



## Company Profile

Shango Solutions (hereafter referred to as Shango), registered as Dunrose Trading 186 (Pty) Ltd and established in April 2004, provides a diverse range of services to the mineral and mining sectors. Currently, 27 permanent multi-disciplinary employees and about 24 nationally and internationally recognised affiliates are employed. The company has a track record of successful project management and leadership, including complex multi-disciplinary assignments.

Consultancy activities straddle the entire mining value chain from exploration to beneficiation (Figure 1), thereby providing the client with complete solutions. Activities are performed in multi-disciplinary teams. Areas of specialisation include target generation, exploration, geodatabase compilation and management, geological modelling, resource estimation, mineral asset valuations, due diligences, desktop project reviews and technical reporting. The company services the majority of the major mining houses, but also junior exploration companies, mineral resource investment firms, government institutions and departments and the artisanal and small-scale mining sectors. Shango Solutions collaborates closely with local and international experts in the mining and corporate industries. This, in conjunction with our affiliations with academic and parastatal institutions, ensures provision of the most innovative and appropriate solutions to clients.

Shango has completed in excess of 400 projects, of which the majority were located in Africa (Appendix 1). The company consequently has extensive ground-based mining related experience throughout Africa, especially southern, eastern and north-west African states. Our extensive knowledge of the African minerals industry has attracted some of the largest names in mineral extraction to our client base. The project portfolio highlights our cross-sectorial approach and capability.

Shango incorporates in excess of 500 years of Africa-based mining and exploration experience. This includes, but is not limited to, gold, platinum, rare earth elements, base metals, uranium, coal, natural gas, ferrochrome, aggregate, heavy mineral sands and diamonds. Over the last decades, we have established comprehensive 2D Geographic Information Systems (GIS) databases throughout Africa, which consider geological and geophysical data, mineral occurrences, defunct and existing mines, infrastructure and mining statistics.

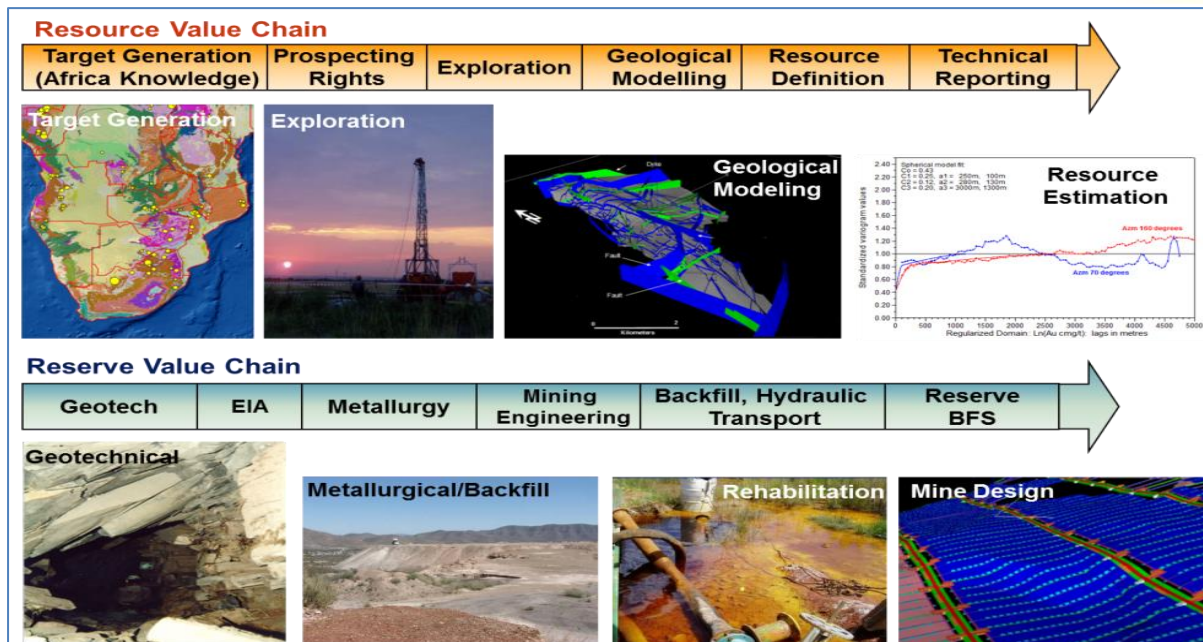


Figure 1: Resource and Reserve Value Chains.

