

# Geological Society of Zimbabwe



## *Newsletter*

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February 2020

No. 1 of 3 of 2020



Sculptor Dominic Benhura's effective use of joint planes in the enhancement of his subjects using 'springstone' – fine-grained bronzitite - as his medium. *Photos: Lucy Broderick*

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The Geological Society of Zimbabwe, P.O. Box CY 1719, Causeway, Harare
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## Editorial

A year has passed with Nevison Chikandiwa at the helm. The Society AGM is to be held on **28<sup>th</sup> February**. We hope to see you all in attendance to receive a first-hand report back on the achievements of Nevison's Committee, to discuss issues that affect us all in our profession, and to welcome the new Committee in under the auspices of Ellah Muchemwa.

**The Venue:** Kia Ora Lodge, 60 Knightsbridge Road, Newlands, Harare

**The Time:** 17.00 hours

The AGM will be followed by dinner at which the guest speaker is  
Andrew du Toit  
and when our Annual Awards will be made.  
Cost - ZWL300.00 per head

Our Administrator, Julie Kuhn, reports a surge in our Membership between January 2019 and January 2020. Ordinary Membership rose from 87 to 144 in the period whilst the number of Associate Members increased from 16 to 23. Foreign Membership remained at 9 whilst there are 18 Honorary Members given the addition of Forbes Mugumbate and Heilke Jelsma to the ranks. These statistics auger well for the future of our Society.

Details of our June Mineral Resources Conference are presented elsewhere in this Newsletter and the Second Circular accompanies this communication. Ellah Muchemwa heads the organizing committee, and she deserves all the support we can give her to make the meeting a success. Apart from the one-day pre- and post-conference field trips to places of topical interest within easy reach of Harare, Andrew du Toit is formulating plans for a more ambitious excursion later in the year. We have much to look forward to.

Our stalwart contributors of institutional news and that of the mining industry are thanked sincerely for their continued efforts in keeping us all 'in the loop'. When taken in sequence these chronicles create a living history and a worthwhile record kept in the archives of this Newsletter, now available on our website. For this archive we must acknowledge the tenacity of Andrew du Toit. We take the opportunity to reproduce a selection of abstracts for presentations made at the 2019 Summer Symposium. The full record of these abstracts together with their Power Point presentations are also archived on our website, a further initiative of Andrew's.

*Tim Broderick*



## Chairperson's Chat

*Nevison Chikandiwa*

The 2019-2020 year is finally coming to a close. There are a lot of issues that the geology community has been discussing. Chief amongst these is the professional registration of geologists. This idea will need to be put on the agenda at the upcoming AGM for it to be taken seriously. The thrust is there, the membership is growing and I personally think the time is now!

The AGM is a platform where issues to do with the Society are discussed, debated upon and where resolutions are passed. Members must also participate in the society's executive committee. New members will bring new thinking and provide new strategies to take the Society forward. Some of the ideas from the membership are not being implemented because the members do not want to participate in the committee. I am therefore encouraging our members to participate for the good of the Society and profession.

The Mineral Resources Conference, which will be held from 24<sup>th</sup> to 25<sup>th</sup> June 2020, is a few months away. Members are encouraged to participate through presentations and in attendance. All those interested should contact the conference chairperson on [ellah.muchemwa@outlook.com](mailto:ellah.muchemwa@outlook.com) or [geol.soc.zimbabwe@gmail.com](mailto:geol.soc.zimbabwe@gmail.com)

The Society will continue to arrange talks and offer short courses. It is our intention to help the membership keep up with current research and new technologies. The committee is grateful for the support it gets from its members who attend and sponsor these events.

## Articles and Reports

### **Sijarira surprise! Preliminary age data on detrital zircons from the Sijarira Group, western Zimbabwe, reveals an unexpected Antarctica connection**

**Sharad Master**

**S.M. Glynn, M. Wiedenbeck, M. Ntsoane**

[sharad.master@wits.ac.za](mailto:sharad.master@wits.ac.za)

The Sijarira Group is a Precambrian unfossiliferous, unmetamorphosed redbed sequence, which unconformably overlies the Palaeoproterozoic Magondi Belt in western Zimbabwe. It outcrops in the Chizarira Hills (where it is up to 660m thick) and in the Hurungwe area (where it is overthrust by the "Urungwe klippe", which preserves carbonate rocks and a glacial diamictite of Neoproterozoic age). Although the unmetamorphosed Sijarira Group has not been dated, it overlies the Badze Granite, which

has a (reset) Rb-Sr muscovite age of c.1211 Ma. It is aligned with, and has been regarded as a continuation of, the Tsumis-Ghanzi belt of early Neoproterozoic redbeds extending across Namibia and northern Botswana.

During our initial reconnaissance study, we collected a sample of coarse-grained trough crossbedded sandstone at 17° 39' 04.0" S; 27° 51' 21.0" E, in the Chizarira Hills. Our sample, ZMB13/2, comes from the Ruziruhuru Formation of the Lubu Subgroup, overlying the basal conglomerates of the Sijarira Group (Humphreys, 1969). We performed U-Pb isotope dating of detrital zircons from the Sijarira sample using the Cameca 1280-HR SIMS instrument at the Helmholtz Zentrum Potsdam. The age spectrum that is obtained from the detrital zircons is very surprising - there are almost no zircons from the underlying Magondi Belt, and none from the Archaean Zimbabwe Craton, despite an easterly sediment source (as shown by the palaeocurrent data of Chappell, 1969; Humphreys, 1969, and Mann, 1970, 1979, 1982). Furthermore, the Sijarira sandstones contain abundant detrital garnets, sphene, and epidote (confirmed by our new petrographic studies), indicating provenance from a metamorphic terrain (Mann, 1970, 1982). The obvious source of these metamorphic detrital mineral components would appear to be the underlying Magondi Belt, but the lack of detrital zircons of Magondi age seems to rule this out completely.

