

Geological Society of Zimbabwe



Newsletter

October 2023

No. 3 of 3 of 2023



The Shawa Ring Complex showing the carbonatite ring dyke in the foreground and the Shawa Vermiculite Mine in the distance adjacent to the outer fenite ring. *Photo: James Winch*

www.geologicalsociety.org.zw

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

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Editorial

Our previous Newsletter was circulated just after the untimely passing of Collins Mwatahwa. As a reminder of Collins' persistent participation in Society affairs, Adolph Chikasha submitted a photo from our trip to assess the Fumure 'Impact' Structure near Bangala Dam in October 2008. Collins had previously been involved with Prospecting Ventures when they investigated the ground, no doubt for a Renco extension. Adolph was working at Renco at the time.



Fumure trip, October 2008 Adolph Chikasha

The trip that had been arranged to visit the Manhize iron ore and process plant on 13th May was cancelled in respect for Collins, but we hope that this venture can be rescheduled. Subsequently Igor Shmakov offered an off-the-cuff visit to the Alrosa diamond prospect below Chikwakwa in the basal unit of the Umkondo Group as they were about to rehabilitate pits. The group that responded are pictured below whilst Igor penned an explanation, which is presented in this Newsletter.



The group attending Alrosa's Chikwakwa prospect, May 2023

Then came the Society Summer Symposium on 1st September, organized in the Diamond Lecture Theatre at UZ by Andrew du Toit. A full and varied lecture programme was presented, highlighted by Patrick James who talked on the subject of Geoparks, Geotrails and Geoheritage. Patrick had done his PhD field work through Leeds University in 1972 on a swathe of country extending south from the Masvingo Greenstone Belt, across the North Marginal Zone of the Limpopo Belt to the vicinity of Bangala Dam. He was able to revisit his field area 50 years on under the guidance of Brian Mapingere. His account of his visit to Zimbabwe is included in this Newsletter, which incorporates a description of the post-Symposium field trip to the Dorowa and Shawa alkali complexes in Buhera North. The frontispiece is a drone image by James Winch showing the Shawa ring structure. Led by Tony Martin, seen pronouncing at the Dorowa north pit, we were also hosted at the Shawa Vermiculite Mine before visiting the now dormant Dinhidza Mine.



The Society was invited by Invictus to visit the Mukuyu 2 drill site north of Mahuwe in Mbire District. An account of this well-attended visit is given by Tim Broderick in this Newsletter. Gratitude is expressed to our various hosts, and we look forward to visiting many more exciting venues.

On-line Zoom talks were presented by:

Lot Koopman on 6th July on *'Expanding our knowledge of melting and metal enrichment in the cratonic basement of Zimbabwe'*. A pdf version of this talk can be downloaded from our web site.

Mike Watkeys was to have expounded upon his topic *'From Stonehenge to the Mayans: just how good were Stone Age astronomers?'*, but he shortened his presentation to detail on Stonehenge and environs, so we have the Mayan contribution to look forward to. The talk drew listeners from the Astronomical Society of Zimbabwe who enthralled in the presentation.

Gayle Hanssen records her experiences at the biennial Colloquium on African Geology (CAG) held in Windhoek, Namibia in September. We note the Committee initiative to use Institutional Membership funds to sponsor Members who apply to present research papers at specified conferences. In November Godfrey Chagondah will represent Zimbabwe at the *'African Exploration and Technology Showcase'* in Johannesburg. Future targeted conferences will be the 2024 Society of Economic Geologist's Annual Conference, which will be held in Windhoek, and the next CAG Conference, which will be in Nairobi, Kenya in 2025.

Talking of conferences, it is worthy of note that Michel Zondo, Curator of Palaeontology at the Natural History Museum, Bulawayo presented his work as a poster at this year's Society of Vertebrate Paleontology Conference in Cincinnati, Ohio held in October. What is more, he won an award for his efforts in describing the stratigraphic setting of dinosaur remains in the Mpandi Formation on Sentinel Ranch west of Beitbridge, a topic for which he is registered for an MSc degree through the Evolutionary Studies Institute at the University of the Witwatersrand.



Mike Zondo's poster at the SVP Conference, Cincinnati Oct 2023. Chris Griffin

As always, a big thankyou to our institution correspondents and also to Kennedy Mtetwa for filtering relevant news and views relating to our mining industry. Forbes will be back on stream with his mining commentary for the next issue of the Newsletter.

Let us conclude by encouraging the growth of our Society through Membership and participation. Gayle is thanked for her summary on the current situation regarding Membership.

Tim Broderick (Icositet)



Chairperson's Chat

Tenyears Gumede

tenyearsgumede@gmail.com



The Geological Society of Zimbabwe (GSZ) is a society for Geoscience with a mission to provide relevant education and networking opportunities to our members. We are in the 4th quarter of the year and it has been an exciting time in terms of the Society's activities designed to achieve our mission. The Summer Symposium in early September, high point in the GSZ calendar, has come and gone. Eleven (11) technical presentations with topics varying from geo-tourism to gold, copper, and molybdenum mineralization, geochemistry of the Dorowa Complex rocks and Archaean late-stage granite suite genesis to machine learning and 3D orebody modeling were presented. This exciting event was followed by a field visit to the Dorowa and Shawa alkaline complexes, which was led by Dr Martin with Dr Meck.

Concerning other GSZ events, we would like to encourage more participation from our Geological Community especially on field trips. The Society organized interesting geological site visits to Umkondo conglomerate exposures being investigated by Alrosa (Zimbabwe) Ltd, and to the Mukuyu 2 hydrocarbons rig site in Mbire District where we were hosted by Invictus Energy. Other potential site visits are planned to the Beatrice Gold Mine and to the Manhize iron ore and plant site before year-end.

The Society is funded through its membership (individual and institutional) and through sponsors who share our passion for geoscience. This money has enabled our participation in the Chamber of Mines' Conference and event at Victoria Falls. The GSZ is sponsoring the attendance of two of its members, one to attend the Geological Society of South Africa's (GSSA) *African Exploration and Technology Showcase* in Johannesburg and the other to participate in the Association of Mine Managers' of Zimbabwe (AMMZ) Meeting at Victoria Falls, where they will present papers and represent the Society. We say congratulations to Dr Godfrey Chagondah and Mr Steve Duma, who were chosen by the Phaup Committee to represent us at the respective events. We thank our sponsors, both institutional and individual, who have made this representation possible.

The GSZ, in honoring the work of Mr Collins Mwatahwa who passed on earlier this year, has created the Collins Mwatahwa Prize, to be awarded to deserving BSc Honours Geology Students from our universities. The University of Zimbabwe and Midlands State University students participated in the award by presenting project work at our Symposium. We would like to encourage other universities offering Geoscience-related courses to equally participate in order to encourage the furtherance of research.

I would like to thank our Members for their variously effective involvement in Society affairs. Let us build this Society together.

MEMBERSHIP UPDATE AS OF 17th OCTOBER 2023

Currently the GSZ has a list of 279 individuals that comprise Honorary, Ordinary, Foreign and Associate membership. Of these 85 are in good standing including our 16 Honorary Members. The GSZ now requires that members be in good standing in order to participate in all conferences (mainly the Summer Symposium) and field trips on offer. There has been renewed interest from our Institutional Members, with the five listed now being paid up and a further three actively pursuing payment.

The GSZ Committee has now committed to use the Institutional Membership fees to fund cutting-edge geological presentations to be delivered at conferences that are considered pertinent to the research and development of the science in the country. This year the GSZ will fund one participant to the **African Exploration and Technology Showcase** being staged by the Geological Society of South Africa in conjunction with other geological societies in southern Africa. This conference will be held in Johannesburg from 15 to 16th November 2023. The funding from GSZ will cover flights and conference fees. A very generous donation of accommodation has been offered by our Member, Nellie Mutemeri, and we certainly thank her for this offer. The conference will showcase new African exploration projects and developments, and the GSZ thanks our Institutional Membership for allowing us to make sure we are part of it. Applications closed on 20th October, following which the successful applicant will be informed and announced to the membership.

Further, the GSZ has targeted the Society of Economic Geologists Annual Conference, which will be held in Windhoek, Namibia in 2024 and the Colloquium of African Geology Conference, which will be held in Nairobi, Kenya in 2025. Further details on how to apply for these scholarships will be circulated in early 2024, but it is emphasised that a good precursor to any application would be the preparation of a pertinent presentation. The GSZ would like to take this opportunity to recognise and appreciate the support by our long-standing Institutional Membership and we encourage other major players in the Zimbabwe Mining Industry to support this initiative and create and encourage research and development to thrive in the Zimbabwe geological sector.

Gayle Hanssen, Membership Secretary

gaylehanssen@gmail.com

Paid-up Membership as of October 2023

Institutional Members

GeoAssociates (Pvt) Limited

MaxGeo

Prospect Resources

RZM Murowa (Pvt) Limited

Zimbabwe Platinum Mines Limited

Honorary Members

Blenkinsop, Tom; Broderick, Tim; Colvine, Sandy; Eriksson, Ken; Jelsma, Hielke; Jones, Dai; Kramers, Jan; Martin, Tony; Master, Sharad; Mugumbate, Forbes; Nisbet, Euan; Park, Graham; Podmore, Francis; Prendergast, Martin; Wilson, Allan; Zengeni, Teddy.

Ordinary Members

Bakasa	Samuel
Chatora	Daniel
Chikomo	Fanuel
Chikumba	Most
Chimbodza	Paul
Chinheya	Brian
Chituri	Owen
Chiumburu	Chenjerai
Chiyama	Leeroy
Denhere	Rumbidzai
Dinginya	Paul
du Toit	Andrew
Dube	David
Dube	Dennis
Dube	Londiwe
Duma	Steven
Gerema	Nyasha
Goba	Racheal
Gumbo	Hillary
Gumede	Tenyears
Hanssen	Gayle
Jones	Tim
Kanyezi	Pardon

Kasambira	Langton
Kashiri	Tendai
Kasumba	Jacob
Magagula	Mathew
Mahoso	Robert
Makumbe	Allan
Makwiranzou	Primrose
Mamuse	Antony
Manenji	Nhamo
Mapingere	Brian
Maponga	Oliver
Marazani	Tarisai
Mashiringwani	Daneonce
Matanga	Charles
Mateveke	Martin
Matsheza	Tinyashe
Mavata	Remigiyo
Mbiri	Esau
Meck	Maideyi
Mtetwa	Kennedy
Muchemwa	Ellah
Mudavanhu	Joy
Mudavase	Emmanuel

Mugandani	Ernest
Mukwashi	Renias
Mungadzi	Watson
Muoneka	Benefit
Mupaya	Bornwell
Mupwanda	Never
Muredzo	Simbarashe
Musiwa	Kudzai
Mutchengeti	Takunda
Mutemeri	Nellie
Mutika	Metrinah
Muyambo	Talkmore
Nemahwe	Billmore
Nhau	Wadzanai
Nkomo	Prince
Nyagumbo	Jonathan
Poterai	Julius
Sansole	Chipo
Sibanda	Chanesta
Siyamuzhombwe	Wesley
Tirivabaya	Renias
Tsomondo	Mark
Winch	James

- **Honorary:** This membership has been bestowed on all presenters of the A.M. Macgregor Memorial Lecture, and to those who have made outstanding contributions to the Society over the years. Currently we have 16 such members.
- **Ordinary:** Professional membership by application for geologists who have a registered degree. To apply for this category, we need a copy of your degree certificate, a form sponsored by 2 current Ordinary Members, and your CV.
- **Foreign:** As above, but for those not resident in Zimbabwe.
- **Associate:** For interested parties not holding a degree but who are interested in participation.
- **Institutional:** Corporate membership and ardent supporters of the Zimbabwe Mining Industry.

<http://www.geologicalsociety.org.zw/membership>

The Membership Application Form can be down-loaded from the Membership Page of the website.

