Geological Society of Zimbabwe

# *Newsletter*

October 2019 No. 3 of 3 of 2019

*The Chilojo Cliffs, Gona-re-Zhou and the Runde River as it wends its way to the Save confluence and into Mozambique. From drone footage. Source Robert Moor.*

www.geologicalsociety.org.zw

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

# Contents

# Editorial

The 2019 Summer Symposium is upon us as we look forward to interacting with friends and colleagues. The line-up of speakers for 29th November with their topics is presented in this Newsletter to whet your appetites. We hope that as many of you as possible will attend to make this the event that has become the highlight of our Society year. A field trip to the Shamva District will follow and be led by Tony Martin on Saturday 30th November.

An update on progress for the June 2020 Mineral Resource Conference is also presented, but Ellah Muchemwa will be announcing and distributing the Second Circular at the Summer Symposium on 29th November. Organization for these events is onerous and the efforts of Andrew du Toit, Ellah and their committees deserve appreciation and support.

Other events organized by your Committee over the past few months have been a workshop on grade control, which was led by Dr Maideyi Meck on 23rd August and a talk in Bulawayo presented by Trish Nyirenda on 25th October entitled *The Black Gold of Hwange*.

Julie Kuhn reports that as at the end of September Society Membership stood at:

18 Honorary Members
121 Ordinary Members
23 Associate Members
8 Foreign Members

We would like to welcome the following who have joined the Geological Society this year:-

**Ordinary Members**
Tinashe Nyambuya; Renias Mukwashi; Brian Mapingere; Arthur Gogobo; Takawis Zhou; Metrinah Mutika; Martin Mateveke; James Abson; George Rusike; Patrick Uteete;Anderson Mudzamiri; Igor Shmakov, Fiona Macdonald; Solomon Gumbie and Reuben Muzulu.

**Associate Members**
Elton Gwatidzo; Zibusiso Dube

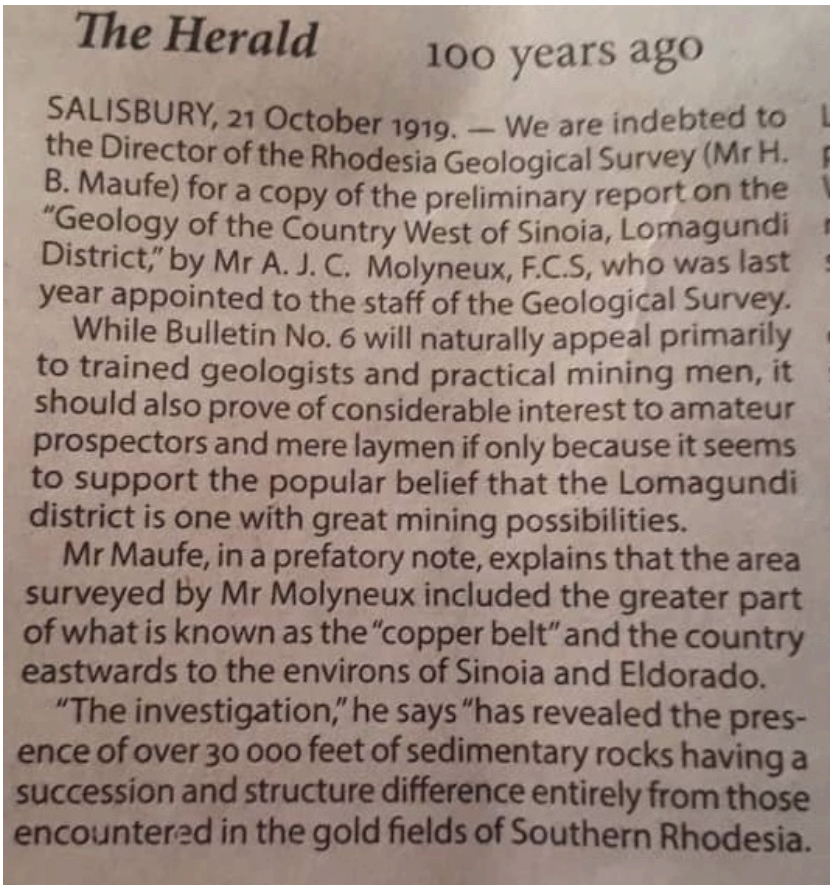
There are a further 7 applications currently being processed.

Our "Application for Membership" form is attached separately with this Newsletter in an effort to encourage new membership in order to enhance our Society's professional standing.

Thanks again are extended to our faithful news contributors, and Tony Martin gives a summary of an international initiative for a sample collection trip intended for reseach into the definition of the Umkondo Large Igneous Province. A special thank you is extended to Allan Mashingaidze for his review of the Chamber's *Mining in Zimbabwe*

book, which was sponsored by Unki Mine. We encourage you to support the sales of this important history of mining in Zimbabwe since the 6th Century.

It was encouraging to see the appreciation that *The Herald* had for the Geological Survey in the following snippet published 100 years ago on 21st October 1919, a reminder of our geological heritage.