Our data indicate that the Sijarira Group is derived from erosion of a distant late Mesoproterozoic (c.1.05 Ga) terrain, with minor provenance from Neoproterozoic rocks. The vast majority (80%) of the zircons record ages between 1075 Ma and 835 Ma. The Sijarira Group cannot be regarded as a molasse of the nearby Pan-African Zambezi Belt, since it contains very few Neoproterozoic zircons, and the palaeocurrents were in general from E to W. We suggest that its provenance is from the erosion of a late Neoproterozoic collisional zone of the southern Mozambique Belt (Manhica *et al.*, 2001) and Maud Belt of West Dronning Maud Land, Antarctica, to the east of the Zimbabwe Craton. The c.1075 to 1000 Ma detrital zircon population in the Sijarira sample could have been sourced from the HU Sverdrupfjella region, in the Maud Belt, where there are gneisses of that age range formed by late Mesoproterozoic arc collisions (Board *et al.*, 2005). The youngest Sijarira zircons may be derived from Neoproterozoic intrusive rocks from the Maud Belt, or they may be related to a  $615 \pm 30$  Ma tectonic event recorded in eastern Zimbabwe. The lack of Pan-African zircons is due to a relative lack of Pan-African aged magmatism in West Dronning Maud Land and in the southern Mozambique Belt. Our new maximum age for the Sijarira Group of c.632 Ma indicates an Ediacaran depositional age. The Sijarira Group thus correlates in terms of age with other late Neoproterozoic to Palaeozoic post-Pan-African molasse basins surrounding the Kalahari Craton, such as the Okwa Group of central Botswana and the Nama basins of southwestern Africa. It's former correlation with the Ghanzi Group of Botswana cannot be sustained, since the Ghanzi Group has no glacial diamictites, and is probably between 1050 and 980 Ma in age (Hall, 2017), while the Sijarira Group is constrained to be < c.632 Ma.

Our original reconnaissance study has now expanded to include samples from other parts of the Sijarira Group, including from areas that were mapped by Chappell (1969), and Harper (1970). We will be obtaining more detrital zircon ages in sufficiently large numbers to be totally representative of the source terrains. We also plan a study of Hf isotopes in the zircons, in order to better characterize the provenance. We also will attempt to compare the mineral chemistry of detrital metamorphic mineral grains from

the Sijarira Group with heavy mineral concentrates obtained from the postulated source terrains of Southern Mozambique and the Maud Belts.

#### Acknowledgments

We acknowledge financial support from the South African National Research Foundation, the Geological Society of South Africa (Kent Fund), the Society of Economic Geologists (Tim Nutt Memorial Fund), and from the DST-NRF Centre of Excellence for Integrated Mineral and Energy Resource Analysis (CIMERA). The Carnegie Corporation (New York) is thanked for a Large Research Grant to SM. We are grateful to Maideyi Meck and Tony Martin for access to the UZ sample collection.

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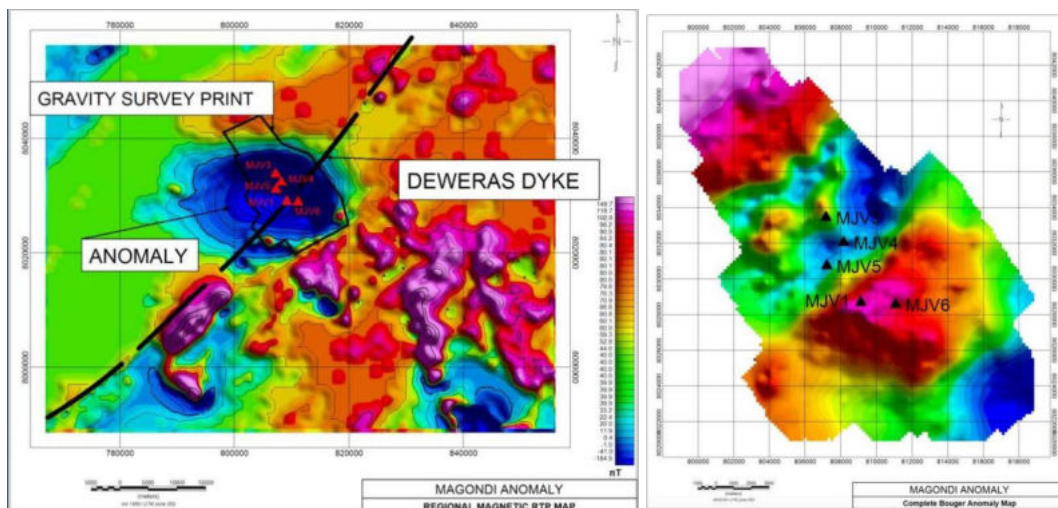
## An Interpretation of Magnetic, Gravity and Magnetotelluric Measurements over the Magondi Circular Magnetic Anomaly of Zimbabwe

Tenyears Gumede

[tenyearsgumede@gmail.com](mailto:tenyearsgumede@gmail.com)

The Magondi “Magnetic” anomaly centered approximately on 17°45”S and 29°52”E consists of a deep-seated circular to ellipsoidal magnetic low, 15km in diameter, with a small magnetic high to the north and northeast. The qualitative depth of the anomaly is interpreted from the constituting wave forms which are smooth. The anomaly is in or below the Proterozoic Lomagundi or Deweras groups at the possible edge of the Zimbabwean Craton. The data indicates that the causative body has a large remanently magnetized component and consequently it is expected that the magnetic material probably has large magnetic crystals. Among the outcropping rock types, no explanation for the magnetic anomaly can be construed.

The deep negative magnetic anomaly is modelled as an unknown intrusion that dips to the north. The depth of the anomaly is as much as 2000m below surface and the thickness varies from 500m to as much as 2000m. The deeper body has an extremely high magnetic susceptibility of 0.1 cgs units. The remanent inclination was taken at the reverse of southern Africa’s present magnetic field direction namely declination is +65° and inclination at +20°. The Königsberger ratio is 1.5.