MEMBERSHIP SUBSCRIPTION FEES

(The first year's fee is the joining fee. If your application is rejected this joining fee will be forfeited)

Members (including Associate Members) US\$30 annually
(or ZWL equivalent at the bank rate on the day of payment if US\$ unobtainable)

Institutional Member US\$500 annually

Note: Foreign Members are classified as such on the basis of postal address. There is a different NOSTRO account for external payments, details for which will be provided on request.

Banking Details

Geological Society of Zimbabwe
First Capital Bank (Barclays)
Kurima House Branch

OR

Ecocash

Merchant Number 82758

USD Nostro FCA Domestic: 21573779436

OR

RTGS Account Number: 21576533195

OR

FOR EXTERNAL FOREX TRANSACTIONS

Account Name: Geological Society of Zimbabwe

Branch Name: NGO Center

Account Numbers: Nostro FCA: 21573779533

Swift Code BARCZWHX



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Articles and Reports

Geotourism, Geotrails and Geoparks – golden opportunities for sustainable social and economic development

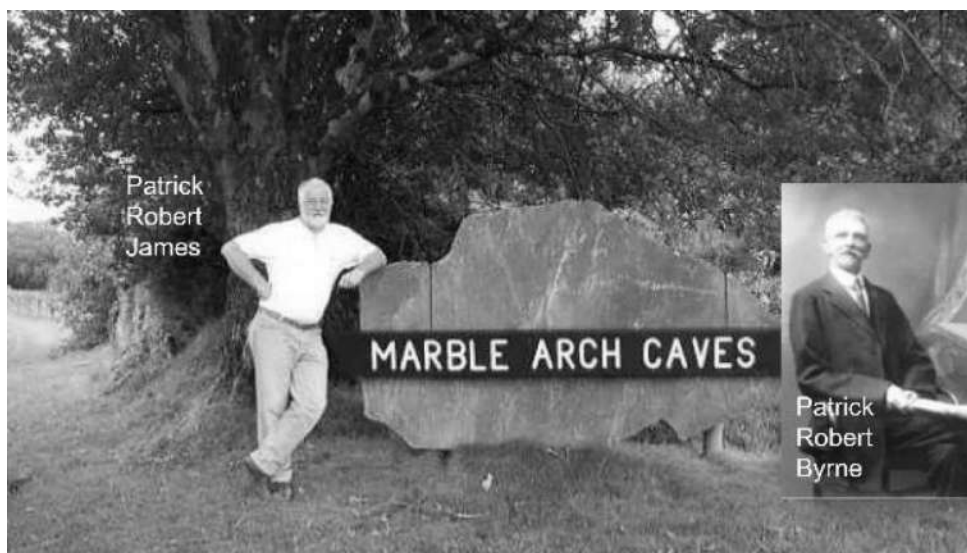
Professor Patrick James, University of South Australia

patrick.james@unisa.edu.au

Geotourism is a growing world-wide recreational and educational activity and is one component of Nature-based or Eco-tourism. This activity has been promoted and enhanced by an increased awareness of the need to protect and conserve our rich and varied “Abiotic” geological heritage (Geoheritage). The great range of geological and geomorphological landscapes, terrains, forms, features and processes provide a natural Geodiversity which is as precious and critical as the living “Biotic” equivalent so keenly and passionately defended by Biodiversity supporters. Geological conservation (Geoconservation) movements have begun to find a rightful place amongst popular, educated and scientific groups as the awareness of the fragility of our earth’s substrate and material spheres (geosphere, hydrosphere, biosphere, atmosphere) become more critical and mainstream, in terms of its effects on our global “Cultural” heritage, especially regarding changing global climates and rising sea levels. Thus, the A, B, C (Abiotic, Biotic and Cultural) themes embedded in Geotourism are becoming increasingly valuable as tools to increase the awareness and value of this activity to the increasing array of visitors and tourists.

A key driver for this rise in public awareness and knowledge of the importance and relevance of geotourism, has been the spectacular growth of UNESCO Global Geoparks (UGG’s) across almost all continents. This movement began only recently (early 2000’s) within Europe and China with the almost parallel development and opening of large numbers of Geoparks. A consortium of more than 30 Geoparks which were organised under the banner of the European Geoparks Network (EGN), provided the impetus for the rapid expansion of this movement, and the subsequent UNESCO Global Geoparks network further established more than 30 geoparks in China and a few others on most continents. These paved the way for the promotion of geology and geotourism to much larger swathes of the global populace. There are now 195 UNESCO Global Geoparks in 48 countries, largely still based in Europe (94) and China (41) but with increasing numbers in SE and East Asia (Vietnam (3), Japan (10), Korea (5), Malaysia (2), Thailand (2) Indonesia (10)), plus South/Central America (12) and Canada (5) and only 2 in Africa in Morocco and Tanzania. Australasia has also just gained its first Geopark – the appropriately named Waitaki Whitestone Geopark in New Zealand.

There are many attributes required to become a Global Geopark. These include significant international Geoheritage, local bottom-up support of local governments/councils, Geological Surveys, Museums, Universities. Business plans, management structures and financial models are required and Geotourism infrastructure and interpretation are needed with well-marked geosites, geotrails, signage and publicly available information and interpretation (brochures, web sites, apps).



Marble Arch Caves Global Geopark (renamed as Cuilcagh Lakelands) was Pat's first experience of a UGGP, following the 2nd International Global Geoparks conference in September 2006. This Geopark now (post Brexit) crosses major national borders between Europe (Ireland) and the UK and demonstrates the value of UGGPs in reducing rural deprivation by significantly increasing (Geo)tourism. It is part situated in Connacht where Pat's Great Grandfather (after whom he was named) fled from equivalent rural poverty in the 1860's due in part to the infamous potato famine.

African Geotourism – Part 1 – Zimbabwe Geopark Potential

Prof. Patrick James – UniSA, STEM, Adelaide

Following the completion of my geological fieldwork and PhD on the Structure of the Northern Margin of the Limpopo Belt in Rhodesia in 1972, there was just never the opportunity to return to this part of Africa which, as has been widely recorded, has changed dramatically in political and economic terms over the subsequent 51 years. However, having committed to attend the Global Geoparks Network conference in Marrakech the opportunity to do so arose and I was fortunate enough to be invited as a keynote speaker to the annual Geological Society of Zimbabwe (GSZ) 2023 Summer Symposium in early September this year.

I was welcomed by GSZ Committee Members Andrew du Toit, Tony Martin, Tim Broderick and Houda Bouammar, who also provided excellent and much welcomed accommodation during my 10-day visit. Obviously, I was very keen to revisit my field mapping area, which had stretched from the Archaean granite batholiths and greenstone belts of the Zimbabwe Craton around Masvingo south into the mylonites and granulite facies gneisses of the Limpopo Mobile Belt. With great generosity, the members of the GSZ facilitated this providing a vehicle and excellent exploration geologist Brian Mapingere, the current treasurer of the GSZ, as a guide. So, over 3 days I was able to revisit many key sites across the area using an excellent 2013 field workshop guide produced by Prof. Tom Blenkinsop, who did much subsequent mapping in the area whilst working at the University of Zimbabwe many years after my own largely reconnaissance study.

As well as enjoying revisits to key former geological sites and contacts around the area (of more than 3000 km²), I had in mind the opportunity to see if any of these sites or areas might provide the potential for future geotourism, and in fact this was evidently the case. This allowed me to scope out three possible Geotrails, which might hopefully kindle the interest in investigating potential for further geotrails and possible Geopark developments in Zimbabwe.

A key site in the area was the Great Zimbabwe National Monument. Sited adjacent to Lake Mutirikwi and constructed from 2600Ma granites and on top of domed inselbergs of the Zimbabwe Batholith, it is a well-known UNESCO World Heritage site, a magnificent and complex fortress that provides evidence of sophisticated and ancient construction by its former African tribal owners. With an excellent museum, well-marked and constructed paths and limited and mostly cultural interpretation, this location would provide not only an array of interesting walking geotrails, but also the key Geoheritage site to any possible more extensive geosite, geotrail or geopark development, including the following more extensive potential geotrail.



L to R – Manager of the Great Zimbabwe Hotel, hoping for more tourists to return after difficult COVID years; Statement of Significance of the Great Zimbabwe Monument; and possible walking geotrails to the summit.

Together with Brian’s enthusiasm and excellent local knowledge, we scoped out such a potential and beautiful geotrail around the large, dammed Lake Mutirikwi. This was formerly named Lake Kyle and there was indeed evidence in terms of an old and rusted sign for the “Lake Kyle Scenic Drive”, from many years past. Driving for about 50km in an anticlockwise circuit, we identified at least 8-10 possible geosites, which might make up such a Lakeview Geotrail. These included the Zimbabwe Monument as a starting point; a well-hidden but incredibly valuable “Bushman Paintings” geosite; one or two magnificent viewpoints over the lake and its many and gloriously exotic islands; monolithic granite Tors, Koppies and Balanced Boulders on the higher inselberg summits; the interesting dam wall expansion with addition of a key hydro-power station; and finally the startlingly stark ranges of greenstone belt metasedimentary conglomerates and grits of the Beza Range, which many years ago I had tramped in search of “finite strain” markers. Unfortunately, an excellent former site in the Shagashi River just south of Masvingo, which had previously exposed magnificent greenstone pillowed basalts, was now heavily polluted, eutrophicated and overgrown by weed infestations.



Clockwise from top left – sensational early morning view west over Lake Mtrikwi; former sign of the Lake Kyle Scenic Drive; Sliding Rock; site of the new hydroelectric power station; corn planted ready for the coming rains.



Insignificant and poorly marked boulders at the "Bushman's Painting" site – with incredible ancient painted scenes of wildlife from probably 2000-5000 years ago.

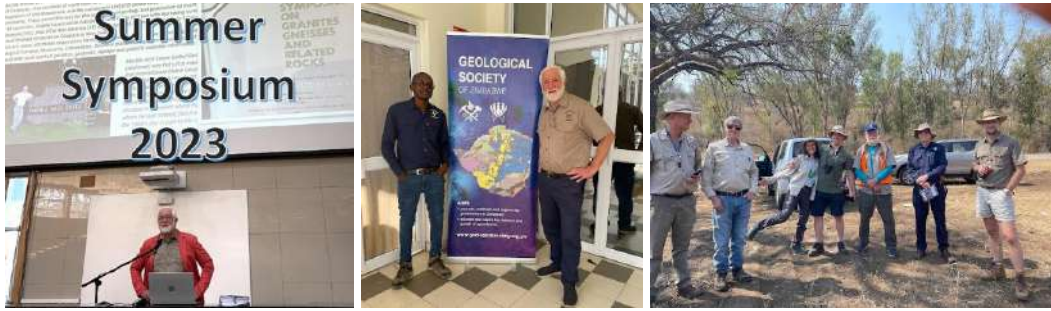
Finally, we scoped out a much larger potential geotrail, driving south on the main track/road to the Renco Gold Mine with excellent geosites occurring across the summit Bornhardts of the Zimbabwe Batholith; the complex grey gneisses (possibly >3 Ga) to the south, intruded by the spectacular porphyritic and Potassic Razi Suite granite; mylonites superbly exposed at the north marginal thrust of the Limpopo Mobile Belt and then the Renco Gold Mine itself. The return loop through Ngundu Halt passed by the new and enormous Tokwe-Mukosi Dam, another key hydro-power site, and then back across the North Marginal Zone Thrust, with more spectacular Razi Granite exposures before crossing back onto the greenstone belt metasediments of the Masvingo Greenstone Belt.



Clockwise from top left – view south over granulites and mylonites as seen from the newly opened Tokwe-Mukosi Dam wall; the Renco Gold Mine; Pat lying on the Limpopo Belt Thrust margin mylonites

Key challenges to any such geotourism development incorporating geotrails and geoparks would include the poor state of many of the roads, the challenging social and economic environment of the country, plus the paucity of tourists. However, with the Victoria Falls area already well known as an iconic (geo)site in Zimbabwe, geotourism could well provide an impetus for growth and development especially for tourists travelling north from the South African border.