**The Herald** 100 years ago

SALISBURY, 21 October 1919. — We are indebted to the Director of the Rhodesia Geological Survey (Mr H. B. Maufe) for a copy of the preliminary report on the "Geology of the Country West of Sinoia, Lomagundi District," by Mr A. J. C. Molyneux, F.C.S, who was last year appointed to the staff of the Geological Survey.

While Bulletin No. 6 will naturally appeal primarily to trained geologists and practical mining men, it should also prove of considerable interest to amateur prospectors and mere laymen if only because it seems to support the popular belief that the Lomagundi district is one with great mining possibilities.

Mr Maufe, in a prefatory note, explains that the area surveyed by Mr Molyneux included the greater part of what is known as the "copper belt" and the country eastwards to the environs of Sinoia and Eldorado.

"The investigation," he says "has revealed the presence of over 30 000 feet of sedimentary rocks having a succession and structure difference entirely from those encountered in the gold fields of Southern Rhodesia.

*The Herald* - 21/10/2019

*Tim Broderick*

# Chairperson's Chat

*Nevison Chikandiwa*

It is that time of the year when the geological community get together, share research, ideas and talk about nothing but geology. The Summer Symposium is upon us once again and th schedule of speakers is presented elsewhere in this Newsletter.

There are interesting discussions afoot amongst geologists concerning professional registration and the formation of junior exploration companies.

The Geological Society will need to drive the professional registration agenda but the drawback is on membership. There is a lot of interest out there from individuals who wish to join the Society. The more members we have, the easier it will be for us to push this agenda through with the legislative arm of the government. There is power in numbers, so lets encourage our colleagues to join our Society.

However, as in most associations every individual who wishes to register as a member will need to seek sponsorship from paid-up members. This is standard practise as a validation process. Let us use the Zimgeos Group or the Society`s Facebook page to seek this sponsorship.

The question of establishing junior exploration companies will have to be an individually driven exercise, as the Society cannot be involved in privately run business.

We continue to offer more courses and talks for our membership and we are grateful for your support.

# Articles and Reports

## Sampling the Umkondo Large Igneous Province

***Tony Martin***

A Large Igneous Province (LIP) is defined as an area greater than 100,000 $km^2$ of igneous rocks that were erupted over, or emplaced within, continental crust over a few million years or less.

Southern Africa is host to five spatially overlapping Large Igneous Provinces emplaced onto and into the Kalahari Craton over a time span of 2.6 billion years: the Ventersdorp (2.7Ga), Bushveld (2.06Ga), Umkondo (1.10Ga), Karoo (0.182Ga) and the Paraná-Etendeka (0.131Ga, but mostly in South America).

Of these, the Umkondo LIP is perhaps the least well-characterized, particularly in Zimbabwe, where there are widespread dolerites in the eastern districts and extrusive equivalents around Birchenough Bridge (Watson, 1969, Swift, 1962).

Elsewhere it is represented by widespread tholeiitic intrusions in Botswana and South Africa, bimodal volcanics in Botswana and Namibia, and dolerites with flood basalts in Antarctica. It was first recognised in 1966 by Jones and McElhinny who did much pioneering palaeomagnetic work on samples from southern Africa, with the Antarctic exposures first reported on by Groenewald *et al.* (1995) and Jones *et al*. (2003).

The age of all of the Umkondo LIP is around 1.1Ga with a U-Pb zircon age of 1105 ± 2Ma from a dolerite sill near Chimanimani (Hansen *et al*., 1998).

To further our knowledge of the emplacement of the Zimbabwe part of the LIP, the Universities of the Witwatersrand and Johannesburg have initiated a project, which involved sampling around Chimanimani, Birchenough Bridge and Nyanga. The samplers included Distinguished Professor Lewis D. Ashwal, Dr Ben Hayes and Mr Khulekani

Khumalo (post-graduate student), and Tony Martin who went along for the ride. In all 42 sites were sampled over the period from 11th to 19th September.

Diesel was a problem and thanks must go to Chris Wilson for arranging 80 litres at Chimanimani, without which we would not have achieved our objective. The daily routine was quickly established: Ben planned the route, broke a few rocks and recorded where we were, Tony had the best sledge hammer technique, Khulekani, "KK", recorded and numbered the samples, and Lew kept asking if the rocks contained magnetite: almost all of them did and some are very magnetic. This might sound trivial but Lew believes there is a correlation between magnetite and the much more important zircons.

Points of geological interest included a vertical dyke contact, although Ben was doubtful about that, the crackled top of a sill, which Ben reckoned was the bottom and some textural variations including locally developed feldspar phenocrysts and sparse glomerocrysts which produce a glomerophyric texture. Ok, ok – I had never heard the term either, and thanks to Ben for introducing me to it: glomeroporphyritic or glomerophyric is used to describe a porpyritic texture in which phenocrysts are clustered into aggregates called glomerocrysts or crystal clots (*Wikipedia*).