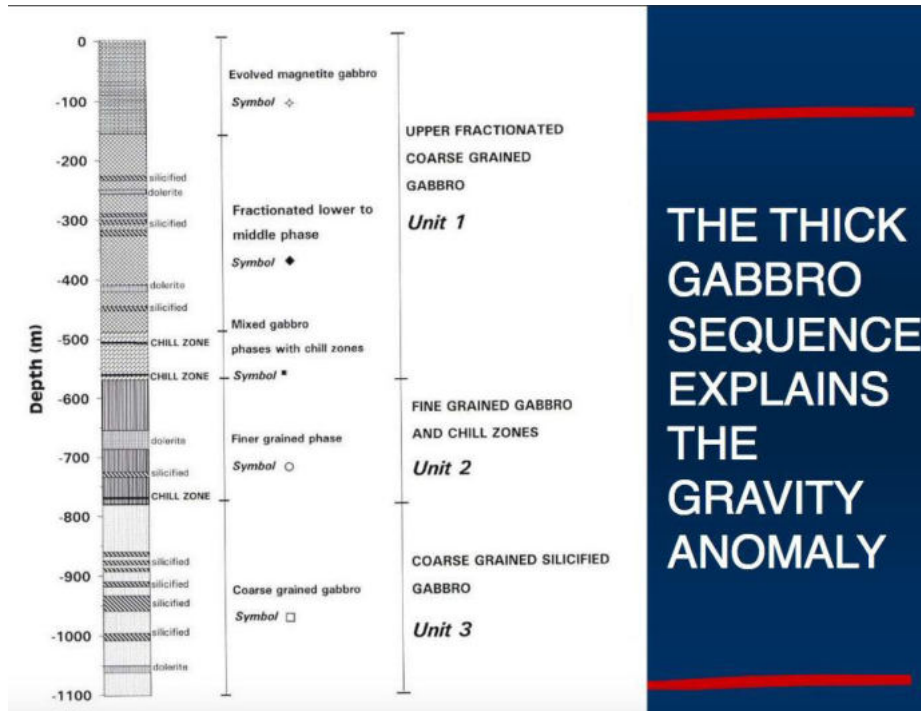


The Magondi regional magnetic anomaly showing the overlay of the Bouguer anomalies in relation to the magnetotelluric soundings and the Deweras dolerite dyke.

The second group of models is represented by a highly magnetic diapiric/plug-like body. The modelled depth to the top of the body is in the order of 2000m. The remanent inclination direction is taken at +93° and declination at +17° with a Königsberger ratio of 1.5.

Substantial gravity anomalies at the southern and northerly perimeter of the magnetic anomaly were mapped and they generated a lot of exploration interest leading to the

drilling of a 1094m drill hole located near a medium-grained gabbro exposure similar to that observed in the first fresh rock encountered in the core below the weathered zone.



Of the six magnetotelluric soundings undertaken, four can be fairly well represented by a north-dipping sheet-like conductor with a resistivity of 60 ohm.m confined above by material with a resistivity of 5K ohm.m and below approximately 20K ohm.m material. The conductive layer may be discontinuous and block faulted. The average dip of the conductor is in the region of 22°. The conductor's most southern boundary coincides roughly with the central part of the magnetic body. Modelling indicates the depth to the conductor to be in the region of 600m. Soundings to the east indicate the presence of a moderate (600 ohm.m) conductor under an outcropping granite sheet. The conductor is expected to be of greenstone material.

## CONCLUSIONS

- ✓ GRAVITY ANOMALY IS CAUSED BY A THICK GABBRO SEQUENCE
- ✓ MAGNETIC ANOMALY ???
- ✓ GRAVITY AND MAGNETIC ANOMALIES NOT CAUSED BY SAME SOURCE
- ✓ MAGNETIC SOURCE IS DEEP, > 1094M

See also pdf of the Power Point on our website [www.geologicalsociety.org.zw](http://www.geologicalsociety.org.zw)

## **Talks and Field Trips**

### **29<sup>th</sup> & 30<sup>th</sup> November 2019**

The 2019 Summer Symposium was organised by Andrew du Toit and held at the Geology Department, University of Zimbabwe on 29<sup>th</sup> November.

The presentation session was attended by 75 members and associates.

The programme comprised:

Welcome - Nevison Chikandiwa, Geological Society Chairman

Official Opening - Forbes Mugumbate, Director Geological Survey of Zimbabwe

Summary of the Petroleum Exploration Completed in the Muzarabani Project by Invictus Energy - Brent Barber

Sijarira surprise! Preliminary age data on detrital zircons from the Sijarira Group, western Zimbabwe, reveals an unexpected Antarctica connection - Sharad Master

Superplume versus far-field stress as geodynamic controls on Witwatersrand sedimentation and Ventersdorp LIP magmatism: new insights from south-retreating and north-advancing orogens of 3.1-2.5Ga Kalahari Supercontinent - Mark Tsomondo

The Great Dyke of Great Treasures and Great Mysteries - Forbes Mugumbate

A new Late Triassic fossil vertebrate assemblage from Zimbabwe - Key to the understanding of the origin of Dinosaurs - Chris Griffin as read by Tim Broderick

The Geology and Historical Importance of the Abanab Vanadium Mine in the Otavi MountainLand (Namibia) - Mark Watts as presented by Sharad Master

Some Observations on Pegmatites - Tony Martin

Structural Footprint of Gold Mineralisation in Zimbabwe Greenstone Belts; A case study of Pickstone Peerless Deposit - George Rusike

Tantalite Production in Post Colonial Zimbabwe, 1980–2018: Challenges and Prospects - Tafadzwa Gwini

The Geo-Metallurgy of the Arcadia Pegmatite Swarm - Adam Moodley

An Interpretation of Magnetic, Gravity and Magnetotelluric Measurements over the Magondi Circular Magnetic Anomaly of Zimbabwe - Tenyears Gumede

ScanIT – Optimizing core logging data acquisition - Megan du Plooy

Microseismic monitoring based approach to effective ground control management in unstable underground mines - Paul Matshona

Summary - Tony Martin

The symposium was followed by a field trip led by Dr Tony Martin to sections of the Harare-Shamva Greenstone Belt, on 30<sup>th</sup> November, 2019.

Outcrops visited included porphyritic granite of the Chinamora Batholith, the Umwinsdale Shear Zone and various spectacular exposures of Shamvaian Supergroup conglomerates, felsic volcanics and clastic lithologies.

30 members participated to the trip.



Participants against the Mumurwi (Lion's Head) cave paintings. Photo: Tony Martin

**13<sup>th</sup> December 2019** – Kramers Room, Geology Department, UZ

Brent Barber, Invictus Energy Limited

*Overview Petroleum Exploration - A Zimbabwe Perspective*

The talk covered the petroleum system fundamentals as well as the exploration techniques involved. An update on the work undertaken in the Muzarabani Project, Zimbabwe.

20 members attended the talk and toasted an end to 2019 courtesy of Invictus.