After my excellent reintroduction to Zimbabwe field geology and the potential for geotourism development, I presented a talk entitled “*Geotourism, Geotrails and Geoparks – golden opportunities for sustainable social and economic development*” to the GSZ Summer Symposium. This emphasized the relatively recent global growth of geotourism especially related to UNESCO Global Geoparks and the lack of such current activity (thus creating an opportunity) in Africa, and also possibly a game-changer for Zimbabwe tourism. I also enjoyed many of the other talks at the symposium, which were more related to traditional geological exploration topics. These included of course the importance of gold exploration and exploitation to the Zimbabwe economy (Brian Mapingere); a summary of the difficulties encountered in the granting of Exclusive Prospecting Orders given by the Director of the Zimbabwe Geological Survey, Forbes Mugumbate; research into Post-Karoo copper mineralization in the Limpopo Belt by Linda Iaccheri; and an account of the petrogenesis of rocks making up the Dorowa Ring Complex with discussion on Rare Earth Element (REEs) phases by Maideyi Meck. New exploration methods were also highlighted, including Machine Learning Geophysical Models by Tenyears Gumede; 3D Modelling at the Eureka Mine, Guruve by Steven Duma; and the use of drones in exploration by Vimbayi Matarirano of Scout Aerial Africa.



GSZ Summer Symposium. Brian Mapingere and Pat at the GSZ Summer Symposium. Members of the GSZ gather for the post-Symposium Dorowa/Shawa Excursion

The symposium finished with a two-day trip to the Alkali Ring Complexes and their associated mines and quarries at Dorowa and Shawa SE of Harare. After a very early start and a 220km drive about 40 participants in 10 4WD vehicles assembled at the Dorowa Mine. Here I was overwhelmed with the concept and terminology of these late alkali rock intrusions and their enigmatic origins, which were however, excellently described and explained by Tony Martin. The unique and unusual carbonate-rich magmas and their seemingly inexplicable array of quaintly named lithologies such as Fenite, Ijolite, Jacupirangite, Juvite, Melteigite and Beforsite brought back memories of second-year undergraduate petrology classes. How these might be interpreted for potential geotourists would indeed be a challenge, but the uniqueness and importance of the assemblages and their economic orebodies of phosphate (for fertilizer) from Dorowa and Vermiculite (for soil aeration and moisture retention) from the Shawa and Dinhidza pits, lead me to suggest that these most unusual Alkali Ring Complexes might also provide future sites for geotourism developments.



Left: inspecting a carbonatite dyke at Dorowa Mine; Right: Vermiculite excavations at SAMREC Mine, Shawa

See: <http://www.geologicalsociety.org.zw/news/trip-dorowa-and-shawa-alkali-ring-complexes>

In my opinion, the potential for further Geopark development by the AUGGN (African UNESCO Geoparks Network) particularly in Zimbabwe, to add to the current M'Goun (Morocco) and Ngorongoro (Tanzania) African Global Geoparks, is significant. I cannot thank my many new friends and colleagues from the GSZ (Anthony, Tony, Tim, Houda, Brian and many others who I hope to keep in communication with) enough for their support and enthusiasm for their wonderful country. I hope that in future I may be able to help them achieve some of these much-needed geotourism-based aspirations.

Exploration under the Auspices of Exclusive Prospecting Orders (EPOs) in Zimbabwe

Forbes Mugumbate, Director - Zimbabwe Geological Survey
fmugumbate@gmail.com

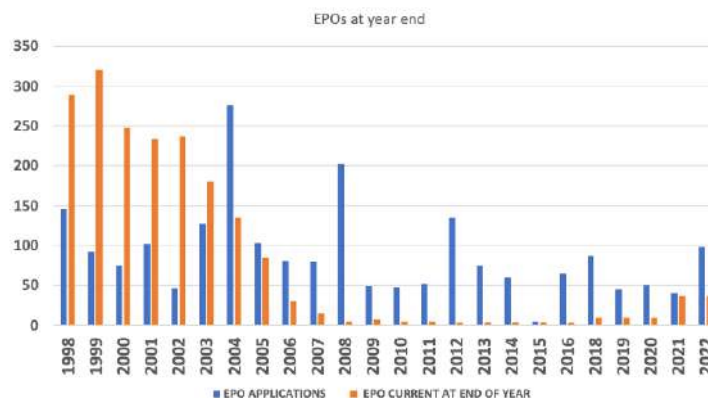
Comprehensive evaluation of many country's mineral resource potential is done by means of systematic regional exploration by companies with the requisite risk capital and technical capability. In Zimbabwe such exploration is done through the issuance of Exclusive Prospecting Orders (EPOs). These are areas up to 65,000ha issued by the President of Zimbabwe in terms of the Mines and Minerals Act (Chapter 21:05) for a period not exceeding 3 years but renewable for up to a further 3 years.

The administration of the EPO system is done by the Mining Affairs Board (MAB), with the Geological Survey playing a major role as part of the MAB secretariat. The MAB comprises government officials and stakeholders who include representatives from the mining and farming sectors. This composition is meant to create transparency in the issuance of mining title and in the resolution of disputes.

Exploration in EPOs has resulted in the discovery or re-discovery of some significant economic mineral deposits since 1947 when the system was legislated. Other advantages of the EPO system include:

- A thorough evaluation of an EPO area's geology and mineral potential, given the obligation of an exploring company to implement certain agreed work programmes, and to spend a certain amount of money to fund the exploration.
- The importation of foreign capital and application of new ideas and technologies.
- The generation of new geological information, which in turn enhances the existing knowledge base.
- Creation of employment both directly and downstream.
- The occasional identification of mineral deposits suitable for exploitation by small-scale miners.
- Creation of other industries and service providers including drillers and assay laboratories.

Presently there are 38 active EPOs whilst 230 applications are at various stages in the process for approval. Considering that there were over 400 current EPOs at peak exploration in the mid-1990's, the prevailing situation can be said to show the presence of bottlenecks in the management of the system. The slow processing of EPO applications has resulted in the sterilization of vast tracts of land against exploration, and has created the current impasse.



Copper in the Central Zone of the Limpopo Belt: the Messina and the Mutandahwe mines

Linda Iaccheri
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The geological significance and metallogenic potential of the Central Zone of the Limpopo Belt is not well understood. The Central Zone of the Limpopo Belt, also called the Messina Block, shows great structural complexity and a multitude of rock types, dominantly represented by high-grade metamorphic rocks. It is poorly studied due to its remote location, limited access, discontinuous outcrop exposure, and thick Karoo sedimentary and volcanic covers.

The Central Zone of the Limpopo Belt hosts two intriguing copper deposits: those at Messina and associated with the Mutandahwe Complex. Both deposits are hydrothermal and experienced extensive mining activity in the middle of the 1900's with operations closing by the 1980s/1990s, but their mineralogical and petrological significance has not been explored.

The origin of the copper sulphides (chalcopyrite, bornite, chalcocite) at the Messina deposit is contentious because the age and the ore-forming processes are not constrained. The consensus is that the Messina deposit is:

1. structurally controlled, as the mining operations occurred along the Messina Fault with an ENE-WSW Limpopo lineament trend;
2. hydrothermal, as there is an association with pervasive alteration of high-grade meta-sedimentary (amphibolite, quartzite and meta-ironstone) country rocks;
3. dominantly hosted in vertical quartz breccia pipes that reach depths of more than 1km from the surface.

The source of the hydrothermal fluids in the Messina deposit has been traditionally attributed to the neighbouring magmatic rocks of the Nuanetsi Igneous Province of southern Zimbabwe. However, this hypothesis has never been tested and is not unanimously accepted, as exposures of the Nuanetsi Igneous Province do not extend south of the Limpopo River.

The Nuanetsi Igneous Province consists of 7 felsic intrusive ring complexes, which are located along the strike from the Messina Mine in an ENE-WSW Limpopo Lineament. The relative age is defined as post-Karoo because the diverse igneous rocks intrude Karoo volcanic sequences. The Cu mineralization associated with the Nuanetsi Igneous Province is found in the most exposed eastern ring dyke complex, the Mutandahwe Complex.

The Mutandahwe Complex once a vibrant mining environment, dotted with active prospects for Cu, W, Mo with minor Au and Ag, now attracts mainly artisanal mining activity. Copper and W showings are not directly within the circular felsic intrusion, but they are rather found in the surrounding Karoo country rocks, often in association with related dyke swarms. Copper sulphides (mostly chalcopyrite) and pyrrhotite are observed in stockworks of quartz-carbonate and as carbonatic veins and sulphide veinlets within malachite-stained, biotite-enriched basaltic host rocks as illustrated at the Mutandahwe Mine. Tungsten (mainly scheelite) is found in carbonate stockwork veins within highly

sheared, altered, and chloritized basaltic country rocks as, for example, at the Buona Fortuna prospect. Evidence of Mo mineralization is instead found within the Mutandahwe quartz-syenite body, such as at the Lazeno Project, where molybdenite (with pyrrhotite and chalcopyrite) is observed in stockwork mineralization within a brecciated and fine-grained felsic rock, greisenized quartz-syenite, and gossans.

Mutandahwe Complex and its Mineralisations

- Last phases of magmatism associated with hydrothermal activity and emplacement of mineralisations
- **Cu** and **W** showings rim the granitic intrusion (Example, MUTANDAHWE Cu MINE; BUONA FORTUNA W Prospect)
- **Mo** mineralisations present within the pluton (Example, LAZENO Project)



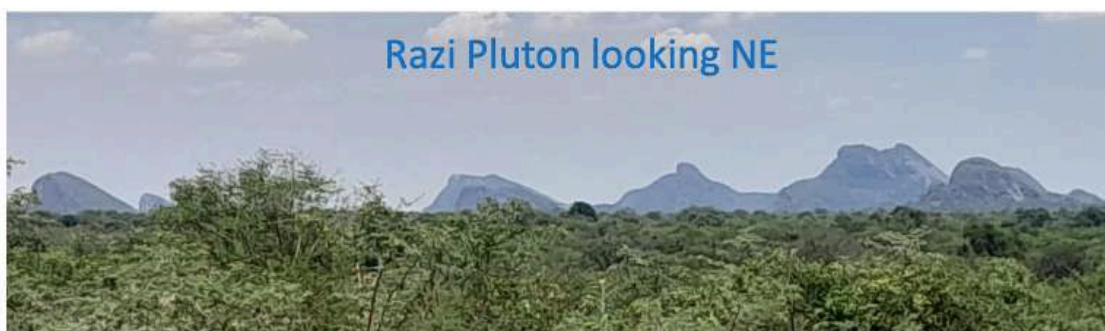
The mineralogy and geochemistry of Archaean late-granite suites along the southern extent of the Zimbabwe Craton

Godfrey S. Chagondah , Axel Hofmann and Allan H. Wilson
geolochagondah@yahoo.com

The southern margin of the Zimbabwe Craton (ZC) exhibits well-exposed Archaean granitoid-gneiss complexes of the tonalite-trondhjemite-granodiorite (TTG) suite and volcano-sedimentary greenstone belts, which are in tectonic contact with the Northern Marginal Zone (NMZ - previously assigned to the Limpopo Belt). The ca. 3.5-2.67 Ga granitoid-gneiss complexes include the Chingezi and Sesombi-Somabula suites. The NMZ is a high-grade terrain consisting of magmatic granulite gneisses (enderbite and charnockite) of the TTG magma-suite. The NMZ and the ZC display elevated contents of the heat-generating elements K, Th and U. Younger (ca. 2635-2620 Ma) syn- to late potassic granites of the Chilimanzi and Razi suites intrude both granitoids and greenstone belts.

Harker and trace element variation diagrams show that the Razi and Chilimanzi suites have similar geochemistry and that fractional crystallization was the main evolutionary process for the granitic magmas. Our mineralogical and geochemical data demonstrate that TTGs are the likely protoliths to the granite suites and this proposition is given credence by previous studies which show evolved isotopic signatures, non-radiogenic Hf isotopic compositions and the presence of xenoliths and inherited zircons in the younger granites. Small geochemical differences are attributed to modal mineralogy, and levels at which the granites are preserved. The Razi Suite represents the lower crustal section of the ZC, whereas the Chilimanzi Suite was emplaced and preserved at higher crustal levels in the same Archaean craton.