Sample export approval took twice as long as sample collection given the plethora of stamps and signatures required from diverse departments within the Ministry of Mines and Mining Development. The Geological Survey and Metallurgical Departments were a breeze, Head Office, the doldrums. However, the samples are on their way and we can look forward to project completion in a year or two.

One of the reasons that LIPs are so important is that they allow for more confident plate reconstructions using dates and palaeomagnetism and they also provide a window into mantle/magmatic processes and crustal contamination. The Wits project aims to enhance our knowledge of what happens within the mantle and crust during LIP formation and this will be done using geochemical and isotopic analyses on a new isotope dilution facility at Wits, along with the recently established multi-collector ICP-MS instrument at the University of Johannesburg. These state-of-the-art instruments will give high-precision, combined Sr-Nd-Hf isotopic compositions for the Umkondo and other southern African LIPs.

The Team - KK, Lew, Tony, Ben

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# BOOK REVIEW

**"*MINING IN ZIMBABWE- From the 6th to the 21st Centuries*"**
**Edited by Martin Prendergast and John Hollaway**
**Published by The Chamber of Mines of Zimbabwe**

When this book was launched, my immediate reaction was: "Ah, at last someone has finally done what has been crying out to be done in documenting the story of mining in Zimbabwe".

In my 30-odd years of life in the mining industry, I must confess that almost each time I emerged from underground, the thought crossed my mind that these collective experiences needed to be recorded. Little did I know that that sentiment was shared, as our colleagues have now eminently displayed in producing this book. Authored by 18 seasoned mining persons and edited by two well respected seniors of the industry, the book is certainly on firm ground in terms of the integrity of authorship.

So what is the first thing that anyone sees about any book? The cover of course! After much thought and several versions, the cover design is a story in itself – of the early miners, their clothing and postures say it all; reflections of surface and underground mining show the diversity of ore types and, of course, the people who make it happen. I guess there is never enough room for everything but a picture of artisanal mining activity would have completed the story for me. After all, right at the beginning of this history, most of the pioneers were artisanal miners and lately, artisanal mining has through circumstance come back in a big way.

The ***Foreword*** helps one understand the background to this project. Interestingly, there are a couple of precursors to this present publication. That in itself is confirmation that this needs to remain a live 'work-in-progress' type of project. If the authors and sponsors were to consider it, perhaps, it could initially develop by way of editions that would enhance this first comprehensive compilation by adding new developments such as the emerging energy minerals quest, including the Zambezi Valley hydrocarbons story, and the rare-earths, WHEN we eventually find them in good quantity.

The contents page of a book is a good initial indicator for any reader to make up their minds whether it is worth their time or not. In this case, what stands out is:

- It starts on the right note: **Geology**. I have often told anyone who cares to listen that for mining, it ALL starts with the geology. No rock – no mine. Refreshingly presented by Tom Blenkinsop.
- It is followed by Forbes Mugumbate's comprehensive account of the regulatory and supporting aspect of **Government's role** in the industry before going into three chapters on **Pre-colonial Mining** where, because of the stage of human development, the focus was on three minerals: gold, iron and copper. The three chapters on pre-colonial mining provide a necessary historical perspective which prepares any reader to understand and accept that mining in Zimbabwe did not start with colonization, but rather much earlier. Hence, from the 6$^{th}$ Century.
- The sixth to the sixteenth chapters are mineral-specific, in which individual authors cover gold, coal, asbestos, chrome, copper, tin, iron & steel, nickel, diamonds, PGMs, and industrial minerals.
- A chapter on minor minerals and metals then rounds off the story before a broad-brush article on Mining Economy and a Postscript on developments in the industry in 2017-2018.

Without reading every page, the reader can get the sense that the authors have attempted to cover every mineral that has featured in Zimbabwe mining history. However to me, what has not stood out is the technology story of mining in Zimbabwe. One might ask if a stand-alone chapter encompasing the following aspects might not have enhanced the book:

- The journey of discovery of deposits from simple prospecting to those employing modern space-age exploration technologies to find major sub-outcropping deposits;
- The development of mining practice from pick and shovel to automated, driverless machines;
- The evolution of mineral processing and recovery, from the humble pan to modern plants run by SCADA from spotless control rooms; and
- Grade control systems development, from a tail in the pan to modern analytical methods using XRF, ICP and other advanced instrumentation.

This is not to suggest that these subjects have not been covered by the authors – they have to a large degree. However, one would need to search in each chapter for a particular section on the above if in need of specific information. Perhaps this is a story for a future edition or even a concept for a completely separate project and publication.

