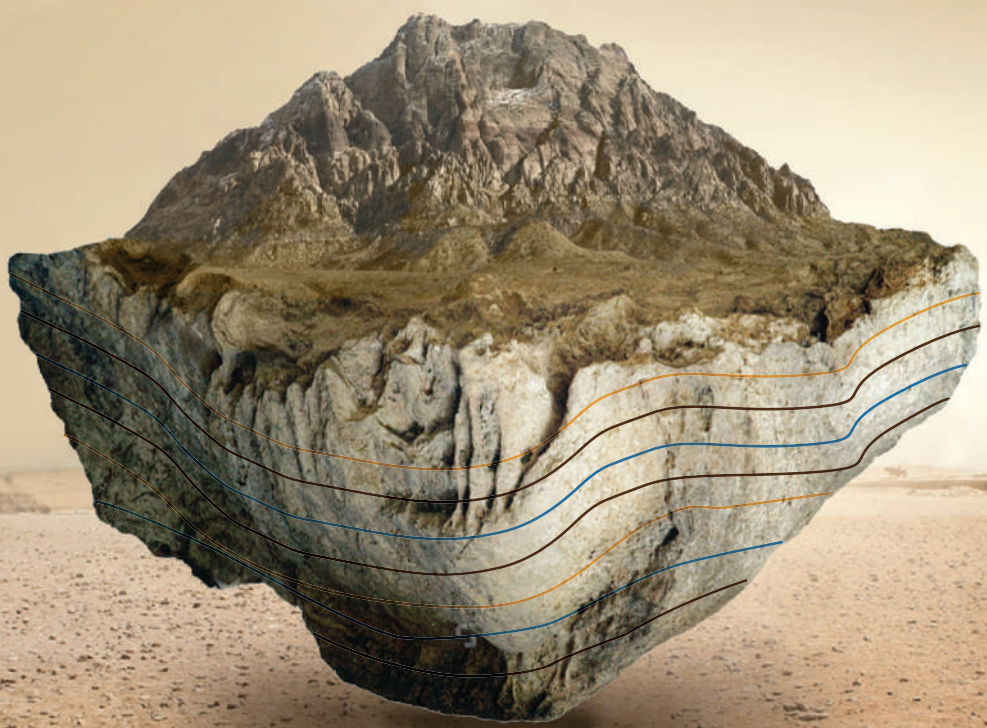
Botswana
Geoscience
Institute
Excellence in Geoscience

ANNUAL REPORT

2019



Botswana Geoscience Institute
Excellence in Geoscience

COMPANY OVERVIEW

Government of Botswana established Botswana Geoscience Institute (BGI) following the dissolution of the Department of Geologic Survey. This decision was primarily driven by the need to improve efficiencies in carrying out geoscience research, in line with best practices expected of a geological survey organization (GSO). The determination was also based on the high desire of achieving Botswana Government's primary imperative of successfully implementing programmes and projects that transform the lives of Botswana's citizens for the better, within time and costs as required in the National Development Plan 10 (NDP10) and subsequent National Development Plans.

BGI now has a major task to position itself as a significant creator of wealth and improving the quality of life of Botswana's citizens.

The creation of Botswana Geoscience Institute (BGI), demonstrates Government of Botswana's commitment to improve efficiencies in the practice of geological survey in Botswana. The Institute's Mandate, as detailed in the Botswana Geoscience Institute Act, 2014, is entirely linked to the country's national development goals and strategic imperatives. As such, the establishment of BGI presents Botswana with a unique opportunity to set up a Geoscience organisation that can meet the needs of its stakeholders and customers. BGI therefore, is projected to become a trusted adviser in all matters of geoscience in Botswana. This Institute is expected to achieve this by applying diverse professional expertise, historical and tested knowledge, nationwide earth observation infrastructure and strong partnerships and collaborations globally.

In line with Botswana Government's policy and intent to lure investors to Botswana and thereby increase foreign direct investment, BGI is expected to open avenues for collaboration in research and mineral discovery and the overall sustainable development of Botswana's mineral sector and related activities such as the monitoring of geohazards.

BGI is a prospect to innovatively apply science and technology to understand the earth for the greater benefit of Botswana and its citizens and broaden the nation's economic base along the mineral sector.

ABOUT THIS REPORT

Botswana Geoscience Institute (BGI) has prepared this Annual Report pursuant to Section 31 of the Botswana Geoscience Institute Act 2014.