2626±29 Ma



Conference Attendance – CAG29 September 2023

Gayle Hanssen

The Colloquium of African Geology (CAG) is a major biennial meeting organized under the auspices of the Geological Society of Africa (GSAf). This year the conference was exceptionally well organized in conjunction with the Namibian Geological Survey in Windhoek from 26th to 29th September. There were four parallel sessions, with a great diversity of topics to suit all – ranging from Medical Geology to the Petroleum Industry, Remote Sensing to Geohazards, Fiscal Policies and Laws to AMREC (which is the AU-recognized reporting code for African smaller scale projects). Of course, there were full sessions on Ore Deposits, Orogeny, Geophysics, Strategic Minerals, Namibian Geology, Nuclear and other topics. This was extremely well attended with geologists from every country on the continent. Hillary Gumbo, Madeiyi Meck and Gayle Hanssen represented Zimbabwe, whilst many of our ‘friends’ included Sharad Master and of course Ben Mapani, who teaches at the NUST University in Windhoek.

Currently the GSZ is in discussion with the GSAf with respect to membership, which will allow us to become more informed on projects and developments throughout Africa. We will then be in a position to share this information with our own membership.

Associated with this conference were some wonderful field trips, 12 in all. The trip to potential Geoparks was funded in its entirety by UNESCO. However, Gayle went on the trip focusing on lithium projects, which was very ably led by former Chairman of the Mennell Society – Simon Kahnovera. We visited the Lepidico project of which the Rubicon and Lexicon pegmatites are key. The Rubicon is a fantastically zoned pegmatite where very large petalite crystals were seen as illustrated.



Rubicon Zoned Pegmatite (kind permission of Simon Kahnovera, Lepidico)



A: Giant petalite crystals as great as 1.5m (photo from the Giant Crystal Project)

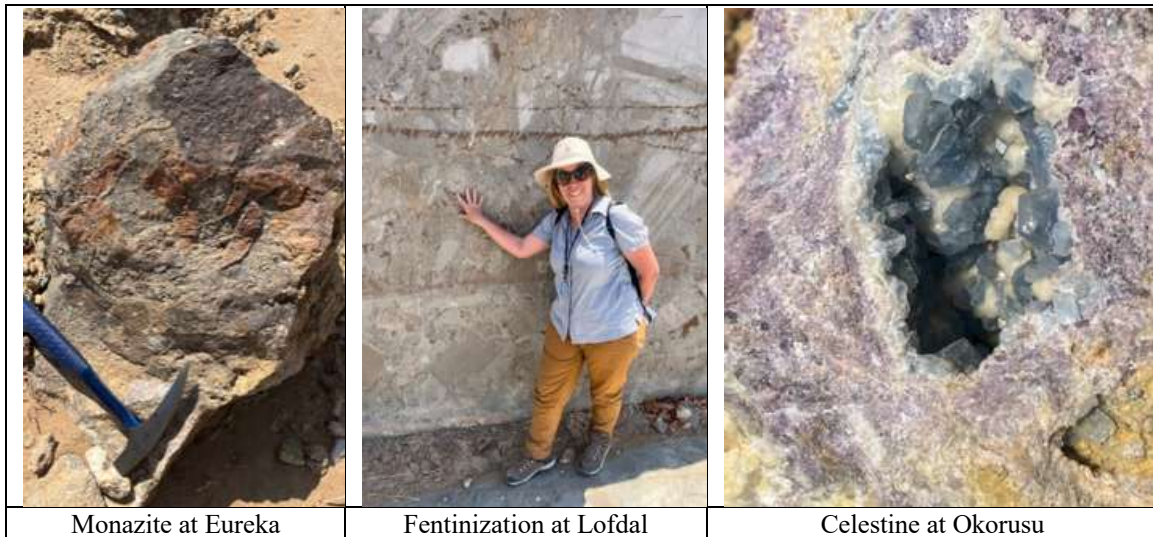


Furthermore, there was a very interesting visit to the Uis Mine, which was formerly a tin producer, but is now owned by Andrada. A current resource of 81Mt of pegmatite is reported grading at 0.15% Sn, 0.73% Li_2O and 86ppm Ta, with potential to increase this resource to 120Mt in the near future.

The post conference field trip was a 5-day drive to visit various carbonatites within the Central Damara. The trip was led by Pete Siegfried. On the first day the Eureka carbonatite owned by E-Tech Resources was visited where spectacular monazite crystals were observed in an exploration trench.

Another highlight was the spectacular fenitization observed in the breccia quarry previously exploited for dimension stone. The rock is associated with the Lofdal intrusion near Khorixas where it predates the carbonatite. We did visit the trial pit, where highly radioactive rocks are indicative a number of narrow, low-grade carbonatite veins that are considered as the ore zone. Another project visited was the now closed Okorusu fluorite mine, where an array of spectacular mineral specimens were collected, including the wonderful pale-blue Sr-sulphate Celestine. The final point of call concluding these fabulous few days was the massive B2 Gold deposit, Otjikoto, where enormous amounts of ground have been moved for the recovery of low grade gold.

This was all in all a wonderful few weeks of diverse and interesting geology. Next year at the end of September, the Society of Economic Geologists (SEG) will hold their annual conference in Namibia, for which I am sure there will be numerous interesting field trips for all of those who are interested in an experience like this.



Visit to the Invictus ‘Mukuyu 2’ Drill Site, Mbire District

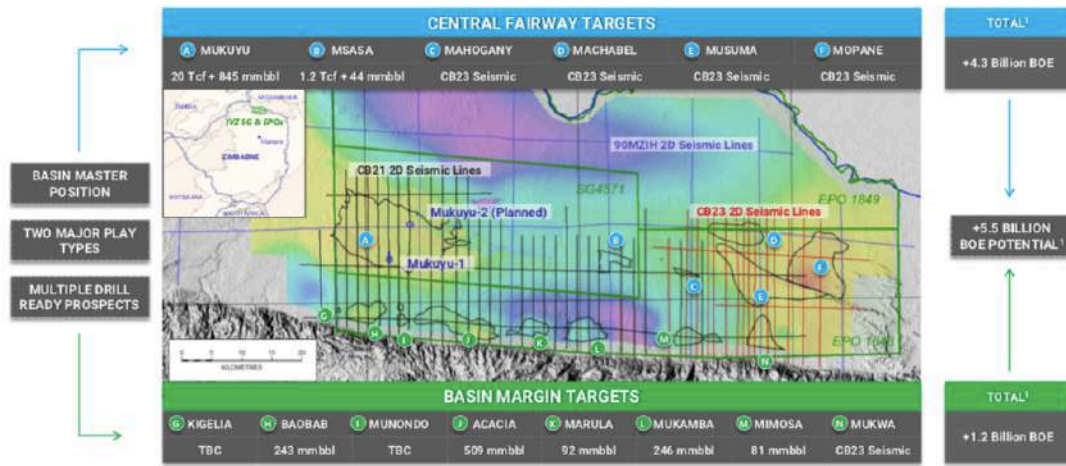
Friday 13th October 2023

Some 30 Members of the Geological Society of Zimbabwe were hosted by Invictus Energy in association with One Gas Resources and GeoAssociates at the Mukuyu 2 Drilling Site some 3-hour’s drive due north of Harare. Welcomed by our old friend Paul Chimbodza, we were inducted by Jabulani and then given a technical overview by consulting geologist, Jim prior to a walk-and-talk around the rig site, with plenty of water at 42°C!



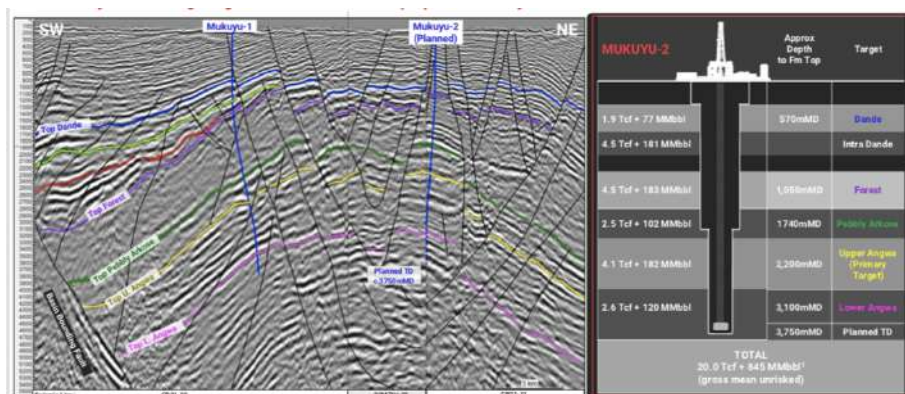
Lucy Broderick

Paul pointed out that the Cabora Bassa rift basin is the last remaining play of its kind to be investigated for its hydrocarbon potential in Africa, encouragement given by successful outcomes in Kenya and Cameroon. He emphasized that the project is in an exploration phase following on, with enhanced technology from the pioneering investigation by Mobil Oil in the 1990’s. The area across the basin in Zimbabwe is secured under Special Grant 4571 and EPO’s 1848 and 1849. Following reinterpretation of the Mobil seismic data, infill 2D vibroseis lines were run during 2021 and 2023. Subsequently six target zones were identified mid-basin across a zone referred to as the ‘Central Fairway’. The Mukuyu 1 and 2 wells, set 7km apart, are intended to investigate and test the potential for hydrocarbon generation within the largest anomaly across the eastern Mbire District. Some eight scarp-foot or basin-margin targets have also been identified.



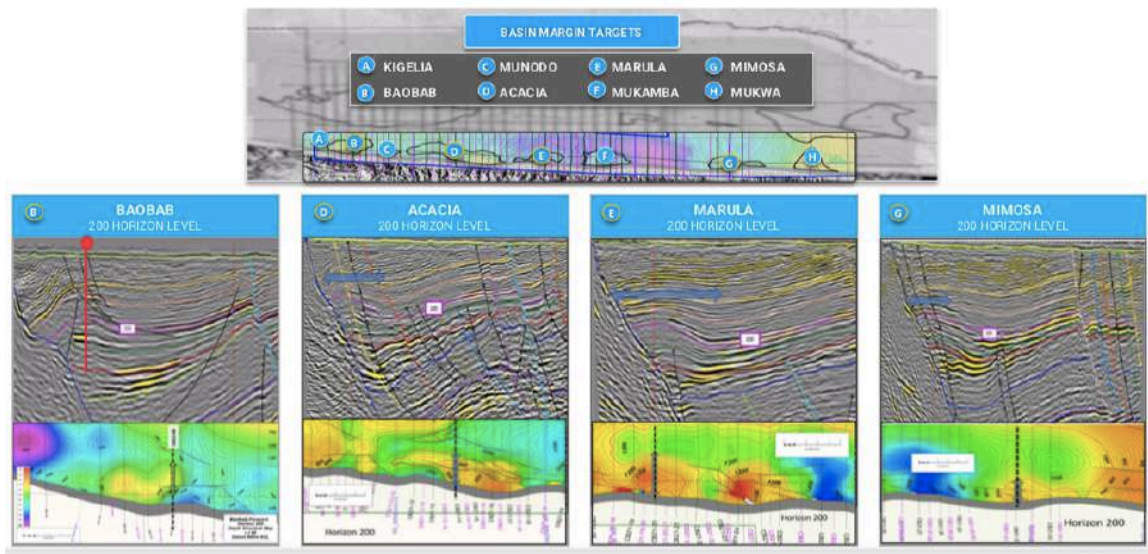
Invictus Energy, 2023

Given the requirements for a suitable source rock (Mkanga Formation), potential trap structures (as defined in the seismic profile), adequate porosity for migration (fracture planes and the Lower Angwa Sandstone Formation) and confining layers (mud and siltstone alternations in the Upper Angwa Sandstone and in the Pebbly Arkose formations), the wells are targeted to intercept optimum locations through the application of controlled directional drilling techniques. Mukuyu 2, being drilled by the Exhalo 202 Rig, was spudded and commenced geologging on 20th September 2023 at a 26-inch hole diameter. Drilling had reached a depth of 1969m at the time of the GSZ visit, the targeted extent being to 3750m. Mud logging is a 24-hour operation whilst down-the-hole wireline logging is ongoing, measuring gas occurrence, temperature, resistivity, density, gamma ray intensity and thermal neutron porosity amongst other parameters. Progressive sidewall cores are obtained to confirm lithology and hydrocarbon properties. Mud pressure is monitored and controlled at all times. Casing was in progress at the time of the visit as the Pebbly Arkose had been intercepted and the borehole is to be telescoped. The targeted depth should have been reached within a week, following which a specialised down-hole tool is used to assess permeability, allow for detailed reservoir testing and to obtain a fluid sample, the analysis of which is a necessity for stock exchange acceptance. It was this tool that became stuck in Mukuyu 1, which precluded the capture of a fluid sample there. However, the indicator tests gave the confidence to further test the target area by means of Mukuyu 2.