**23<sup>rd</sup> January 2020** – Kramers Room, Geology Department, UZ

Professor Judith Kinnaird, Regional Vice President for the Society of Economic Geology (SEG) with Paul Nex from the University of the Witwatersrand is the SEG Lecturer for 2019. Zimbabwe is honoured to have been included in her lecture schedule. Her presentation was entitled "*Pegmatites – Questions and Answers?*" The year 2020 marks the Centenary of the founding of SEG.

30 members of the Society attended.

Power Point presentations for the above presentations can be viewed on the Geological Society of Zimbabwe website [www.geologicalsociety.org.zw](http://www.geologicalsociety.org.zw)



Attendance at the regional SEG Lecture presented by Prof. Judith Kinnaid, January 2020.

*Photo: Julie Kuhn*

*Houda Bouammar*  
February 2020

## News



### Geology Department, University of Zimbabwe

*Maideyi Meck*

The period under review was extremely quiet with people enjoying well earned breaks from Christmas through January.

The department managed to complete all geology-related teaching commitments but were unable to service other departments. As such, we are currently completing geology courses relevant to the engineering faculty.

The department received a resignation from Tonderai Harawa who has gone to pursue a doctorate degree through the University of Johannesburg.

Consolidation of the School of Mineral and Earth Sciences has been put on hold by the University as they reorganize our national role. Further developments will be communicated in due course.

The new semester is set to open on 24th February and all seems to be set for the new year.

Mr Mandingais was involved in a road traffic accident on his way to Muriel Mine to supervise geology students who are attached there.

Mr David Murangari has offered to help the department as a part time lecturer. We are hopeful that the university will allow him to join the department as we stand to benefit from his wealth of experience.



## The Mennell Geological Society

Audious Kashesha (Chairperson)    Bernatrix Makenah (Secretary)  
[audieekm@gmail.com](mailto:audieekm@gmail.com)    [panashebpm@gmail.com](mailto:panashebpm@gmail.com)

### Contact details as of February 2020:

Name	Position	Email	Cell Phone	Office Number	Office Phone 04-303211 (Extension)
Prof M Ityokumbul	Professorial Chairman	<a href="mailto:m_tyokumbul@yahoo.com">m_tyokumbul@yahoo.com</a>	0719654321		15032 Secretary
Dr. M.L. Meck	Dept. Chairperson	<a href="mailto:mabvira@science.uz.ac.zw">mabvira@science.uz.ac.zw</a>	0772906612	25	15027
Mr. P. Mangingaisa	Lecturer	<a href="mailto:mandingaisap@gmail.com">mandingaisap@gmail.com</a>	0783042494		
Mr. F.B. Mupaya	Lecturer	<a href="mailto:fbmupaya@gmail.com">fbmupaya@gmail.com</a>	0773599433	26	
Mr. O. Maponga	Lecturer	<a href="mailto:mapongaoliver1954@gmail.com">mapongaoliver1954@gmail.com</a>	0772410609		
Mr. G. Kwenda	Lecturer	<a href="mailto:gkwenda@gmail.com">gkwenda@gmail.com</a>	0772935936		
Mr P. Maketa	Lecturer	<a href="mailto:geologistmaketa@gmail.com">geologistmaketa@gmail.com</a>	0777386284		
Mr S. Mabhanga	Lecturer	<a href="mailto:smabhanga@gmail.com">smabhanga@gmail.com</a>	0783536530		
Mr C. Mhindu	Part time Lecturer	<a href="mailto:Mhindicharles@yahoo.com">Mhindicharles@yahoo.com</a>	0774460531		
Mrs G. Chipari	Secretary	<a href="mailto:gchipari@science.uz.ac.zw">gchipari@science.uz.ac.zw</a>	0772950681	21A	15032
Mr. F. Zihanzu	Technician	<a href="mailto:fzihanzu@science.uz.ac.zw">fzihanzu@science.uz.ac.zw</a>	0772218208	1	15024
Mrs E. Hamah	Technician	<a href="mailto:emhamah@gmail.com">emhamah@gmail.com</a>	0773924053		
Mr. D. Mupambo	Technician	<a href="mailto:DIDYMUS@science.uz.ac.zw">DIDYMUS@science.uz.ac.zw</a>	0772916652	16	15024
Mr. P. Sena	Technical Assistant	<a href="mailto:psena@science.uz.ac.zw">psena@science.uz.ac.zw</a>	0772390026		15193
Ms. S. Gorogodo	Messenger/Cleaner		0772390026		15029



**MIDLANDS STATE UNIVERSITY**  
FACULTY OF ENGINEERING & GEOSCIENCES  
ZVISHAVANE CAMPUS

The Faculty of Engineering & Geosciences released its first nine Mining Engineering and two Metallurgical Engineering Visiting School graduates into industry in November 2019. We would like to thank companies who sponsored various prizes issued to top achievers at the graduation ceremony.

Semester 1 Visiting School classes commenced on 1<sup>st</sup> February 2020, while returning Conventional students are expected back on 17<sup>th</sup> February 2020. Per directive from the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development, MSU and the Faculty are not enrolling Level 1.1 students this Semester.

The Faculty now has a teaching staff complement of 34, with 7 backup technical staff. Recently the Faculty interviewed several candidates for staff development fellowships and we are currently working on postgraduate scholarship arrangements for successful applicants.

The Faculty would like to thank those from the mining industry for their continued support through availing industrial placement opportunities to our students. A few of our students due for placement from January 2020 are yet to secure placements - we ask those companies who are still able to absorb students to consider their placement. Although we administer formal placement assessment tools to industry, any other form of feedback pertaining to our programmes, graduates and internship students would be helpful in our quest to extend excellence.

In conclusion, I reiterate that our Faculty continues to value partnerships in research and development with local and international entities and with government in order to advance the sustainable exploitation and utilisation of Zimbabwe's resources for the country's maximum equitable socio-economic benefit. Additional partnerships are being sought to provide requisite infrastructure and equipment for our programmes in order to help effectively address the national critical skills shortages in engineering and science.

*Submitted by Dr Antony Mamuse, Executive Dean*  
[antony.mamuse@graduate.curtin.edu.au](mailto:antony.mamuse@graduate.curtin.edu.au)



## *Geological Survey Department*

*Sokesimbone Lunga*  
[sokelunga@gmail.com](mailto:sokelunga@gmail.com)

### STAFFING MATTERS

**Ms Portia Mungate**, a geologist previously stationed at the Mashonaland East provincial office, joined the Department at the beginning of the year as the Acting Deputy Director, Geological Survey responsible for the newly established Mining Cadastre Unit of the ministry.