For the lazy reader, the ***Introduction*** written by Walter Nemasasi and John Hollaway, is an excellent overview telling the story behind the story. It walks one through why Zimbabwe was colonized, how the mineral potential was developed and exploited, and

the way that political events and the legal environment have shaped the mining industry. You can fast-forward and go on to read Tony Hawkins' concluding chapter on ***Zimbabwe's Mining Economy*** where there is greater detail in the narrative supported by tables and graphs to give a sense of how our industry has evolved over time. That concluding chapter is another opportunity for a speed-read as to what has happened with the various minerals commodities over time. It is admirable how records have been maintained such that a reconstruction of mining over the years is possible, even though Prof. Hawkins laments that *"data on profitability are very crude"*. This can only be a function of the unenforceable need for full disclosure of the financial returns of mining ventures, particularly where the majority of players are not listed on any stock exchange.

The mineral-specific chapters make up the bulk of this 645-page book, which being a hard-back, is certainly not one of those you can take on a bus, train or plane to read in transit. This is a serious treatise of mining in one of Africa's best developed and regulated mining jurisdictions. One would probably be forgiven for using it as a reference work like an encyclopaedia. What is interesting is that, as each author wrote about a specific mineral, they also touched on issues of the history around the mining of that mineral. This gives the reader an opportunity to have both an enhanced history as well as, in places, a means of cross-checking historical fact. One fascinating enhancement is the inclusion of biographies of two colourful personalities in the history of mining: the late ***Norman Levin*** and the late ***Roland "Tiny" Rowland***, which John Hollaway somehow managed to fit into the story of ***Gold*** mining. Perhaps another future project might be to write about the 100 most influential personalities in Zimbabwe's mining history?

The book is, literally, a MINE of information. From Oliver Maponga's wide coverage of ***Coal***, through Farai Makwara's expose on ***Asbestos***, Sunny Kalenjeka's story on ***Chrome*** mining and Harald Solberg's fascinating piece on ***Copper***, the reader is given great coverage of history, geology, mining practice, processing and ownership issues of the main players for each commodity. Similarly the chapters by Alexander Mukwekwezeke (***Tin***), Charles Castellin (***Iron & Steel***) and Paul Markham (***Nickel***) all give well researched and written accounts on these minerals. The chapters on ***Diamonds*** by Vernon and Susan Stocklmayer and ***Platinum Group Metals*** by Martin Prendergast, Andrew du Toit and Caston Musa feature towards the end of the book, possibly due the fact that they are new-comers to mineral production in Zimbabwe.

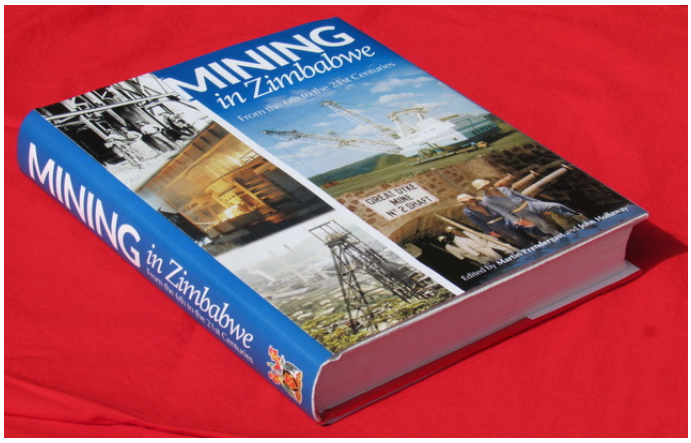
For the simple reason that some are mined in smaller volumes, may have less potential value and that their exploitation is less prominent, the chapters on ***Industrial Minerals*** and ***Minor Minerals and Metals*** by John Hollaway are covered towards the end of the book. Interestingly, this is the section where ***lithium*** is reviewed. Without needing any prophetic prowess, I can predict that the next edition of this book will feature a stand-alone chapter on lithium, which is rapidly gaining prominence due to the evolution of electric vehicles and increasing use of re-chargeable batteries. Also tucked away as minor minerals, are the ***rare earths***. Again, the reader needs to 'watch this space' as these will feature prominently mining and technology as the ***Postscript*** heralds these developments for the future.

My view? Go out and buy this book if mining runs in your blood, and do so before it runs out of print! A good – no, great - addition to any individual or communal library, I recommend it highly. It would not surprise me that the interest in this publication will go

beyond the mining fraternity to embrace academia (as a reference for both students and lecturers), economists, prospective investors and interested individuals. The investment of US$170 equivalent at the prevailing interbank rate is certainly value for money considering the wealth of information packed into this tome on our mining history. Get your copy TODAY.

*Allan B. Mashingaidze*
**MINING CONSULTANT**
August, 2019

***FOOTNOTE***
*This review of the book "MINING IN ZIMBABWE: From the 6th to the 21st Centuries" was requested, through Mr. Tim Broderick, for publication in the October 2019 issue of the Geological Society of Zimbabwe Newsletter. The views expressed, analysis and recommendations are wholly the responsibility of the reviewer and should not be blamed or ascribed to any of the contributors or the editors of the book. The reviewer gives permission for this review to be reproduced elsewhere, on condition that the authorship remains acknowledged.*




If you would like to purchase a copy of *Mining in Zimbabwe*, please contact either Joyful Muzvidziwa (+263772242238, Joyful.Muzvidziwa@angloamerican.com) at the Unki Mine office at 47 Broadlands Road, Emerald Hill in Harare, or Sikhangele Ngwenya (+263772105360), Sikhangele.Ngwenya@angloamerican.com) at Unki Mine.