Invictus Energy

All being well, decisions will be made to progressively test other target areas through drilling. Perhaps the ‘Baobab’ anomaly close to the bounding master fault will receive attention next, thus furthering our knowledge of the Cabora Bassa Basin play.



Invictus Energy

We as a Geological Society, would like to thank Invictus sincerely for laying open their drill site and exploration philosophy for our visit. This gesture is much appreciated.

Compiled by Tim Broderick



Lucy Broderick

A Visit to the Chikwakwa Diamond Prospect, Lower Umkondo Group

May 2023

Igor Shmakov, Alrosa Zimbabwe Limited

Summary

Prospecting field work was carried out by Alrosa Zimbabwe Ltd during 2021 and 2022 inside special grants SG-7700 (Tsindi 1), SG-7745 (Tsindi 2) and SG-7744 (Kandemwa). As a result of this geological work the basal sequence of Umkondo sediments were studied in detail. A potential diamondiferous basal horizon of conglomerate and gravels was identified in the valley of the Chikwizi River.

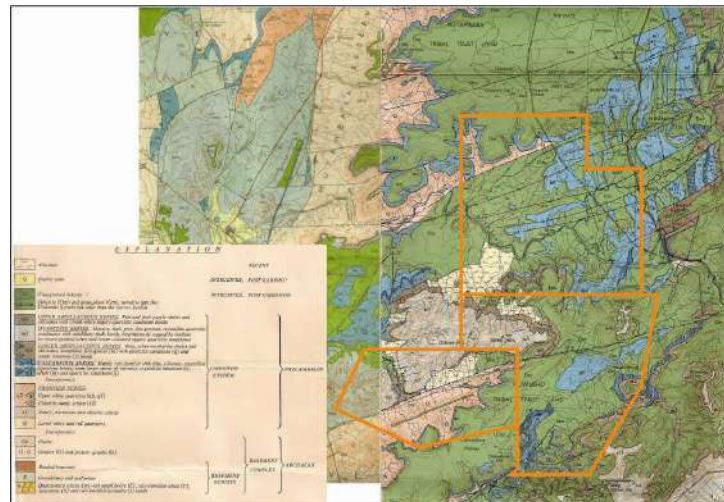


Figure 1: Geological map after Watson (1969) with outlines of the Kandemwa, Tsindi1, and Tsindi 2 licenses superimposed.

The area investigated is located at the boundary of the Meso- to Late-Archaean granite-gneiss terrain of the Zimbabwe Basement Complex with the Meso-Proterozoic Umkondo Group, which comprises a mainly non-metamorphosed sequence of sediments that here define the Zimbabwean Facies. Currently, the agreed age estimate for the Umkondo magmatic dolerite occurrence in eastern Zimbabwe is 1105 Ma. This figure is believed to represent the minimum age of the Umkondo Group deposits.

The Umkondo Group

The Zimbabwe facies making up most of the related exposures in Zimbabwe, consists of a pebbly basal arkose that grades upwards into sub-horizontal strata of stromatolitic limestone, associated chert, argillites and a cross-bedded arkosic sandstone layer capped by basalt flows (Watson, 1969; Stocklmayer, 1978; Munyanyiwa, 1999). These rocks overlie and are flanked by the Archaean basement granite terrain to the west. Detrital grains within the basal arkose include very angular pink feldspar, grey quartz and a little mica, representing their provenance through subaerial erosion of the underlying granite (Swift, 1962). The Zimbabwe Facies sediments appear to be deposited unconformably over a peneplained Archaean basement granite and gneiss surface associated with the North Marginal Zone and Central Zone of the Limpopo Mobile Belt (Tyndale-Biscoe, 1957; Watson, 1969; Stocklmayer, 1978; Hanson *et al.*, 1998b). The sedimentary strata of the Umkondo Group were deposited in fluvial to shallow marine environments where they record the presence of a major epicontinental basin in this part of southern Africa. The basal arkoses and upper cross-bedded arkose suggest deposition in a fluvial environment. Stromatolitic limestone was deposited in a shallow marine environment, while deposition of the shales took place in a low energy environment, apparently a deltaic situation. The arkoses are compositionally and texturally immature, consisting of poorly to moderately sorted angular to sub-angular grains, which suggest that the depocentre was very close to the granitic source.

Umkondo Dolerite

Dolerites intrude the Archaean granites and gneisses and the overlying Umkondo strata as both dykes and sills, the latter expression being more widespread (Munyanyiwa, 1999). Some sills are intruded along bedding planes, which are transgressed in places, and at the Archaean basement contact (Watson, 1969; Mukwakwami *et al.*, 2001). The dolerite, forming a part of the Umkondo Large Igneous Province (LIP) is referred to as Umkondo Dolerite and is commonly represented through the Zimbabwe Facies where the sills are relatively undeformed and are believed to have been intruded into wet sediments (Munyanyiwa, 1997; Hanson *et al.*, 1998b).

Geological Mapping

During the area investigation, observations of the geological structure were made, clarified and detailed, the lithological and facies variation of sedimentary and igneous rocks was studied and horizons considered important for understanding the structure and ore controls were traced. The work resulted in an updated geological map of the license area providing a detailed geological and structural framework.

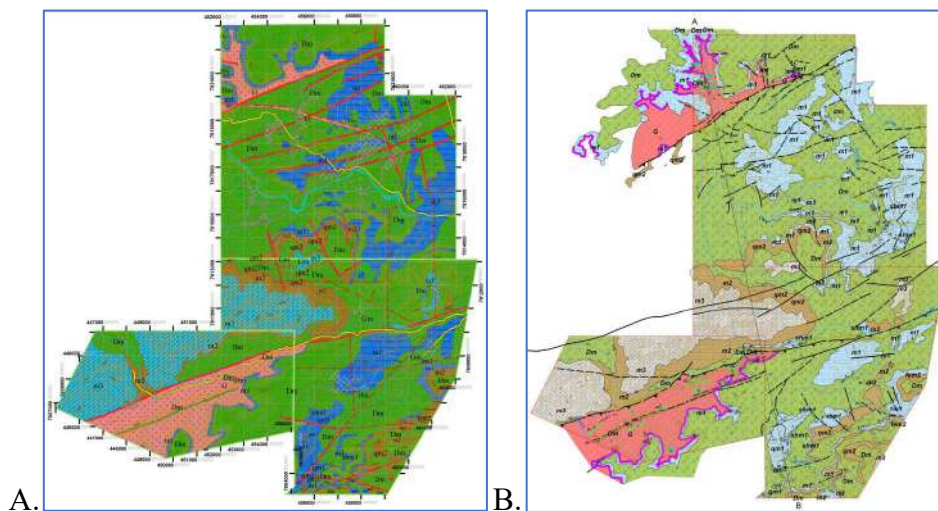


Figure 2: Comparative geological maps of the Kandemwa, Tsindi 1, and Tsindi 2 licensed areas, based A. on the mapping by Watson 1969 and B. updated from current observations.

The basal Umkondo Group sedimentary accumulation east of Hot Springs is analogous to the diamondiferous basal sequence of the Marange deposits in terms of lithological and facies composition and structural expression. These deposits were formed within the same sedimentary basin, and probably received sedimentation from the same area of clastic provenance. In all of the Marange deposits, the productive primary mineralization is associated with an horizon within the basal gravel-pebble arkose. The diamondiferous horizon lies at the base of the Umkondo sedimentary section. Therefore, the main exploration target involved detailing the basal Umkondo ‘pack’ as represented in the Kandemwa, Tsindi 1, and Tsindi 2 exploration license areas.

Given the present relief in the area, the basal member is only exposed in the elevated blocks ‘A North’ and ‘A South’ as indicated in Figure 3. In the down-faulted blocks, the basal

pack is overlain by the lower Umkondo dolerite sill and higher stratigraphic levels of the Umkondo Group. Figure 3 shows the locations where detailed studies of the basal sedimentary sequence were carried out. The sections are clearly identifiable in the field rock as illustrated by topographic exposures in both Block A North and Block A South (Figure 4 A to C).

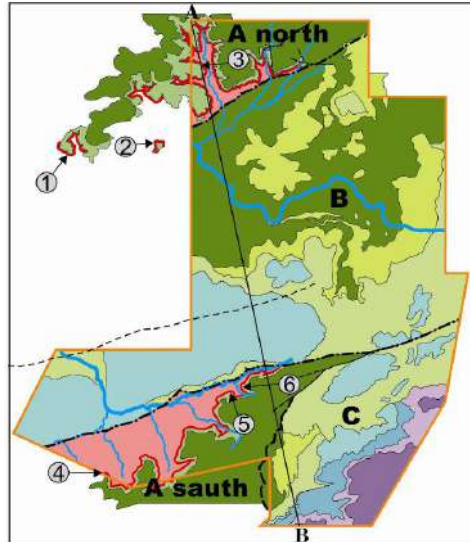


Figure 3: Schematic of the location of detailed sections of the basal Umkondo sedimentary sequence in the elevated blocks A North and A South



Figure 4: Cuestas relief formed by the basal Umkondo sedimentary sequence: A. Block A North. B and C. Block A South, the Chikwizi river valley.

The Southern Block

The southern tectonically uplifted block is separated from the northern block by the down-thrown Block B, which is about 10km wide. However, the basal sedimentary pack of the Umkondo section is comparable to that of the northern block by its lithological and facies typomorphic characteristics. The basal pebble-gravel horizon is exposed in all re-entrants developed up from the left bank of the Chikwizi River and is continuously traced up the valley from the western boundary of the Kandemwa license for a distance of 8km. In the vicinity of the pass into the Mhakwe Valley, the basal pack is disrupted by faulting.

The structure of the basal zone was studied in detail at more than 10 exposures, including those revealed by artisanal mining operations. The basal gravel-pebble horizon lies over pale grey to pink, red-pink coarse-grained granite. The contact is uneven, sinuous with depressions and protrusions being observed. In the basal horizon, uneven expression of dark-red feldspar was noted. Within the basal pack is an horizon of light gray, coarse-grained arkose with interlayers and lenses of gravel in the lower part, which transcends into

a layer of coarse gravel with separate quartz pebbles. Lenses of conglomerate up to 10cm thick occur with a red feldspar matrix at the contact with basement rocks. The gravel layer itself is heterogeneous in textural, structural, and colour characteristics. There are extended (50-10m) lenses of dark gray to green-gray gravels in the lower part, merging upwards into light gray and pink gravel. The thickness of these gravel beds range from 0.1 to 1.3m.



A.

Figure 5A: A prospect pit on the left side of the Chikwizi Valley. The lower part of the basal pack uncovered by the quarry allows us to see details of the structure of the coarse-clastic basal horizon.



B.

Figure 5B: Details the structure of the basal pebble-gravel horizon in a large artisanal quarry: A – Basement granites showing an intensive development of red feldspar; B – dark-gray gravel with rare quartz pebbles; C – pale pink to light gray gravel with rare quartz pebbles; D – light green-gray quartzitic-sandstone with bands and lenses of red-brown ferruginous sandstone and pale green siliceous rock.



Figure 6: A small prospector's quarry on the left side of the Chikwizi Valley located opposite the large quarry on the right side of the creek. Trenches and pits are visible as miners cut into the coarse-clastic basal horizon on the creek slope.