**Benedict Ncube and Brian Muteta**, both geologists, were seconded to the newly created Directorate of Mining Development in the ministry in acting positions. Mr Ncube who was head of the Economic Section in the Department has been appointed the Acting Deputy Director for Energy Minerals responsible for Coal and Hydrocarbons while Mr Muteta, the head of our Applied Geology Section, was appointed Acting Deputy Director for Non-Energy Minerals responsible for Gold, Gemstones and PGMs. Both positions are based at Head Office.

**Mr Amicable Hove**, a geologist in the Data Management Section, resigned from his post in September 2019.

**Ernest Mugandani**, Principal Geologist, is still seconded to the Midlands office of the Ministry as the Acting Deputy Provincial Mining Director

**Lloyd Magombedze**, Senior Geologist who was on secondment to the Chief Director, Technical Services office at Head Office, has been further seconded to Aure Merge Investments (Pvt) Ltd, an organisation set up for the establishment of gold service centres, which will work together with Fidelity Printers and Refiners.

**Tapiwa Magidi**, Geologist, who was seconded to the Mashonaland Central Bindura office in July 2019, initially for a period of three months, had his secondment to the province extended indefinitely.

The Department has two UZ Geology students on attachment. **Godfrey Matope** has been on attachment with the Department since April 2019 while **Gilbert Kupeta** joined the Department on attachment in October 2019.

## SPONSORED SKILLS DEVELOPMENT TRAINING

### Japan Oil and Gas National Co-operation (JOGMEC)

Through the Memorandum of Understanding (MoU) between the Ministry of Mines and Mining Development and the Japan Oil, Gas and Metals National Corporation, (JOGMEC) a number of local geoscientists have been receiving Remote Sensing and GIS training over the years through an annual workshop held at JOGMEC's Botswana facility. The thrust of this annual is to strengthen the remote sensing skills of geoscientists in the Southern African Development Community (SADC) region whilst JOGMEC seeks, through the co-operation, to secure future supplies of mineral deposits for exploitation by Japanese companies for the mutual benefit of both countries concerned.

At the workshop held in October 2019, the Zimbabwe team comprising geologists **Ms Vimbai Gengezha** and **Brian Muteta**, as well as **Abenezel Makuvaza** (geophysicist) attained third position in a competition held to test the GIS and Remote Sensing aptitudes of the programme's trainees. The achievement is commendable given that the team only came behind power-houses South Africa and Namibia among the 13 competing countries.

## TRAINING

**Mr Shawarira**, Principal geophysicist, is attending an international training course on Global Seismological Observation being conducted at the International Institute of Seismology and Earthquake Engineering, Building Research Institute, Tsukuba, Japan, under the auspices of JICA (Japan International Co-operation Agency). The course runs from 13<sup>th</sup> January to 7<sup>th</sup> March 2020.

The objective of the course is to impart knowledge of advanced techniques in global seismological observations of earthquakes and nuclear tests under the Comprehensive Nuclear Test Ban Treaty (CTBT).

## VISIT FROM THE BRITISH GEOLOGICAL SURVEY

A delegation from the British Geological Survey (BGS) accompanied by staff from the Department for International Development (DFID) at the British Embassy in Zimbabwe visited the Department to familiarize themselves and explore possibilities for future co-operation between the two organizations. The delegation met with the directorate and undertook a tour of the Department. They also visited a number of mining sites and met with mining stakeholders including members from academia, mining houses and staff from the Chamber of Mines. Leader of the party, Dr Goodenough, Deputy Director of the BGS – Global Unit expressed interest in seeing the BGS and ZGS collaborate in the area of geo-information management in the future.



*Join the Geological Society of Zimbabwe Facebook Group*

## **NEW PUBLICATIONS AT THE ZIMBABWE GEOLOGICAL SURVEY**

*Forbes Mugumbate, Director,*

*Zimbabwe Geological Survey (ZGS)*



Under the Governance Institutional Strengthening Project (GISP), ZGS managed to have 12 new publications printed with 18 being reprinted. Four new maps were printed and 14 were reprinted as listed below. All were delivered in early October, 2018 and are now on sale. The support came through the African Development Bank (AfDB) who facilitated the editing of the new publications under the auspices of Tailjet Consultancy. The printing was done by Kadimah Print Global in the Republic of South Africa. In the table B = Bulletin, SR = Short Report and MRS = Mineral Resource Series.

<b>No.</b>	<b>Status</b>	<b>Title</b>	<b>Author(s)</b>	<b>Editor</b>
B 95 text	New	The Geology of the Country around Dorowa-Shawa	J. N. LAUDERDALE	<i>Mr. D. E. H. Murangari</i>
B 99	New	The Geology of the Western Portion of the	P. FEY	<i>Prof. Tom</i>