The books will be couriered (not posted) to external purchasers, at the purchaser's cost.

Published by the Chamber of Mines of Zimbabwe with funding from Unki Mines (Pvt) Ltd, an Anglo American Company in Zimbabwe.


*Editors and authors at the launch of* Mining in Zimbabwe, *28th May 2019*
*L to R, Standing: Martin Prendergast, John Hollaway, Caston Musa*
*Seated: Sunny Kalenjeka, Walter Nemasasi, Harald Solberg, Alexander Mukwekwezeke, Farai Makwara, Forbes Mugumbate, Paul Markham, Charles Castelin, Tony Hawkins, Andrew du Toit, Herbert Mashanyare Photo: Anglo American photo library.*
*Missing: Roger Stringer (Copy Editor), Tom Blenkinsop, Oliver Maponga, Susan and Vernon Stocklmayer.*

# News

## Geology Department, University of Zimbabwe

*Maideyi Meck*

There were no major events during the period under review. At the end of the semester Dr Martin and Dr Mulugheta resigned. The university as a whole has reverted to taking in one stream of students and as such there will be no February intake.

The Department managed to participate in the 100-days ZINGISA Project initiated by the Ministry of Higher and Tertiary Education. Dr Meck, Mr Mandingaisa and Mr Kwenda's research project involved the Geospatial Capability for Detecting and Quantifying Minerals.

Mr Mabhanga attended a two-week short course on geological mapping and exploration in South Korea using technologically advanced equipment. Material and experience gained will be adapted for the teaching of students

Dr Meck attended the POLARIS Geophysics Workshop by Vahosi on new technology involving the use of seisimic surveys. Our lecturers were briefed on the outcome to enable them to introduce content in our new courses.

The MOU with ETH-Zurich has seen one visiting PhD student from Switzerland being hosted by the Department. One student from Zimbabwe will go to ETH in 2020.

The MOU with the University of Tsukuba in Japan allowed one visiting professor to be hosted for two weeks by the Department. A PhD student will go to Japan during 2020.

Our MOU with the Chamber of Mines saw the Department, as part of the School of Mineral and Earth Science, receiving sponsorship for our curriculum review.

The Department partnered with Middle West to run a workshop on the subject of 'Automated Core Logging Software' in order to share their respective knowledge with industry participants on the subject of core logging.

The Department also hosted three talks on behalf of the Geological Society, and held an open day for high school children, principally from St Michael's School.

# The Mennell Geological Society

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# MIDLANDS STATE UNIVERSITY

FACULTY OF ENGINEERING & GEOSCIENCES
ZVISHAVANE CAMPUS

## 1. Introduction

Our Faculty has changed its name from Faculty of Mining & Mineral Processing Engineering to Faculty of Engineering & Geosciences to take care of additional engineering disciplines and burgeoning geology and geophysics programmes within the Faculty. The Mechanical Engineering programme, which was expected to commence in 2019 is now due to commence in 2020. The Fuels & Energy Engineering Department is also expected to take shape in 2020.

## 2. Staff Recruitment

At least 15 of the 35 Faculty positions advertised for earlier in the year were successfully filled. Some of the remaining posts will be filled through recently advertised staff development fellowships designed to enable individuals to advance themselves to approved postgraduate levels in preparation for their substantive roles at the university. The fellowships are tenable at any approved local, regional or international institution.

## 3. Student Industrial Placement

The Faculty would like to thank industry for availing industrial placements to our students. With our next group of students due for industrial placement in January 2020, we continue to bank on industry support to ensure that our students get the best exposure and training in their several fields of study.

## 4. Conclusions

The Faculty continues to value partnerships in research and development with local and international entities and government 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

# Geological Survey Department

*Sokesimbone Lunga*
sokelunga@gmail.com

## STAFFING MATTERS

**Brian Muteta** returned to the Department in April having successfully completed his MSc degree in Economic Geology undertaken in Japan over the past three years. Brian currently heads the Applied Geology Section of the Department

**Ms Rumbidzai Shereni**, a Geologist trained in Algeria, resigned from her post in April 2019.

**Frank Muzanenhamo**, former head of the Applied Geology Section, left the Department in May 2019 on transfer to substantively take up the post of Deputy Provincial Mining Director for Manicaland Province, which he had been holding in an acting capacity since mid-2018.

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

**Lloyd Magombedze**, Senior Geologist, is still on secondment to the Chief Director, Technical Services Office at Head Office.

**Tapiwa Magidi**, Geologist, was seconded to the Mashonaland Central Bindura office in July, initially for a period of three months, but this posting has since been extended indefinitely.

**Godfrey Matope,** a UZ Geology student, joined the Department on attachment in April 2019 whilst **Gilbert Kupeta,** also a student from UZ, joined the Geological Survey on attachment in October 2019.