Shango Solutions main attributes are as follows:

- Decades of mining expertise, from surface to deep level
- Established track record
- Management experience
- Aspiration to challenges
- Multi-commodity experience
- Striving towards technical excellence
- Established networks facilitating multi-disciplinary solutions
- Committed to transformation and sustainable development
- Customer focused

Shango has not performed formal marketing for the past eleven years due to technical excellence, relying primarily on word of mouth, our reputation in the industry and a strong network. The company adopts a mean and lean structure with no fulltime finance and human



resources departments. The current directors Dr Jochen Schweitzer (co-founding member) and Rob Handley, together with a very competent management team assist with the running of the company.

Our student mentoring programme focusses on grooming promising students with a long term aim at permanent employment. Graduate students employed at Shango are encouraged to further studies. Shango provides financial support to these students enabling them to complete honours, masters and doctorate degrees. Shango has a strong community upliftment ethos and contributes to a number of charity initiatives such as Humanity at Last.



## Appendix 1: Previous Assignments

Region	Project Type	No. of Projects	Countries	Resources	Project Activities	Examples of Clients
South Africa	Mining Geology and Related Activities	91	South Africa	Chrome, Gold, Platinum, Rare Earth Elements	Geological Modelling/Prediction, Reserve Definition, Competent Persons Report, Processing and Backfill Design, Pre-Feasibility and Feasibility Studies, Mine Optimisation, Data Capture and Geodatabase Management, Risk Assessments	Gold1, Harmony, Gold Fields, AngloGold Ashanti, AngloPlatinum, DCM Chrome
	Exploration	80	South Africa	Chrome, Coal, Gold, Manganise, Natural Gas, Base Metals, Platinum Group Metals, Uranium, Rare Earth Elements, Slate, Titanium, Dimension Stone	Target Generation, Exploration Management, Prospecting Right Applications, Geochemical Analyses and Modelling, Data Capture and Geodatabase Management, Geological Modelling, Technical Reporting, Mineral Asset Valuation, Resource Estimation	Gold1, Barrick, BHP Billiton, Rio Tinto, Ivanplats
	Engineering	102	South Africa	Gold, Platinum Group Metals, Chrome, Uranium, Coal, Manganese, Iron Ore, Base Metals, Antimony, Phosphate, Bauxite, Rare Earth Elements	Process and Surface Infrastructure, Pre-Feasibility and Feasibility Studies, Conceptual and Scoping Studies, Mining Cost Estimations, Definition of Labour Plan, Environmental Risk Audits for Mine Closures, Design of Hydropower Systems, In-Mine Water Reticulation and Pumping, Power Reticulation, Surface and Underground Infrastructure, Ventilation Design, Mechanical and Electrical Design and Implementation, Overland Pipeline and Pumpstations, Backfill Design, Risk Assessment, Mine Safety Engineering and Occupational Health Management, Financial Assessments, Plant Audits and Designs, Environmental Audits, Defintion of Mitigation Processes	Aflease, Gold1, AngloGold Ashanti, Harmony, Anglo Platinum, Gold Fields, Burnstone, West Wits, Meteorex, Lonmin, Boynton, African Rainbow Minerals, ABSA Bank
	Environmental	12	South Africa	Natural Water Resources	Dewatering, Water Sampling, Acid Mine Drainage Modelling, Environmental Impact Assessments, Environmental Management Program Reports, Water Monitoring	South African Council for Geosciences, Department of Mineral Resources, Aurecon, Aflease, Gold1