+ map		Chewore Inliers, Zambezi Valley		<i>Blenkinsop</i>
B 103	New	The National Gravity Dataset of Zimbabwe	K. P. FISK; M. T. HAWADI	
B 104 text	New	The Geology of the country South of Mataga, Mberengwa, Mwenezi, Gwanda and Beitbridge Districts	N. E. H. BOUAMMAR	<i>Mr Tim J. Broderick</i>
B 105 + map	New	The Geology of the Country between Chireya and Goredema, Gokwe North and Gokwe South Districts	A. AIT- KACI AHMED	<i>Dr Dennis S. M. Shoko</i>
B 107 text	New	Review of the Geology and Summary of the Known Fossil Fuel Potential of the Karoo and Younger rocks in Zimbabwe	B. BARBER; P. M. OESTERLEN; A. AIT-KACI AHMED; M. A. MUKANDI.	<i>Dr Dennis S. M. Shoko</i>
Map	New	Gravity Map of Zimbabwe	K. P. FISK; M. T. HAWADI	
MRS 26	New	An Assesment of the Lesser Known Coal Localities IN North Western Zimbabwe	B. BARBER	<i>Dr Dennis S. M. Shoko</i>
MRS 28	New	Tantalum and Niobium in Zimbabwe	G. NASCHEL- WESCHKE	<i>Mr Peter Fey</i>
MRS 29	New	Copper Deposits in Zimbabwe	F. B. MUPAYA	<i>Dr Kosmas Chenjerai</i>
MRS 30	New	Gemstone Deposits of Zimbabwe	M.T. HAWADI; L. S. MAFARA	<i>Dr Maideyi Mabvira-Meck</i>
SR 51 text	New	The Geology of the country around Belingwe Peak.	J. L. ORPEN ; A. MARTIN; F. MUGUMBATE.	<i>Dr Kosmas Chenjerai</i>
SR 55 + map	New	Geology of the Country Southwest of the Chewore Inliers, Hurungwe District	P.T. ZIZHOU; S. LUNGA	<i>Mr Peter Fey</i>
B 32	Reprint	The Geology of the Mutare Gold belt	A. E. PHAUP	
B 40 + map	Reprint	The Geology of the lower Sabi Coal Field	W. H. SWIFT; W.C. WHITE; J. W. WILES; B. G. WORST.	
B 44/2 + map	Reprint	Gold Deposits and Mines	J. W. WILES	
B 46 + map	Reprint	The Geology of the Country around Mangula Mines, Makonde and Hurungwe Districts	J. G. STAGMAN	
B 47 + 1 sheet (Snake Head)	Reprint	The Great Dyke of Zimbabwe	B. G. WORST	
B 49 + map	Reprint	The Geology of the Country around Chinhoyi and Banket Makonde District	J. G. STAGMAN	
B 52 + map	Reprint	The Geology Middle Sabi Valley	W. H. SWIFT	
B 58 + map	Reprint	The Geology of the Country around Masvingo & The Bikita Tinfield	J. F. WILSON	
B 59 + map	Reprint	The Geology of the Country south and West of Shurugwi	C. W. STOWE	
B 64 text	Reprint	THE Geology of the Country around Kadoma	N. W. BLISS	
B 67/1 + map	Reprint	Geology of the Country around Kwekwe	N. M. HARRISON	

B 69 text	Reprint	Check List of the Minerals of Zimbabwe	SUSAN M. WARNER
B 80 text	Reprint	An Outlook of the Geological History of Zimbabwe	J. G. STAGMAN; N. M. HARRISON; T. J. BRODERICK; V. R. STOCKLMAYER. A. MARTIN
B 83 + map	Reprint	The Geology of the Belingwe- Shabani Schist Belt	
MRS 22 map	Reprint	Base Metal and industrial Mineral Deposits of Zimbabwe	D. S. BARTHOLOMEW
MRS 23 map	Reprint	Gold Deposits of Zimbabwe	D. S. BARTHOLOMEW
SR 43 + map	Reprint	Explanation of the Geological map of the Country east of Kariba	T. J. BRODERICK
SR 45 text	Reprint	Explanation of the Geological Map of the country West of Beitbridge	M. K. WATKEYS
SR 46 text	Reprint	Explanation of the Geological Map of the country South of Mwenezi, Mwenezi and Beitbridge Districts	T. J. BRODERICK
SR 48 text	Reprint	Explanation of the Geological Map Vungu and Gweru river Valleys, Gweru , wekwe and Bubi districts	N.M. HARRISON

## NEWS from the MINING INDUSTRY

*Forbes Mugumbate*  
fmugumbate@gmail.com

### **Machete gangs**

An item captured by many news agencies that has helped to put the bad side of Zimbabwe's mining industry into the world arena, is the news of marauding gangs of machete-wielding thugs who have unleashed violence and committed brutal murders on a scale never before seen. The thugs, commonly known as *maShurugwi*, had seemingly become a law unto themselves, as they have instilled fear into communities from all mining areas of the country. Small gold mines, gold buyers, gold ore milling centres and foreign currency traders have become their prime targets.

We have reported before in this Newsletter concerning the dangers of allowing chaos to prevail in the small-scale mining areas. The situation should not have been allowed to deteriorate to this level. Police only reacted with intensity after one of their members was brutally murdered by the gangs. Stakeholders in the mining sector have now called for urgent action to stop this hazard, and have condemned the involvement of political actors in illicit gold trade as they believe they are fomenting criminality and violence in the sector. The country cannot afford to have its image soiled by these gangs at a time when efforts to turn around the economy are being put in place under the mantra, "*Zimbabwe is Open for Business*".

In response, the police have launched an operation to stop the *maShurugwi* menace. Thousands of illegal miners have already been arrested. The Jumbo Mine area, which had become notorious, has been closed off. These actions are necessary to instill discipline and improve the image of the mining industry. As warned previously, the

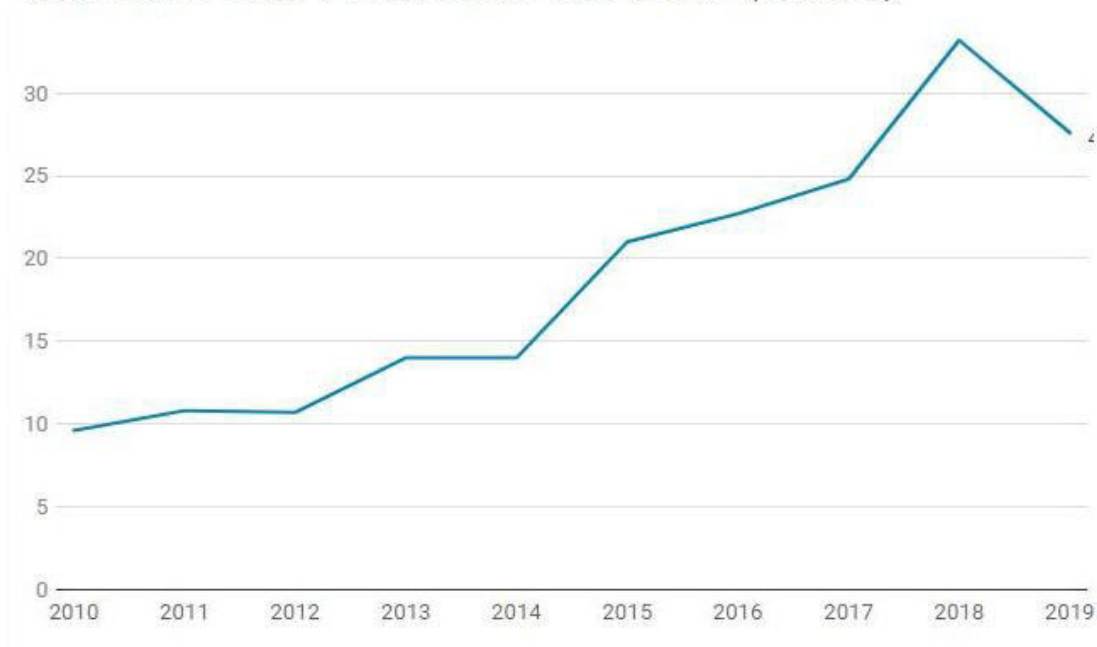
country's minerals face the danger of being considered irresponsibly produced. The London Bullion Market Association (LBMA) is looking to elevate the standards of its responsible precious metals sourcing programme. Also the European Union's (EU's) new conflict minerals regulation is due to come into force on 1<sup>st</sup> January, 2021. It is therefore important to clean up our image to avoid being affected by these developments.

