVU filling station Luanshya, 2009
8. Environmental Management Plans for Golden Lay Ltd, Luanshya, 2010
9. Environmental Impact Assessment for the Mwekera Copper Project for Microlink Ltd, Ndola, 2010
10. Environmental Project Brief for Olympic Milling Ltd, Ndola 2010
11. Environmental Protection Fund for Bolo Mining, Independent Audit, 2010
12. Environmental Impact Assessment for the Kakoso Leach Project for Kakoso Metals Ltd, 2011
13. Environmental Impact Assessment for the South East Orebody Project for NFCA Mining Plc, 2011
14. Environmental Project Brief for Barlow World, Kitwe 2011
15. Environmental Project Brief for Bell Equipment, Kitwe 2012
16. Environmental Project Brief for Copper Fields, Kitwe 2012
17. Environmental Project Brief for African Energy Resources, Sinazongwe Project 2012
18. Socio-Economic Baseline Survey for Lumwana Property Development Company, Lumwana 2013
19. Environmental Impact Assessment for Mwambashi Copper Project for Sino Metals Leach (Z) Ltd 2013
20. Environmental Protection Fund (EPF) for Sino-Metals Leach (Z) Independent Audit, 2014
21. Bio-monitoring of the Mufulira Stream for pollution indicators for Mopani Copper Mines 2014
22. Environmental Impact Assessment for Sino Metals (Z) Leach Conveyor belt system – 10km long - 2015
23. RAP Closure Assessment for Lubambe mine, 2016
24. EPF inspection for Bolo Mining 2016

GEOTECHNICAL, GEOLOGICAL AND MINING CONSULTANCY

1. Soil Testing at KCM Konkola power generation site foundation –2008 (Rycon invite)
2. Statutory inspection of tailings and rock dumps at NFCA – 2009
3. Soil testing and geotechnical assessment at New Levy Junction shopping complex, JKL Associates - 2009
4. Soil testing at old Zambia Railways compound site in Mufulira –with Worley Parsons, UK, 2009
5. Statutory inspection of tailings and rock dumps at NFCA - 2007
6. A study of the Uranium tailings environmental impact and design of disposal remediation with WISUTEC of Germany – 2007
7. Assessment of running ground at Nchanga underground mine and support design in conjunction with Landings Investments Limited - 2007
8. Re-design of No 2 Tailings dump at Sino Metals Leach (z) Limited – Chambeshi mine, 2006

9. Soil testing and geotechnical assessment at New Smelter expansion project in Mufulira, conjunction with JKL Associates - 2008
10. Statutory inspection and stability assessment of all tailings, rock and overburden dumps since 2005 to 2016 at Sino Metals Leach (Z) Ltd.
12. Modeling ground water flow patterns in the Chambeshi Mine area (Sino Metals) 2013
13. Asbestos identification for Mopani Copper Mines 2013
14. Statutory inspection of tailings and rock dumps at NFCA – 2014
15. Statutory inspection of tailings and rock dumps at CNMC – 2014 & 2016
16. Geotechnical core logging for Chifupa Copper project – Chibuluma mine 2014
17. Geotechnical core logging for Lusaka West Limestone – Mopani mine – 2014
18. Assessment of effectiveness of Rock support at Lubambe mine - 2017
19. Geotechnical assessment of the South East Orebody project at NFRCA - 2017

PUBLICATIONS :

1. Hydrogeological conditions at Chambishi Mine : international conférences on Geology, mining and environment, Livinstone, Zambia, 11 – 13th July 2017 (WS Moono, Jagn Dong)
2. Achieving sustainable waste management practices through capacity building of stakeholder Engagement, the case of Zambian Mineral Industry. American Scientific Research Journal for Engineering, Technology and Sciences, Aug. 2016 (W S Moono, M Songolo and W M Mwenya)
3. An Overview of Falls of Ground in Zambian Mines – National Conference on Health and Safety ; Chamber of Mines – 2015, Lusaka
4. Study of water flow rates in the soil around Sino Metals Tailings dumps (pollution control) – Chambishi mine, Zambia. Conference on Health and Safety ; Chamber of Mines – 2015, Lusaka
5. A Glimpse into the History of Mining in Zambia – 80years on ; Celebrating 50 years of the Copperbelt Musuem Conference/workshop, Ndola, 2012

ACADEMIC PROJECT SUPERVIONS AND ARTICLE EDITING :

- 1) Supervised 47 fifth year final and 02 Masters thesis projects since 2005
- 2) January 2008, edited an article for UNZA's Science Journal by Prof. Whitaker entitled "New Method of Estimating Surface Subsidence in Mining"
- 3) Article editor for "Earth Science Journal" for the Geological Society of Zambia, 1987 to 2010

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REFEREES

1. **Mwiya Songolo** : Head of Mining Engineering Department, Copperbelt University, Kitwe, Zambia. Cell :0977485717
2. **Professor Kenneth, K Maseka** : Department of Chemistry, Copperbelt University, Kitwe, Zambia. Cell : 0977807803
3. **Eng. Patrick Kampengele** : Knight Piesoid Consulting Engineers, Kitwe, Zambia. Cell : 0966909480



Wilson Moono