Region	Project Type	No. of Projects	Countries	Resources	Project Activities	Examples of Clients
Africa	Mining Geology and Related Activities	7	Botswana, Congo, Kenya, Mali, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	Copper, Gold, Gemstones	Backfill Studies and Design, Due Diligence and Auditing, Geological Modelling	Meteorex, Konkola, Indarama Mine
	Exploration	9	Botswana, Congo, Kenya, Mali, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe, Liberia, Several Desktop Studies Considering the Entire African Continent	Coal, Chrome, Copper, Gold, Iron Ore, Platinum, Uranium	Target Generation, Exploration Management, Geochemical Analyses and Modelling, Data Capture and Geodatabase Management, Technical Reporting, Mineral Asset Valuation, Resource Estimation, Geological Modelling, Remote Sensing	Aflease, Atomic Resources, Congo Gold, West African Synergies, Rockridge
	Engineering	67	Democratic Republic of Congo, Zimbabwe, Ghana, Namibia, Tanzania, Botswana, Mozambique, Papua New Guinea, Liberia, Malawi, Mali, Zambia	Gold, Platinum Group Metals, Chrome, Uranium, Coal, Manganese, Iron Ore, Base Metals, Antimony, Phosphate, Bauxite, Rare Earth Elements	Process and Surface Infrastructure, Pre-Feasibility and Feasibility Studies, Conceptual and Scoping Studies, Mining Cost Estimations, Definition of Labour Plan, Environmental Risk Audits for Mine Closures, Design of Hydropower Systems, In-Mine Water Reticulation and Pumping, Power Reticulation, Surface and Underground Infrastructure, Ventilation Design, Mechanical and Electrical Design and Implementation, Overland Pipeline and Pumpstations, Backfill Design, Risk Assessment, Mine Safety Engineering and Occupational Health Management, Financial Assessments, Plant Audits and Designs, Environmental Audits, Definition of Mitigation Processes	DRC Copper, Great Lakes Minerals, Meteorex, Rio Tinto, African Nickle, First Quantum Minerals, Botswana Ash, Golden Star, Barrick, Grafiri/Guinea Bauxite, Mitsui, Investec, Ghana Gold
	Environmental	2	Botswana, Congo, Kenya, Mali, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	Gold, Natural Water Resources	Shaft Level Monitoring and Water Qualities	Indarama Gold Mine





Region	Project Type	No. of Projects	Countries	Resources	Project Activities	Examples of Clients
Non-African Countries	Mining Geology and Related Activities	2	Australia, Mexico	Gold, Iron Ore	Backfill Optimisation, Geological Modelling	BHP Billiton
	Exploration	9	Australia, South America, Central America, North America, Europe	Gold, Iron Ore, Uranium	Target Generation, Exploration Management, Technical Reporting	Aflease, Nullagine Exploration
	Engineering	24	Ukraine, Slovakia, Kazakstan, Tayikastan, Australia, Great Britain, Germany	Gold, Platinum Group Metals, Chrome, Uranium, Coal, Manganese, Iron Ore, Base Metals, Antimony, Phosphate, Bauxite, Rare Earth Elements	Process and Surface Infrastructure, Pre-Feasibility and Feasibility Studies, Conceptual and Scoping Studies, Mining Cost Estimations, Definition of Labour Plan, Environmental Risk Audits for Mine Closures, Design of Hydropower Systems, In-Mine Water Reticulation and Pumping, Power Reticulation, Surface and Underground Infrastructure, Ventilation Design, Mechanical and Electrical Design and Implementation, Overland Pipeline and Pumpstations, Backfill Design, Risk Assessment, Mine Safety Engineering and Occupational Health Management, Financial Assessments, Plant Audits and Designs, Environmental Audits, Defintion of Mitigation Processes	Various Banks, Ferrexpo, KRYSO, Rio Tinto, Barrick, European Union, BHP Billiton
Total Number of Projects		405				

**DECLARATION OF THE EAP INDEPENDENCE**

I, **Nangamso Zizo Siwendu**, declare that –

General declaration:

- I act as the independent environmental practitioner;
- I will perform the work relating to this tenement in an objective manner, even if this results in views and findings that are not favourable to the prospecting right holder;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental audits, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the prospecting right holder and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the tenement by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will provide the competent authority with access to all information at my disposal regarding the tenement, whether such information is favourable to the prospecting right holder or not;
- all the particulars furnished by me in this report are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.

**Disclosure of Vested Interest** (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

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 Siwendu.

Signature of the environmental assessment practitioner:

**Shango Solutions, registered as Dunrose Trading 186 (Pty) Ltd**

Name of company:

**12 March 2018**

Date:



## CURRICULUM VITAE

### NANGAMSO ZIZO SIWENDU

#### PERSONAL DATA

Address: Shango Solutions  
H.H.K. House, Cnr Ethel Road and Ruth Crescent  
Northcliff, 2195

Telephone: +27 (0)11 678 6504 (work)  
+27 (0)76 859 2686

E-mail: [zizo@shango.co.za](mailto:zizo@shango.co.za)

Fax: +27 (0)11 678 9731

Date of birth: 04 June 1983

Place of birth: Butterworth, Eastern Cape, South Africa

Marital Status: Single

#### EDUCATION

2002: Matriculated  
Victoria Girls' High School, Grahamstown

2008-2009: B. Sc. (Hons) Environmental Management





## **EMPLOYMENT HISTORY**

November 2010 - October 2016:	Environmental Impact Management Services (Pty) Ltd Environmental Consultant
October 2016 – Present	Shango Solutions Environmental Manager