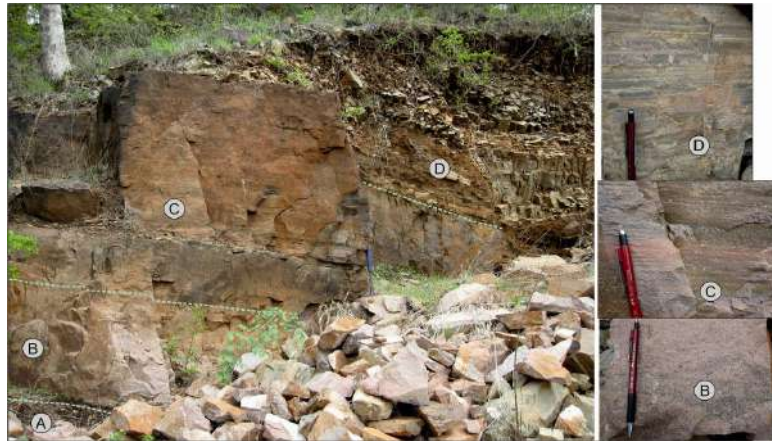


Figure 7: Details of the structure of the basal gravel-pebble horizon in an artisanal trench on the slope of the creek: A – Basement granite. B - light gray-pink gravel with sparse quartz pebbles; C - light green-gray quartzitic sandstone with bands and lenses of red-brown sandstone; D - light green-gray quartzitic sandstone with interlayers and lenses of light green siliceous rock.



Figure 8: Details of structure in the basal gravel-pebble horizon from an artisanal trench on the creek slope: A 5cm-thick conglomerate lens at the base of the gravel horizon



Figure 9: Further details of the structure of the basal conglomerate lens horizon.

In the valleys of two streams very distinctive boulder and pebble conglomerate forms extensive lenses in the lower part of the basal clastic horizon. The distribution of boulder conglomerate extends over a distance of some 3km in the stream heads up the left flank of the Chikwizi River. The boulder conglomerates are in the order of 0.8-1.3m thick. The total thickness of the basal pack of Block A South is 32-40m and is succeeded by a 50-100m-thick dolerite sill. The lithologies observed in the south correlate well with the sequence exposed in Block A North whilst diamond evaluation appears to be positive.



Figure 10: Boulder and pebble conglomerate and details of its structure in creeks up the left bank of the Chikwizi Valley.



Figure 11: Boulder and pebble conglomerate and details of its structure in the creek valley on the left bank of the Chikwizi River.

Structural and block tectonic characteristics of the area

Several macro-tectonic structural elements were distinguished in the area that determine the geological setting and directly influence diamond ore assessment. Major faults of variable displacement separate blocks and include steeply dipping ENE strike-slip faults (1 and 2 in Figures 12 and 13 below) and an inclined fault (3) separating Block A South from Block C.

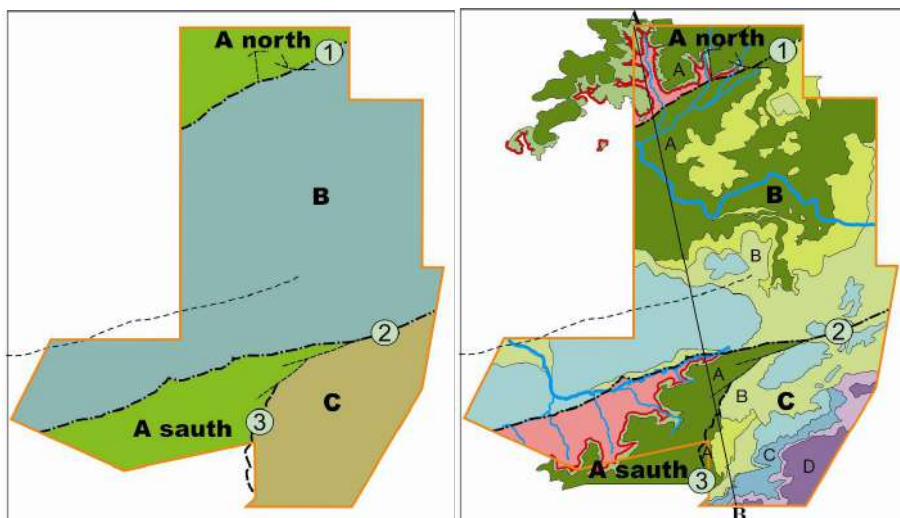


Figure 12: Tectonic blocks and major structural elements affecting the Kandemwa, Tsindi 1, and Tsindi 2 license areas.

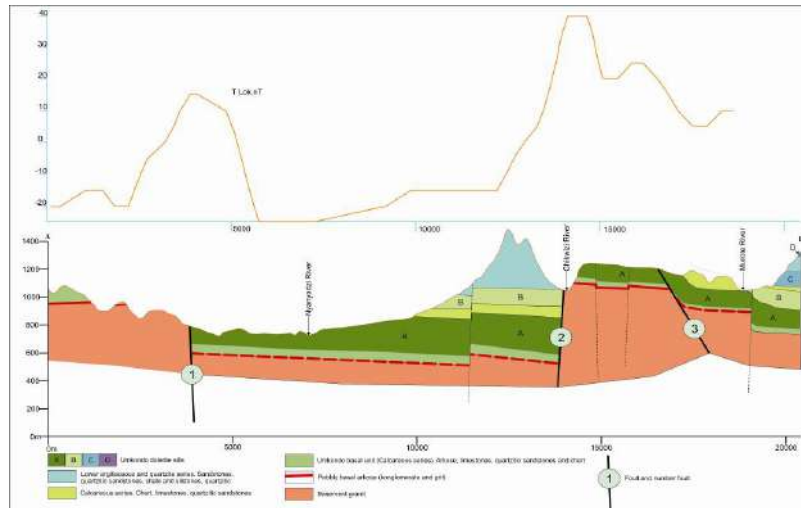


Figure 13: A schematic section along line A-B with the main structural elements identified.

Conclusion

Given a reasonable probability for developing a productive alluvial diamond source from the basal coarse-clastic rocks of the Umkondo Group, Blocks A north and south, where the target horizon is exposed and dips to depths of 35-50m, are attractive. Zones in Block B where the topography and thickness of overlying sediment beneath the dolerite sill bring the basal beds to within 180-220m from surface are also of interest and warrant a preliminary diamond drilling programme to assess their diamond potential (Figure 14).

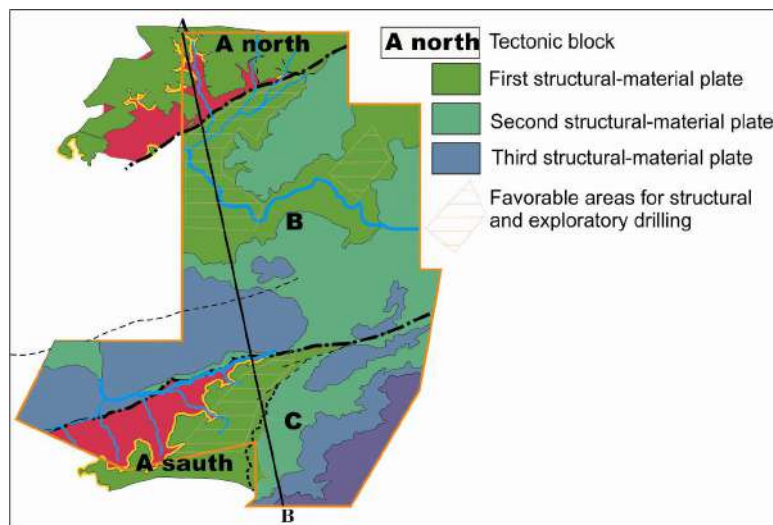


Figure 14: Structural and material plates in the licensed area, indicating potential areas for further penetrative investigation.

News



Geology Section: Department of Chemistry and Earth Science, University of Zimbabwe

Dr Maideyi Meck with a contribution from Fadzanai Bornwell Mupaya

Teaching in the Department

Despite challenges, the department is working hard to deliver quality education to our students and to foster research. The September 2023 intake has less than 20 students, which is the lowest number in two decades. The good news is that, the department has realized new opportunities and we will offer customized courses for banks and mining organizations from October to December. This will involve the teaching of basic rock and mineral identification as well as project evaluation for them to be able relationship managers to understand mining related investment projects submitted to banks for funding. This is a positive step for the mining industry as we anticipate progress in project financing.

The part 4.2 group, comprising about 60 students, is now back at university for their last semester. individuals are carrying out various interesting projects across the country, mainly on gold, coal and lithium. Coincidentally, the part 4.1 students have now started working on their projects. Industry will be asked to assist students who were on industrial attachment at their mines so that they can produce quality projects useful within the industry.

The thin section making unit is now fully operational.

The Pan-African Minerals University of Science and Technology (PAMUST) taught MSc degree in Mineral and Geological Exploration (MMGE) has faced some difficulties due to a shortage of lecturers, but the course is still running. The University is expecting a group of Russian lecturers in October who will assist in teaching some of the courses. PAMUST is a statutory body established by the PAMUST Act [Chapter 25:33] of 2016 and it is still in its early stages of development under the mentorship of the University of Zimbabwe. PAMUST focuses on post-graduate programmes and encourages research in mining and related fields. It offers the following taught masters degrees:

- MSc Mineral and Geological Exploration (MMGE)
- MSc Energy and Petroleum Chemistry (MEP)
- MSc Mining Engineering (MME)
- MSc Advanced Mineral Processing and Extractive Metallurgy (MPEM)

The MSc in Mineral Exploration is taught from the Geology Section of the Chemistry and Earth Science Department. It started with 10 taught-masters students, 6 MPhil students and 1 PhD student. However, the number of master's degree students has dropped to 6 for various reasons.

The University will be establishing a mineral resources centre, which is envisaged to operate differently from the one that the Department of Geology operated previously. The

relationships between the IMR, Geology Section, Mineral Resources Centre and PAMUST are still to be defined.

Staff update

Current PAMUST staff are being recruited through various UZ departments such that those teaching the MSc in Mineral Exploration are being appointed under the auspices of the Chemistry and Earth Science Geology Section. **Advocate Mlilo** joined the department to assist in teaching PAMUST students attending the mining and mineral law module. Dr **Chenjerai** has already taught 2 modules. Dr **Dzinamurungu** is expected to teach another module soon.

Mr Percy Sena has left the department for a better opportunity.

Research in Geology

Research projects by students have shifted from the traditional gold and base metals emphasis to those associated with green and energy minerals and hydrogeology. Some of the current ongoing projects in the department where industry partners are welcome to join are:

1. Genesis and provenance of the diamondiferous sediments at the Chimanimani Deposits: implications for exploration in the Umkondo Basin, Zimbabwe.
2. Re-appraisal of the Umkondo basin, southeast of the Zimbabwe Craton: Implications relating to landslides initiation.
3. An assessment of geothermal wellhead power generation potential and the nexus with local seismic activity and geotechnical setting.
4. Ground failure in underground mines - Risk management framework assessment.
5. Coal appraisal in the Zambezi Valley
6. Critical raw materials appraisal



The Mennell Geological Society

Fadzanayi Mupaya (Patron)

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MIDLANDS STATE UNIVERSITY
FACULTY OF ENGINEERING & GEOSCIENCES
ZVISHAVANE CAMPUS

Updates from the Department of Geosciences

Introduction

As indicated in the October 2022 edition of the GSZ Newsletter, MSU contributions to the newsletter now cover activities of the Department of Geosciences rather than those of the Faculty of Engineering & Geosciences as a whole. From the next edition of the newsletter, contributions from the Department of Geosciences will provide detailed information about Geoscience staffing, projects and other departmental activities.