## SPONSORED SKILLS DEVELOPMENT TRAINING

### Japan Oil and Gas National Corporation (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 through workshops held at JOCMEC's Botswana facility over the years. The annual event conducted through JOGMEC's scope is to strengthen remote sensing skills for geoscientists in the Southern African Development Community (SADC) region. For its part JOGMEC seeks in the long term, through mutual co-operation with countries in the region, to identify and secure mineral deposits for future exploitation by Japanese companies for the mutual benefit of the countries concerned. The following geoscientists are the current beneficiaries.

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**Benedict Ncube**, geologist, will attend a two week-long training workshop starting at the beginning of November whilst **Ms Vimbai Gengezha and Brian Muteta**, geologists, as well as **Abenezel Makuvaza,** geophysicist, attended a Remote Sensing competition held in Lobatse, Botswana in the final week of October 2019.

### Organization of African Geological Surveys (OAGS)

The Department participates in various training programmes offered under the Pan African Geoscience Project (PanAfGeo). The programmes are aimed at addressing the practical skills gaps that exist in African Geological Surveys. The following are the current beneficiaries;

**Tapiwa Magidi**, geologist, attended a month-long Geoscientific Mapping training course held in Ethiopia in February and March 2019 while **Ms Vimbai Takawira**, geologist, attended a similar course in Windhoek, Namibia from mid-August to mid-September 2019.

### Multilateral Seminars and Courses offered by the Chinese Government

The Department has over the years been a beneficiary of training courses offered by the Chinese government in its endeavour to strengthen the minerals management regime of developing countries, among them Zimbabwe.

In this regard **Ms Evelyn Marumisa**, geologist, attended a seminar on Geological Survey Informatization Technology for Developing Countries held in China from mid-August to mid-September 2019.

**GEOHAZARDS / CYCLONE IDAI**

The Department is a member of the Geological Hazards Sub-Committee of the Technical Committee on Multiple Hazard Analysis on Chimanimani and other areas affected by Cyclone Idai. The Technical Committee, comprising personnel drawn from government departments, research institutes, and academia, is headed and co-ordinated by the Ministry of Tertiary and Higher Education, Science and Technology Development.

The Geological Survey Department's task is to investigate the geological circumstances associated with mudslides and rockfalls triggered by Cyclone Idai with a view to explaining the nature of the geohazards and to make recommendations on mitigatory measures against the hazards. **Ms Vimbai Takawira**, and **Mr Amicable Hove**, geologists, are representing the Geological Survey on this Technical Committee.

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*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.

| No. | Status | Title | Author(s) | *Editor* |
|---|---|---|---|---|
| B 95 text | New | The Geology of the Country around Dorowa-Shawa | J. N. LAUDERDALE | *Mr. D. E. H. Murangari* |
| B 99 + map | New | The Geology of the Western Portion of the Chewore Inliers, Zambezi Valley | P. FEY | *Prof. Tom Blenkinsop* |
| 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 | *Mr Tim J. Broderick* |
| B 105 + map | New | The Geology of the Country between Chireya and Goredema, Gokwe North and Gokwe South Districts | A. AIT- KACI AHMED | *Dr Dennis S. M. Shoko* |
| 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. | *Dr Dennis S. M. Shoko* |
| 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 | *Dr Dennis S. M. Shoko* |
| MRS 28 | New | Tantalum and Niobium in Zimbabwe | G. NASCHEL-WESCHKE | *Mr Peter Fey* |
| MRS 29 | New | Copper Deposits in Zimbabwe | F. B. MUPAYA | *Dr Kosmas Chenjerai* |
| MRS 30 | New | Gemstone Deposits of Zimbabwe | M.T. HAWADI; L. S. MAFARA | *Dr Maideyi Mabvira-Meck* |
| SR 51 text | New | The Geology of the country around Belingwe Peak. | J. L. ORPEN ; A. MARTIN; | *Dr Kosmas Chenjerai* |

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| | | | F. MUGUMBATE. | |
| SR 55 + map | New | Geology of the Country Southwest of the Chewore Inliers, Hurungwe District | P.T. ZIZHOU; S. LUNGA | *Mr Peter Fey* |
| 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. | |
| B 83 + map | Reprint | The Geology of the Belingwe- Shabani Schist Belt | A. MARTIN | |
| 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

**A US$12 billion mining industry by 2023**

The Ministry of Mines and Mining Development has launched an ambitious plan to facilitate development of a US$12 billion mining industry by 2023. This will be the mining industry's partial contribution towards the nation's vision of becoming an upper middle income country by 2030.