### **Mine accidents**

Related to the above story is the increased frequency of mine accidents in the small-scale and uncontrolled mining sector. A week hardly passes without sad news of small-scale miners trapped in their crude or invaded workings. Such frequent accidents in small-scale mining circles might have the same effect on the marketability of our minerals as the marauding machete gangs. The year 2020 has started on a very bad note with 25 reported fatalities so far.

### **Mineral Production**

#### **Zimbabwe Gold Production 2010-2019 (tonnes)**



Gold production in Zimbabwe dropped to 27.6 tonnes in 2019, down from 33.2 tonnes in 2018, and short of the targeted 40 tonnes. The country is aiming at 100 tonnes of gold per annum in order to achieve the USD12 billion mining industry goal by 2023. Output from large mines was 10.181 tonnes in 2019, while small-scale mines produced 17.478 tonnes according to figures from Fidelity Printers and Refiners. The third quarter saw the highest combined output of 8.327 tonnes.

Metallon, once the country's largest gold producer, has placed two of its four mines under care and maintenance. However, Caledonia Mining's Blanket Mine has bucked the trend as their 2019 production jumped 24% in the last quarter to help the miner beat their annual target.

An area of concern is the foreign currency retention system, which miners are blaming for hurting their operations. Miners are required to surrender a certain percentage of their earnings to the Reserve Bank of Zimbabwe. They want the retention scheme to be dropped to allow them to effectively utilize all of their earnings.

Erratic power supply is listed as one of the reasons why there is a decline in gold production, although the closure of or downsizing by some large producers has probably played a major part in the drop in productivity. Mining houses are considering going off grid to avoid crippling losses in production, as the country continues to battle against the unstable power supply. RioZim is the latest to apply to the Zimbabwe Energy Regulatory Authority (ZERA) for licences to build four solar power plants at each of its four mining operations, with a combined output of 214MW. Caledonia Mining Corporation announced plans to build a 20MW power plant at its Blanket Mine near Gwanda.

Diamond production at the Zimbabwe Consolidated Diamond Company (ZCDC) also slumped in 2019 due to power outages. The company reported losing close to eight million tonnes of ore that could have been moved for processing due to erratic power cuts and fuel shortages. Production tumbled to 1.6 million carats from 2.8 million as a result. The company is planning to set up an independent power plant to secure their energy requirements.

Meanwhile Alrosa and the Zimbabwe Consolidated Diamond Company (ZCDC) have signed a number of agreements to finalise the creation of a joint venture for the exploration and discovery of primary diamond deposits in Zimbabwe. According to the agreements, Alrosa owns 70% of the JV while ZCDC gets 30%.

### **New kid on the block**

Finally, Great Dyke Investments officially commenced mining at its Darwendale concession after years of preparation. The cutting of the first box, signifying commencement of work, was witnessed by Mines and Mining Development Minister Winston Chitando, his deputy Mr Polite Kambamura, Russian Ambassador to Zimbabwe Krasilnikov Nikolai Vladimirovich and Mashonaland West Provincial Affairs Minister Mary Mliswa, among other dignitaries.

Great Dyke Investments is a joint venture between Russia's Vi Holdings and Zimbabwe's Landela Mining Venture (Pvt) Ltd. The mine is expected to produce 180,000 tonnes of ore per month, with a lifespan of 15 years, while the first platinum concentrates will be sold in 2022.

Platinum is expected to contribute USD3 billion to the \$12 billion industry by 2023. The Minister believes this is easily achievable with the coming on board of Great Dyke Investments and Karo Resources, which is expected to start new operations south of Selous soon, to augment production from Zimplats, Mimosa and Unki mines that are already operational.

### **New structure at the Ministry**

In an effort to ensure that the USD12 billion mining industry by 2023 target is achieved, a new Directorate of Mining Development has been created at the Ministry comprising; the Chief Director Mining Development; Director Non-energy Minerals; Director Energy Minerals; Director Policy Implementation and Evaluation; and respective deputy

directors. A position of Deputy Director responsible for Mining Cadastre has also been created at the Geological Survey. We will give more details about people occupying these offices in the next Newsletter.

As shown in *News from the Geological Survey*, the restructuring of the Ministry has decimated the Department, as a number of officers have now been seconded to various structures within the parent Ministry.



### SEG Timothy Nutt Memorial Fund (Up to US\$1500.00 available for 2018)

This fund will be available to provide financial support for geology students and young economic geologists located in Zimbabwe or in southern Africa with ties to Zimbabwe. The fund may be used to support SEG student chapter activities, travel to meetings, field trips, for research or study grants, technical lectures or any other activities approved by the SEG Regional Vice President for Africa.

***Strong preference will be given to those applicants who are SEG Student Members.***

To become an SEG Student member visit [www.segweb.org/join](http://www.segweb.org/join)

# Applicants must describe what the project is, why the research is important and how it is to be done.

# An estimate of expenses for the project must be included with the application.

# Grants are expected to be fully utilized by April 30 following the calendar year in which they are awarded / dispersed. .

# Grant recipients are required to provide a year-end accounting of how the money was spent together with a suitable progress report or final abstract.

**A 2018 Research Grant application form may be downloaded from**

**[www.segweb.org/StudentResearchGrants](http://www.segweb.org/StudentResearchGrants)**

Student Research Grants Committee c/o Assistant for Student Affairs, Society of Economic Geologists Foundation 7811 Shaffer Parkway, Littleton, CO 80127-3732 USA

Phone: +1.720.981.7882/Fax: +1.720.981.7874



### GSZ Research and Development Fund

Enquiries relating to the distribution of funds through this facility should be made through the standing Chairperson.