## **RELEVANT EXPERIENCE**

### **Compliance and Enforcement Strategy**

- Development of the City of Johannesburg Waste By-Laws Compliance and Enforcement Strategy, Gauteng Province, 2015

### **Public Involvement Processes**

- Public Participation Process for Mashala Coal EIA, Waste Management and Water Use License, Mpumalanga Province, 2013
- Public Participation for PHBagale Mining Right (re-submission), Gauteng Province, 2013
- Public Participation Process for Umsinde Wind Energy Facility and associated Grid Connection EIA, Western Cape and Northern Cape Provinces, 2014
- Public Participation Process for Komsberg Wind Energy Facility and associated Grid Connection EIA, Western Cape and Northern Cape Provinces, 2015

### **Environmental Auditing**

- Development and implementation of the ISO 14000 environmental management system for Eskom Primary Energy Division, Gauteng Province, 2010
- Eskom Medupi power station bi-annual environmental compliance audits, Limpopo Province, 2011 – 2012
- Environmental audit reports and financial provision audit reports for White Rivers Exploration prospecting tenements, 2016 and 2017
- Environmental audit report and financial audit report for Mafuri Mining Construction (Pty) Ltd for the Schiel Alkaline Complex Prospecting Right, 2017
- Environmental audit report and financial audit report for West Wits Mining (Pty) Ltd for the Prospecting Right GP 10035 PR, 2017



### **Basic Assessment Processes**

- Prospecting right for African Exploration, Mining and Finance Corporation (Pty) Ltd, KwaZulu-Natal, 2011
- Basic assessment for Eros Vuyani Towers within 32m of a watercourse, KwaZulu-Natal, 2012
- Basic assessments for three 20ha sites of 15mw pv developments, North-West, 2012
- Basic assessment for the First National Bank datacentre upgrade in Randburg, Gauteng, 2015
- Prospecting right for Atoll Metal Recovery (Pty) Ltd, Gauteng, 2016
- Basic assessment for Lothlorien waste paper recycling storage facility, Gauteng, 2016

### **Environmental Impact Assessments**

- Environmental impact assessment for Transnet Overvaal tunnel, Mpumalanga, 2013
- Production right for Tetra 4 (previously known as Molopo South African Exploration), Free State, 2016
- Exploration right for Sungu Sungu Gas (Pty) Ltd, KwaZulu-Natal and Free State, 2016

### **Water Use Licenses**

- Environmental management programme and water use licenses for Kusile-Zeus to Kendal-Zeus 400kV lines, Mpumalanga, 2012
- Matimba power station integrated and waste management plan and water use license amendments, Limpopo, 2013

### **Section 24G Processes**

- Sterkfontein poultry section 24G rectification, Gauteng, 2013
- Ferrous Metal Processors section 24G rectification, Gauteng, 2014

### **SKILLS**

Software: MS Office  
Adobe Acrobat  
Google Earth



## CURRICULUM VITAE

### MMAKOENA ADELAIDE MMOLA

#### PERSONAL DATA

Address: Shango Solutions  
H.H.K. House, Cnr Ethel Road and Ruth Crescent  
Northcliff, 2195

Telephone: +27 (0)11 678 6504 (work)  
+27 (0)76 714 7937

E-mail: [mmakoena@shango.co.za](mailto:mmakoena@shango.co.za)

Fax: +27 (0)11 678 9731

Date of birth: 02 May 1994

Marital Status: Single

#### EDUCATION

2012: Matriculated  
Glen Cowie Secondary School, Glen Cowie

2013-2015: B.Sc. (Geology)  
University of the Witwatersrand

2016-2016: B.Sc. Hons. (Geochemistry)  
University of the Witwatersrand



## **EMPLOYMENT HISTORY**

January 2017 – Present                      Shango Solutions  
Geologist

## **RELEVANT EXPERIENCE**

- Environmental audit reports and financial provision audit reports for White Rivers Exploration prospecting tenements
- Compilation of Comments and Responses Reports and Financial Provision Reports for White Rivers Exploration prospecting tenements
- Compilation of Environmental Authorisation Applications for White Rivers Exploration prospecting tenements

## **SKILLS**

Software:                      MS Office  
                                        Adobe Acrobat  
                                        Google Earth  
                                        ArcGIS