At a colourful ceremony officially launched by President E.D. Mnangagwa in Harare, Minister of Mines and Mining Development, Winston Chitando, unveiled a policy document, known as the 'Strategic Road to the Achievement of a $12-billion mining industry by 2023'. The document shows that the US$12 billion mining industry will be achieved through various initiatives including increased exploration, mining development, value addition and beneficiation, mining investment, human and institutional capacity development as well as digital transformation. The key minerals of focus and their contribution will include: 50 tonnes of platinum group metals produced per annum (USD3 billion), production of 100 tonnes of gold per annum (USD4 billion), 1.8 million tonnes of chrome produced per annum (USD1 billion), 10 million carats of diamonds produced per annum (USD1 billion), Coal (USD1 billion), Lithium (USD0.5 billion), and other minerals (USD1.5 billion). While the Minister gave an indication of the various projects that will contribute in the coal and PGM sectors, the gold sector was not favoured with such detailed analyses despite the sector being projected to be the major contributor to the US$12 billion industry. This is probably the result of utterances by the Zimbabwe Miner's Federation that the sector is already producing 100 tonnes gold per annum, most of which is side marketed due to unfavourable marketing conditions in Zimbabwe. The understanding is therefore that with regards to gold, it is just a matter of putting in place favourable marketing conditions.

Zimbabwe is home to large resources of important minerals including coal, PGMs, chrome ore, iron ore, lithium, and gold. There is therefore no reason why such targets cannot be achieved given favourable investment conditions. Minister Chitando has predicted that the US$12 billion mining industry will be achieved by 2023 without failure. It remains to be seen how this will be possible under current conditions of shortages of electricity, fuel and foreign currency. It is however interesting to note that within the same programme, the Minister projects that Zimbabwe will be a net exporter of both electricity and diesel fuel by 2023. We can only brace for exciting times ahead of us.

**New structure at the Ministry of Mines and Mining Development**

The Ministry has been reconfigured so that it is able to deliver the US$12 billion mining industry by 2023. Highlights of the changes include creation a new position of Chief Director responsible for Mining Development. Under him are three departments headed by directors respectively responsible for Energy Minerals, Non-Energy Minerals, and Research and Value Addition. There will also be a department responsible for Policy Planning, Monitoring and Evaluation.

**Legislative environment**

The continued delays in completing amendments to the Mines and Minerals Act could be a threat to the achievement of the US$12 billion mining industry target. Some investors are sceptical about investing without knowledge of what the new Act will bring. We hope the promise made by the Parliamentary Portfolio Committee on Mines in Kariba in November 2018 that the Act will be amended this year is still on course.

Another potential obstacle to getting to the US$12 billion mining industry target could be uncertainty surrounding the Indigenization and Economic Empowerment Act (Chapter 14:33). Despite amendments that were made through the 2018 Finance Act, the Indigenization Act is yet to be amended or repealed to give weight to government pronouncements to remove platinum miners from the reserve list. Zimbabwe Platinum Holdings (Zimplats) has already expressed concerns over the delays in clarification of government's position.

**Forced labour at Zimbabwe diamond Mines?**

Very disturbing news is that the United States of America has banned trading of diamonds from Zimbabwe accusing the country of using forced labour at the diamond fields in Marange. The mines are operated by the Zimbabwe Consolidated Diamond Company (ZCDC), a government owned company. Zimbabwe has been seeking to mend ties with the US, which has maintained selective sanctions on the country for close to two decades over alleged human rights violations and the country's poor democracy record. Could this ban be a way of tightening the sanctions considering that the Minerals Marketing Corporation of Zimbabwe (MMCZ) and the Zimbabwe Mining Development Corporation of Zimbabwe (ZMDC) are under sanctions? What is obvious is that the move by the US government will have negative effects on the development of the mining industry, a threat to the ambitious US$12 billion mining industry road map. This will certainly erode some confidences the country had built.

**Electricity shortages; a threat to attaining the US$12 billion mining industry**

The Zimbabwe Electricity Supply Authority (ZESA) has increased the average electricity tariff by 320% at a time power cuts lasting up to 18 hours have hit mines, industry and homes and, together with a devastating drought, have been cited by the treasury as among the main reasons why the economy is set to contract by up to 6% this year. This was the second increase in three months, following one in August.

Some mines have taken measures to mitigate the problem of energy supplies. For instance, Caledonia Mining Corporation has bought an additional 6 MW diesel generator to complement its current 12.5 MW diesel generator capacity. Additionally, the company is evaluating a project to install solar photovoltaic generating capacity at Blanket. Other companies have taken similar measures to further reduce dependence on the grid.

**Unki Mine commits to independent responsible mining audit**

We congratulate Unki Platinum Mine for becoming the first in Zimbabwe to publicly commit to being independently audited against the Initiative for Responsible Mining Assurance's (Irma's) Standard for Responsible Mining. Unki's Sustainable Mining Plan is to have all of its operations assessed against credible responsible mining standards by 2025. The mine was assessed by independent auditors against the 26 areas including working conditions, human rights, community and stakeholder engagement, environmental impact, and planning and financing reclamation and closure. This is a commendable move that should be emulated by other mines in the spirit of transparency.