## Conferences

### **Zimbabwe Mineral Resources Conference**

**HARARE – 2020**

#### **Update**

The second circular for The Geological Society of Zimbabwe Mineral Resources Conference 2020 was issued in November 2019 and is also distributed with this Newsletter. The third and final circular will be issued in April 2020.

Good progress continues to be made in organising the conference, scheduled for the 24<sup>th</sup> and 25<sup>th</sup> June 2020. Some of the key milestones to date include the following:

- All the keynote speakers for each of the four sessions have agreed to be with us and the majority of them have submitted their abstracts. The keynote speakers include, Hielke Jelsma (South Africa), Mark Tsomondo (Zimbabwe), Steven Duma (Zimbabwe), Paul Dirks (South Africa) and Oliver Maponga (Zimbabwe).
- Final compilation is in progress for the rest of the speakers and these so far include Peter Buchholz (West Germany), Metrinah Mutika (Zimbabwe), Andrew Moore (Botswana), Godfrey Chagonda (South Africa), Antony Mamuse (Zimbabwe), Tenyears Gumede (Zimbabwe), Andrew Moodley/Roger Tyler (Zimbabwe) and others. The available abstracts cover a broad array of very interesting papers and more are expected.
- The deadline for the submission of abstracts has been extended to the 29<sup>th</sup> February 2020 to allow for submission of more papers. Please take this opportunity to submit yours if you have not already done so.
- Participation from students registered at all our local universities is being encouraged through the presentation of poster papers. The Society is sponsoring a number of students as part of this initiative.
- All the moderators, whose responsibilities include chairing their respective sessions and assisting with selection of the final papers, have been confirmed: Caston Musa – Platinum and Chrome, Doctor Tony Martin – Base Metals, Forbes Mugumbate – Carbon, and Mark Tsomondo – Gold.
- More work still needs to be done, but we believe we are on track to hosting a successful conference.

The Conference Sub- Committee looks forward to great support from you, our membership through attendance at the conference, sponsorship of specific events or items planned at the conference, the presentation papers of interest to the wider geological and mining industry, and by being ambassadors for the Society and the conference in your various communities. Please share news about the conference in your networks.

Please do not hesitate to contact me via e-mail [ellah.muchemwa@outlook.com](mailto:ellah.muchemwa@outlook.com) and or [geol.soc.zimbabwe@gmail.com](mailto:geol.soc.zimbabwe@gmail.com) if you need further information or any clarification.

*Ellah Muchemwa*

Chair – Zimbabwe Minerals Resources Conference Sub-Committee

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**Geological Society of South Africa**

**GeoCongress 2020**  
29 June – 01 July  
*Stellenbosch University, Western Cape*  
*“The Next 125 years of Earth Sciences”*  
[geocongress@allevents.co.zw](mailto:geocongress@allevents.co.zw)  
+27 21 8101913

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**Sixth International Archean Symposium**

**6ias**  
14<sup>th</sup> – 16<sup>th</sup> July 2020  
Perth, Australia  
[www.6ias.org](http://www.6ias.org)

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**12<sup>th</sup> International Kimberlite Conference**

30 years of diamonds in Canada  
16<sup>th</sup> – 20<sup>th</sup> August 2021  
Yellowknife, Canada  
[secretariat@12ikc.ca](mailto:secretariat@12ikc.ca)

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GEOLOGICAL SOCIETY OF ZIMBABWE: CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE FOR 2019		
NAME	PORTFOLIO	EMAIL
Chikandiwa, Nevison	Chairman	<a href="mailto:wchikandiwa@yahoo.co.uk">wchikandiwa@yahoo.co.uk</a>
Muchemwa, Ellah	Vice Chairman & International Conference	<a href="mailto:ellah.muchemwa@outlook.com">ellah.muchemwa@outlook.com</a>
Musiwa, Kudzai	Hon. Secretary	<a href="mailto:kudzimusi@gmail.com">kudzimusi@gmail.com</a>
Kuhn, Julie	Administrator	<a href="mailto:geol.soc.zimbabwe@gmail.com">geol.soc.zimbabwe@gmail.com</a>
Mwatahwa, Collins	Hon. Treasurer. Regional Rep., Mid's.	<a href="mailto:collinsm885@gmail.com">collinsm885@gmail.com</a>
Ait Kaci Ahmed, Ali	Newsletter	<a href="mailto:ali_aitkaci@yahoo.fr">ali_aitkaci@yahoo.fr</a>
Bouammar, Houda	Talks & Field Events. Phaup Award	<a href="mailto:houda.bouammar@gmail.com">houda.bouammar@gmail.com</a>
du Toit, Andrew	Summer Symposium	<a href="mailto:andrewdutoitzim@gmail.com">andrewdutoitzim@gmail.com</a>
Meck, Maideyi	GSA Representative. Phaup Award	<a href="mailto:maideyimeck@yahoo.com">maideyimeck@yahoo.com</a>
Mugumbate, Forbes	ZGS Representative. Phaup Award	<a href="mailto:fmugumbate@gmail.com">fmugumbate@gmail.com</a>
Ndebele, Fyrence	Regional Rep., Matabeleland	<a href="mailto:fndebele@zsm.co.zw">fndebele@zsm.co.zw</a>

## Institutional Membership, 2019

Bruker RSA  
 Chamber of Mines of Zimbabwe  
 Freda Rebecca Mine  
 Goldsearch Technical Services  
 Metallon Gold  
 Mimosa Mining Compant (Pvt) Ltd  
 Murowa Diamonds (Pvt) Limited  
 New Dawn Mining  
 Optimum Drilling  
 Prospect Resources  
 RioZim Limited  
 Samrec Vermiculite Zimbabwe (Pvt) Limited  
 Sandvik  
 SMC Drilling  
 Trojan Nickel Mine  
 University of Zimbabwe Geology Department  
 Unki Mines (Pvt) Limited  
 Vast Resources  
 Zimbabwe Geological Survey  
 Zimbabwe Mining Development Corporation  
 Zimbabwe Mining Investments  
 Zimbabwe Platinum Mines Limited