Recent Changes in the Department of Geosciences

- **Dr Edwinna Muleya** took over as the Dean of Engineering and Geosciences on 1st October 2023 following the expiry of **Dr Antony Mamuse's** contract. We congratulate Dr Muleya on her appointment and wish her well in her new role whilst thanking Dr Mamuse for his service as Dean of the Faculty since its inception in 2015.
- **Ms Priscilla Chima** took over as Chairperson of the Department of Geosciences on 1st August following the expiry of **Dr Masimba Mutakaya's** contract. We thank Dr. Mutakaya for his sterling service to the Department and we congratulate Ms Chima on her appointment whilst wishing her well in her new role.

- **Dr Antony Mamuse** reverts to the position of Senior Lecturer in the Department of Geosciences from 1st October 2023.

The format of the next Newsletter contribution from the Department will be discussed by the Geosciences team lead by Ms Chima.

Contributed by Antony Mamuse

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NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF APPLIED PHYSICS
EARTH SCIENCES

Table 1. Staff compliment for the Applied Physics and Earth Sciences programmes

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ZIMBABWE SCHOOL OF MINES

Serving the SADC mining industry

The Department of Geology continues to strive at the School of Mines. Two new courses, the Diploma in Gemology and that of Cutting and Polishing were launched successfully. The new students are due for a visit to AUREX in Harare at the end of September. They visited ZCDC and benefitted greatly from the experience. The School appreciates the support from all stakeholders.

The final year students are scheduled for an exciting excursion along the Great Dyke and across the Belingwe Greenstone Belt in October. Our first-years are lined up for a mine visit to Blanket Mine. The School is set to have their graduation ceremony on 13th October. The Department is looking towards an exciting and eventful semester.

Submitted by Fyrence Ndebele



Geological Survey Department

Ernest T. Mugandani
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- The ZGS staff congratulate **Admire Charumbira**, Senior Geophysicist, who was promoted to the post of Deputy Provincial Mining Director for Masvingo Province with effect from 20th July 2023. We wish him well in the new post.
- The department also congratulates other geologists in the provinces who were promoted to the post of Deputy Provincial Mining Director in July 2023. These are **Ms Edeleen Savieri** for Manicaland Province, **Ms Junior Mudyawabikwa** for Mashonaland West Province, and **Godfrey Dadirai** for Mashonaland East Province. We wish them well in their respective positions.
- The Director, **Forbes Mugumbate**, attended the three-day *Zimbabwe-China Business Forum* held in Beijing, China from the 30th May to 1st June 2023. The business forum, organized by ZimTrade, sought to explore trade and investment opportunities between Zimbabwe and China in line with the Second Republic's economic diplomacy policy.
- Together with **Evelyn Marumisa**, **Forbes** also attended the annual *Africa Down Under (ADU) Conference* held in Perth, Australia from 6 to 8th September 2023. **Evelyn** subsequently attended the *PanAfGeo 2* training course on Geoscientific Information Management held in Windhoek, Namibia from 2nd to 14th October 2023.
- The Deputy Director, **Ernest T. Mugandani** attended the Chamber of Mines of Zimbabwe Annual General Meeting held at Elephant Hills Resort, Victoria Falls from 29th May 2023 to 2nd June 2023. He attended on behalf of the Geological Society of Zimbabwe for which he is currently the Vice Chairman of the Executive Committee. The main conference was held under the theme “*Mining for Economic Transformation; Creating Growth Enablers for the Mining Industry*”. Ernest is

congratulated for being appointed to the Executive Committee of the Chamber of Mines for the 2023/2024 season.

- **Mangwiro Sibanda**, Geologist, attended the *African Critical Minerals Summit* held in Johannesburg, South Africa from 29 to 30th August 2023. The discussions at the summit included prioritizing a list of minerals that are considered critical from an African perspective.
- Six Geoscientists and Technicians from the Zimbabwe Geological Survey have become the latest beneficiaries of the look-east policy when they attended seminars held in Beijing, China during the period 8th to 28th September 2023.
 - ❖ **McEpherson Gwindi** and **Edwin Muzanenhamo** attended a seminar on *Development and Management of Oil and Gas Resources*. Prior to this seminar McEpherson had also attended the *Africa Energy Forum and Youth Energy Summit* in Nairobi, Kenya from 12th to 16th June 2023.
 - ❖ **Roseweter Mubaiwa** and **Idah Charlaine Chatambudza** attended a seminar on *Geo-science and Laboratory Techniques for South–Central African Countries*.
 - ❖ **Diana Mugadza** and **Belinda Nobanda** attended a seminar on the *Geological Disaster Prevention Platform* and the application of ‘*Big Data*’ for *Developing Countries*.
- **McEpherson** attended an artisanal and small-scale miner’s skills training workshop on gemstones identification held at the Cresta Lodge in Msasa from 15th to 18th May 2023 where he presented on geological aspects and identification techniques relating to various gemstones.
- **Evelyn** participated in the 2nd *Quarter Gold Mobilization Exercise* for the period 10th to 17th May 2023 while **Mangwiro** participated in the week-long 3rd *Quarter Gold Mobilization Exercise* held from 5th to 11th October 2023. The aim of the programme is to encourage and enforce the disposal of gold through Fidelity Printers and Refinery by all miners in the country.
- **Ernest** also participated in the virtual *Southern African Development Community (SADC) Green Investments Forum* that was held on 24th August 2023. It was generally agreed that there is no internationally accepted definition for Green Investments, but as SADC member states we need to share our experiences so that we can benefit from global sources of finance for green investments.
- A team of four technical experts from the French Geological Survey (BRGM) were in the country for a week during the month of June to prepare for the commencement of a bilateral project with the Zimbabwe Geological Survey (ZGS)

for the computerization of geological data and information. We hope the department will achieve some degree of modernization through this project.

- The Japan Organisation for Metals and Energy Security (JOGMEC) and ZGS Memorandum of Understanding allowed for field work to be conducted within the Kamativi Inlier from 17th to 23rd September 2023. This was part of a ground truthing exercise following several months of remote sensing interpretation and satellite image processing designed to generate mineral exploration targets. **Brian Muteta, Mangwiro Sibanda, Lloyd Shavarira, Esnath Mupomhori and Tatenda Tavarera** participated in the week-long field programme.

OUTSTANDING KEY ZIMBABWE MINING CONFERENCES FOR 2023

(Source: The Sunday Mail 5 February 2023 Business 3)

	Conference Name	Date	Venue
	Zimbabwe International Conference	6 November 2023	Victoria Falls
RSVP: Chief Director Mining Development Office		Linda (0242) 750829	

MINING NEWS

gleaned from <https://www.mining.com/>

by Kennedy Mtetwa

Zimbabwe to meet with Bravura over delayed platinum project

[Bloomberg News](#) | July 5, 2023 | 8:38 am [Intelligence Africa Platinum](#)

The Zimbabwean government will meet with Bravura Holdings Ltd, a company owned by Nigerian billionaire Benedict Peters, over delays to a platinum project in the southern African country, the deputy mines minister said.

“We are meeting them later this week” and are “worried,” Polite Kambamura said in an interview in the capital, Harare.

Bravura was awarded a 3000-hectare (7400-acre) concession in Selous, about 50 miles south of the capital, in 2019. Calls and emails to Bravura’s management in Harare went unanswered.

Zimbabwe has the world’s second-largest reserves of platinum, which occurs with base metals including nickel and copper.

Peters owns Aiteo Eastern E&P Co., Nigeria’s biggest domestic oil producer, but has little experience in mining.

(By Godfrey Marawanyika)

Tharisa delays Zimbabwe platinum mine, citing weak prices and uncertain economy

[Reuters](#) | October 17, 2023 | 3:45 pm [Africa Platinum](#)

Tharisa Plc will delay commissioning its Karo Mine in Zimbabwe by up to a year to June 2025 due to current weak platinum group metal (PGM) prices and an uncertain global economic outlook, the miner said on Tuesday.

Tharisa is building the 194,000 ounce per year Karo PGM mine at a cost of \$391 million on Zimbabwe's Great Dyke, about 100km (62 miles) southwest of the capital Harare. The mine, which is close to Impala Platinum's Zimplats operations, was due to be commissioned by July 2024.

"Given the current PGM basket price weakness and uncertain global economic outlook, we have taken the measured decision to extend the Karo Platinum timeline out to commissioning by June 2025, with the opportunity to accelerate the timeline as markets become more favourable," South Africa-based Tharisa said.

The prices of PGMs, mainly used to make catalytic converters which help control emissions in vehicle engines, have declined rapidly over the past year.

Tharisa realised an average PGM basket price of \$1893 per ounce in the year ended 30th September, 26% lower than the average price of \$2564 per ounce it received during the same period in 2022.

PGM major Sibanye Stillwater's CEO Neal Froneman has warned of "significant restructuring" which could result in shaft closures and job losses in the platinum industry due to the current low metal prices.

(By Nelson Banya; Editing by Louise Heavens)

Caledonia explores funding options to build Zimbabwe's biggest gold mine

[Reuters](#) | October 19, 2023 | 6:59 am [Intelligence Africa Gold](#)

Caledonia Mining Corp is exploring options to raise \$250 million needed to develop its Bilboes project into what could be Zimbabwe's biggest gold mine. The company, which also owns the Blanket gold mine in Zimbabwe, could raise the money via a combination of debt, its own cash reserves and equity, Maurice Mason, Caledonia's vice president, corporate development, told *Reuters*. The Bilboes project could potentially produce about 170,000 ounces of gold annually, boosting Caledonia's total bullion output to around 250,000 ounces, Mason said.

Caledonia, backed by investors including Cape Town-based fund manager Allan Gray, is one of a number of mining investors that are searching for new opportunities in Zimbabwe even as the economy buckles from ongoing challenges such as intermittent power cuts, scarcity of US dollars and hyperinflation. Caledonia, which plans to construct the Bilboes Mine over two years, is doing studies to find solutions to reduce the up-front capital, Mason said.

"It will be Zimbabwe's biggest gold mine by far," Mason told *Reuters* via email. "We are considering phased capital raising, but that will depend on the outcome of the review of the feasibility study."

Mason said that while investors were cautious to commit to big mining projects, "our experience has been for quality projects with good returns investors have been supportive." Zimbabwe has been struggling to attract big investors from early 2000 when its economy imploded following the government's seizure of white-owned commercial farmland for

distribution to Blacks. The scarcity of dollars means some investors often struggle or fail to remit profits.

While Caledonia has been able to pay dividends from its Blanket Mine, Mason said in general terms some international investors remain concerned about repatriating profits from investments in Zimbabwe as well as about the country's policy stability.

"Foreign investors need to know that they can repatriate the fruits of their investment," Mason said.

Gold is among Zimbabwe's top foreign currency earning commodities alongside shipments of tobacco and platinum metals mined by units of Impala Platinum and Anglo American Platinum.

Caledonia, which has long sought to expand gold output in Zimbabwe, acquired the Bilboes project last year. It is also searching for more gold deposits at the Motapa and Maligreen projects.

(By Nyasha Chingono; Editing by Felix Njini and Jane Merriman)

Huayou commissions \$300 million Zimbabwe lithium plant

[Reuters](#) | July 5, 2023 | 11:11 am [Battery Metals](#) [Africa](#) [China](#) [Lithium](#)

Zhejiang Huayou Cobalt on Wednesday 5th July commissioned a lithium concentrator in Zimbabwe as it seeks to consolidate its position as one of the world's top battery materials producers. Huayou acquired the Arcadia hard rock deposit, 40km outside Harare, from Australia-listed Prospect Resources for \$422 million in April 2022. The Chinese company invested a further \$300 million to build a plant to produce 450,000 metric tons of lithium concentrates annually. The Arcadia plant took nine months to construct and started exporting concentrates in April after the plant went into trial production, George Fang, Huayou vice president and chairman of the Zimbabwe unit, said in a speech to mark the commissioning.

"We have exported close to 30,000 metric tons. This equates to \$40 million in revenue generation," Fang said.

Zimbabwe's President Emmerson Mnangagwa, who officiated at the commissioning, said the southern African country hopes its huge hard rock lithium resources will help revive its struggling economy.

"Lithium is a mineral of the present and the future. It is beneficial and will position our country in the global lithium value chain," Mnangagwa said.