**Lithium bubble about to burst?**

The demand for lithium has been driven by the projected need for lithium batteries when electric cars go mainstream. Between mid-2015 and mid-2018, prices for lithium, the metal crucial for rechargeable batteries, almost tripled as the world's fleet of electric vehicles hit the 5 million mark. This sparked the opening of six lithium mines in Australia since 2017 as companies raced to gain from an evolving technology.

Lithium carbonate prices that peaked in November 2017 at US$25,800/t, have been under pressure since then. Having fallen through much of 2018 and the start of 2019, as of October 2019 carbonate prices stood at just US$10,000/t. The over supply of mined lithium products caused largely by the commissioning of lithium mineral operations in Australia outpacing mineral/chemical conversion capacity in China, and the weaker-than-expected demand in China due to declining sales of electric cars are believed to be the major influences on falling lithium prices.

## 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

# 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**

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.

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# Conferences

## Geological Society of Zimbabwe

## Summer Symposium 2019

## Friday 29th November 2019

Department of Geology, UZ

### Provisional Programme

| | **Topic** | **Speaker** |
|---|---|---|
| 07:45 | Registration | |
| 8:00 | Welcome | Nevison Chikandiwa GSZ Chairman |
| 8:20 | Official Opening | Forbes Mugumbate Director ZGS |
| 8:40 | Petroleum Exploration | Brent Barber |
| **09:00** | **Tea** | |
| 09:20 | Sijarira surprise: Preliminary dating of the Sijarira Group in western Zimbabwe reveals a possible Antarctica link | Sharad Master |
| 10:15 | 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 |
| 11:00 | The Great Dyke of great treasures and great mysteries. | Forbes Mugumbate |
| 11:20 | 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 |
| 11:50 | The Geology and Historical Importance of the Abanab Vanadium Mine in the Otavi MountainLand (Namibia). | Mark Watts |
| 12:10 | Some observations on pegmatites. | Tony Martin |
| 12:40 | Structural Footprint of Gold Mineralisation in Zimbabwe Greenstone Belts; A case study of Pickstone Peerless Deposit. | George Rusike |
| **13:00** | **Lunch** | |

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|---|---|---|
| 14:00 | Tantalite Production in Post Colonial Zimbabwe, 1980 – 2018: Challenges and Prospects. | Tafadzwa Gwini |
| 14:20 | The Geo-Metallurgy of the Arcadia Pegmatite Swarm. | Adam Moodley |
| 14:40 | An Interpretation Of Magnetic, Gravity And Magnetotelluric Measurements Over The Magondi Circular Magnetic Anomaly Of Zimbabwe. | Tenyears Gumede |
| **15:00** | **Tea** | |
| 15:15 | ScanIT – Optimizing core logging data acquisition. | Megan du Plooy |
| 15:35 | Microseismic monitoring-based approach to effective ground control management in unstable underground mines. | Paul Matshona |
| 15:55 | Applications Of Ground Penetrating Radar Scanning And Borehole Logging At Unki. | Simbarashe Wedu |
| **16:15** | **Summary** | Tony Martin |

Contact andrewdutoitzim@gmail.com

*Please put this date in you diary now*

Geological Society of Zimbabwe

P O Box 1719
Causeway, Harare
Zimbabwe

# Zimbabwe Mineral Resource Conference

## HARARE – 2020

## Update

The Geological Society of Zimbabwe 2020 Conference sub–committee consists of the following people:

| | |
|---|---|
| Chairman: | Ellah Muchemwa |
| Secretary, Treasurer and venue | Julie Kuhn |
| Sponsorship and advertising | Kudzai Musiwa |
| Papers, abstracts, publications | Houda Bouammar |
| Field trips & Website | Andrew du Toit and Steve Duma |
| Ex-officio (Current GSZ Chairman) | Nevison Chikandiwa |

The sub-committee is excited to be planning and organising this conference for June 2020 following its rescheduling last year. Preparations for the conference are now at an advanced stage.

- Keynote speakers for each of the planned four sessions have been identified including some renowned international participants**;**
- Both pre-conference and post–conference field trips are being finalized and will include visits to operating mines and some exciting new projects;
- The Conference Sub-committee has reached out to a select group of companies to work with us on the conference through sponsorship/partnership and or advertising.

The response to our first flier sent out in June 2019 has been good and some high quality titles for abstracts have been received. We look forward to receiving even more responses once the second flier is sent out at the end of November, 2019.

We also look forward to great support from you, our membership, through your attendance at the conference, the presentation of papers of interest to the wider geological and mining community, and by being ambassadors for the Society in your respective capacities.

Please let us know as soon as possible, your interest in attending/presenting by sending an e-mail to ellah.muchemwa@outlook.com and or geol.soc.zimbabwe@gmail.com

# GEOLOGICAL SOCIETY OF ZIMBABWE: CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE FOR 2019

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# Institutional Membership, 2019

Bruker RSA

Chamber of Mines of Zimbabwe

Freda Rebecca Mine

Goldsearch Technical Services

Metallon Gold

Mimosa

Murowa Diamonds (Pvt) Limited

New Dawn Mining

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