Zimbabwe's government wants lithium miners operating in the country to go beyond producing lithium concentrates and process battery-grade lithium. Trevor Barnard, deputy general manager of Huayou's Zimbabwe unit, said the company was undertaking feasibility studies on further processing.

"We are not at the battery stage yet, it will take a regional approach from quite a few mines coming together to do beneficiation (processing)," Barnard told *Reuters*.

Chinese firms including Huayou, Sinomine Resource Group, Chengxin Lithium Group, Yahua Group and Canmax Technologies have spent more than \$1 billion over the past two years to acquire and develop lithium projects in Zimbabwe.

London-listed Premier African Minerals has said it will start producing lithium concentrates from its Zulu mine in southern Zimbabwe this year despite a delay caused by a plant defect.

(By Nyasha Chingono; Editing by Nelson Banya and David Holmes)

Zimbabwe's \$1 billion lithium plan faces setback as Chinese partner cuts stake

[Bloomberg](#) | July 19, 2023 | 8:28 am [Battery Metals Intelligence Africa China Lithium](#)

South Africa's Moti Group said a Chinese company with which it planned to develop a \$1 billion lithium processing plant in Zimbabwe was halving its stake in the venture, dealing the project a potential blow.

Moti Group's Pulserate Investments holds a 10,000-hectare (24,710-acre) lithium exploration concession in the northeast of the country, Africa's biggest producer of the metal according to the US Geological Survey. Earlier this year Moti said it planned to have the Chinese company, which it didn't identify, increase its stake in Pulserate to 70% and apply for an exemption to Zimbabwe's ban on lithium ore exports while establishing a battery factory.

The company, "one of the largest Chinese battery manufacturers," has instead exercised an option to cut its stake to 10% from 20%, Dondo Mogajane, Moti's chief executive officer, said in a response to queries. Pulserate "is adjusting its plans in line with the changes introduced by the Zimbabwean government regarding lithium mining and processing conditionalities," he said.

The decision is a setback to Zimbabwe's plans to develop an industry that will process the metal, which is crucial to the battery storage and electric vehicle industries. Since the ban was announced in December, stockpiles of the material have built up at mines in the country and smuggling of the ore has increased.

Moti, which runs a platinum extraction business in South Africa, will now need to find another partner or raise the money itself to build a processing facility.

Mogajane is a former director general of South Africa's National Treasury who has been tasked with restructuring the Moti Group as its founder, Zunaid Moti, steps back from active management. Moti has been tied to a number of scandals and told *Bloomberg* this year that his reputation was hindering the company's progress. He spent five months in a German jail in 2018 and 2019 after being arrested on an Interpol diffusion notice issued by Russia in connection with the alleged theft of a pink diamond. In 2012, he was charged with conspiracy to commit murder before the case was thrown out of court. He is no longer subject to a notice from Interpol and said he was arrested improperly on bogus charges engineered by a disgruntled businessman.

Mogajane is the chairman of South Africa's Government Employees Pension Fund, which has 2.3 trillion rand (\$128 billion) under management. He is also a board member at the New Development Bank, a multilateral lender founded by the BRICS group of countries.

(By Antony Sguazzin, with assistance from Danny Lee)

Zimbabwe eyes world No. 5 lithium spot as Chinese investors boost capacity

[Reuters](#) | July 27, 2023 | 7:30 am [Battery Metals Intelligence Africa China Lithium](#)

Chinese investors racing to secure lithium supplies could help Zimbabwe rise to become the world's fifth biggest primary producer of the material that is vital to battery electric vehicles and the green revolution, mining consultancy CRU said.

The lithium industry in Africa's top producer has expanded rapidly, buoyed by about \$1 billion of investments during the past two years by Chinese companies including Zhejiang Huayou Cobalt, Sinomine Resource Group, Chengxin Lithium Group and Yahua Group. The Chinese companies, faced with production constraints at home, have focused on Zimbabwe to lock-in future lithium supplies.

The investments could boost capacity to 192,000 tons of lithium carbonate equivalent (LCE) per year of petalite and spodumene in 2027, from 13,000 tons per year LCE in 2022, Cameron Hughes, a battery markets analyst at CRU said in a report.

“These investments will place Zimbabwe as the fifth largest primary producer of lithium by 2025, after Argentina, contributing more than either Canada or Brazil,” Hughes said.

While Zimbabwe holds some of the world’s biggest lithium deposits, the metal has only been mined at Bikita Minerals, producing petalite – a form of lithium used in ceramics, aluminum smelting and glass – since the 1950s. Sinomine paid \$180 million for Bikita Minerals last year and has spent \$300 million to expand the petalite and spodumene capacity to over 90,000 tons LCE per year from 6,000 tons LCE per year in 2020.

Investments by Sinomine and others mean Zimbabwe’s capacity could rise to about 11% of global LCE production in five years from just 2% in 2020, said Martin Jackson, head of battery raw materials at CRU.

Still, while the capacity is “significant”, full utilization would depend on lithium demand and prices, Jackson added.

“I doubted the speed of the ramp up of many of those operations, but those Chinese investors have brought lithium to market much quicker than I ever expected,” he said.

Chinese manufacturers’ ability to blend petalite and spodumene concentrates into battery grade material has made the Zimbabwean deposits more attractive, Jackson said.

“One thing we know is there is more investment coming through, we know there is more Chinese interest.”

Despite the huge potential, softening prices might not support investments on marginal projects, Jackson added.

(By Felix Njini; Editing by Mark Potter)

Zimbabwe stockpiles 300,000 carats of diamonds

[Bloomberg News](#) | August 13, 2023 | 11:49 am [Intelligence Africa](#) [Diamond Gold](#)

The Reserve Bank of Zimbabwe has stockpiled 300,000 carats of diamonds under new regulations which compel miners to pay half of their royalties using commodities, the state-run *Sunday Mail* reported.

Central bank governor John Mangudya also told the Harare-based newspaper that gold reserves stood at around 350 kilograms, or around \$20 million in US dollars. The value of the diamond stockpile is hard to quantify, he added.

Zimbabwe introduced regulations last year that require miners to pay half of their royalties to the government in the commodities themselves and the rest in cash, as the southern African country seeks to build its mineral reserves. Zimbabwe Consolidated Diamond Co Ltd, and Murowa Diamond Ltd, which is owned by Rio Zim Ltd, are the only diamond firms operating in the country.

(By Godfrey Marawanyika, with assistance from Desmond Kumbuka)

Zimbabwe’s biggest diamond miner shifts sales to Dubai auctions

[Bloomberg News](#) | October 20, 2023 | 4:02 am [Markets Africa](#) [Asia](#) [Diamond](#)

Zimbabwe’s biggest diamond producer has shifted almost all of its sales to Dubai, targeting cutters, polishers and traders and eliminating middlemen. Zimbabwe Consolidated Diamond Co. has auctioned 4 million carats of stones so far this year in the emirate, up from 850,000 carats for the whole of 2022. The state-owned miner is targeting revenue of \$1 billion by 2030, according to Sales and Marketing Manager Enock Moyo. Three

auctions held in Dubai have attracted an average of about 150 buyers, at least five times the number for sales in Zimbabwe, said Moyo, adding that better quality diamonds have also helped. Selling rough stones in the United Arab Emirates has also eliminated the middlemen that used to bid in auctions in the southern African country.

“For us, Dubai has been a game changer,” Moyo said in an interview.

The switch in sales to Dubai comes amid a slump in global diamond prices. Buyers in India — the industry’s biggest customers for rough stones — have been putting pressure on the largest miners to rein in supply. Last month, Russian diamond giant Alrosa PJSC said it was halting all sales until November.

The Zimbabwean producer expects gem prices to firm up by early next year.

The UAE already ranks as the No. 3 export destination for Zimbabwe, after South Africa and China. It is the biggest buyer of the nation’s gold and the second-largest buyer of tobacco.

ZCDC, located in the eastern district of Marange, is targeting output of 5.3 million carats this year, up from 4.3 million last year. The company has also teamed up with Russia’s Alrosa to form a joint-venture that is exploring for gems at Chimanimani and Mwenezi.

(By Godfrey Marawanyika)

Rule that rocked global carbon market softened in Zimbabwe

[Bloomberg News](#) | August 18, 2023 | 10:06 am [Energy Africa](#)

Three months after Zimbabwe roiled the \$2 billion carbon credit market by suddenly cancelling projects and claiming half of all proceeds, the country now says it will accept a smaller share of revenue and has begun the process of reinstating scrapped projects. In revised regulations issued Friday 18th August, the government said projects had 60 days to reapply for reinstatement and it would now keep 30% of proceeds in the form of an environment levy for the first 10 years of their operation. Developers, while retaining 70% of proceeds, are required to invest a quarter of their earnings in community projects. Fresh negotiations will be held in the 11th year.

That is a big retreat from the government’s rule change in May, under which foreign developers were told they could keep only 30% of proceeds while handing over a minimum of 20% to local partners. Zimbabwe’s shock decree alarmed investors and prompted various countries, including Malawi and Zambia, to say they may take a similar approach. The change to the planned regulations “is a positive starting point for further dialog,” the Zimbabwe Carbon Association said in a statement. The group was set up by 13 project developers to lobby the government after the initial announcement and has more than \$100 million of investment planned.

Zimbabwe has said its rules are to help ensure that the government and ordinary Zimbabweans benefit from the trade in the carbon emission offsets, where most agreements are concluded between foreign developers and local municipalities or traditional leaders known as chiefs. Zimbabwe is the third-biggest producer of carbon credits on the continent, accounting for about an eighth of production. The country’s biggest project is in the northern area of Kariba, covering a 785,000 hectare (1.94 million acre) swath of forest and is overseen in part by South Pole, the world’s leading seller of offsets.

Of the environmental levy taken by the government, 55% will go toward climate mitigation and adaptation projects, 5% will be retained for a so-called loss-and-damage fund to compensate for climate-related disasters. The Treasury will take 15%, and a further 15% will go toward funding an authority that will oversee the trade in the country and the rest will go toward fees charged by local and “appropriate” authorities. A single carbon credit

represents a ton of carbon dioxide equivalent either removed from the atmosphere or prevented from entering it in the first place. Those securities are bought by producers of the climate-warming gases who want to offset their emissions.

Programs often consist of reforestation programmes as trees suck in carbon dioxide, effectively storing emissions. The industry is projected to grow to as much as \$1 trillion per year in 15 years, according to an estimate by Bloomberg NEF.

Zimbabwe's government has a history of making policy pronouncements with no prior warning and sometimes adjusting them later, an approach that has dented investor confidence. In 2000 it began seizing White-owned commercial farms in what it said was a programme aimed at rectifying the injustices of colonialism. Export earnings collapsed and hyperinflation followed. It similarly stymied investment in the crucial mining industry by later decreeing that all operations must be controlled by Black Zimbabweans. In December it banned the export of lithium ore without warning.

(By Godfrey Marawanyika and Antony Sguazzin, with assistance from Ray Ndlovu)



SEG Timothy Nutt Memorial Fund

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 with the standing Chairperson.

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You can also advertise in this Newsletter through these contacts, where the cost for an A4 page size will be \$50 in any one issue.

Conferences

African Exploration and Technology Showcase

15 & 16 November 2023

Johannesburg Country Club, Auckland Park

Hosted by Geological Society of South Africa,

Geological Societies of Africa, Zambia, Zimbabwe and Namibia

Members - R2500 | Non-Members - R3250 | Student/Retired - R1000

CPD Points: GSSA - 16 | SACNASP - 2

Be aware of this upcoming conference to mark “100 Years of the Merensky Reef. Minerals Metals and Mining”. Geological Society of South Africa, 15-24 August, 2024.

For further information on specific events see <https://www.gssa.org.za/>
or email info@gssa.org.za

12th International Kimberlite Conference

30 Years of Diamonds in Canada

8-12 July 2024, Yellowknife

<https://12ikc.ca/>

Society of Economic Geologists

SEG conference 2024

Windhoek, Namibia

Colloquium of African Geology

Nairobi, Kenya – 2025

Biennial Conference organized by the Geological Society of Africa

**GEOLOGICAL SOCIETY OF ZIMBABWE:
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