This Report provides comprehensive information on the activities and operations of the Institute during the 2018/19 financial year. It includes review of critical areas such as its financial performance, flagship projects and forward looking of the Institute according to its Strategic Plan and Mandate as espoused in the Botswana Geoscience Institute Act no 29 of 2014.

CONTACT DETAILS

Feedback, comments and questions on the content of this report can be addressed to the contacts below.

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REPORT COVER CREATIVE RATIONALE

COVER DESIGN

This Annual Report cover is inspired by the study of rocks and their constituents, general earth materials and processes that form them, a science called Geology. Contour lines simply highlight the sedimentary layers of rocks.

COVER COLOURS

Hematite

Goethite

Clay

We used shades of Brown colour in the cover as it is a common color for rocks in general at the Earth's surface.

We sampled from rock Brown Minerals which are Hematite, Geothite and Clay.

FINAL COVER

BOTSWANA GEOSCIENCE INSTITUTE

CORPORATE PROFILE

Botswana Geoscience Institute
Excellence in Geoscience

OUR VISION AND MISSION

01

OUR VISION STATEMENT

To be a Renowned Geoscience Centre

02

OUR MISSION STATEMENT

We Create Economic Value through Advancing, Promoting and Disseminating Geoscientific Knowledge for the Benefit of Botswana and our Global Partners

OUR CORPORATE VALUES

VALUE 1

We are reliable custodians of Geoscience information

VALUE 2

We promote market-oriented and innovative products and services

VALUE 3

We create a conducive environment that promotes absolute integrity

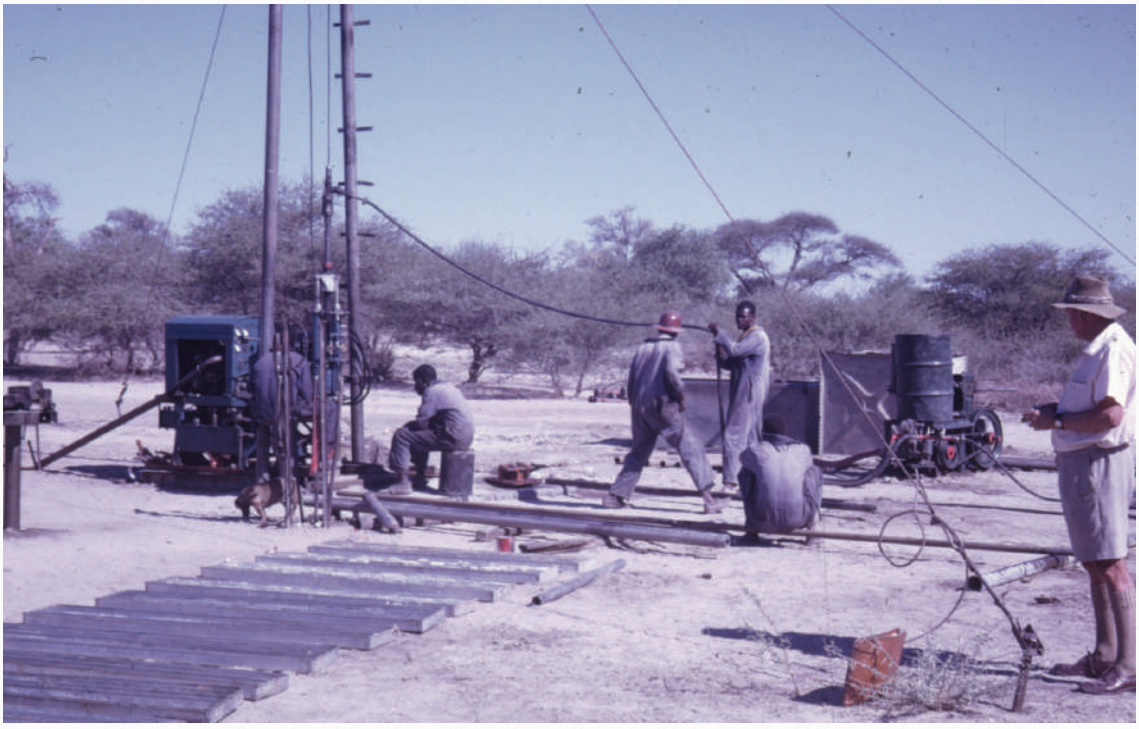
VALUE 4

We espouse professionalism

OUR HISTORY

Government of Botswana established Botswana Geoscience Institute (BGI) following the termination of the Department of Geologic Survey. This decision was primarily driven by the need to improve efficiencies in carrying out geoscience research, in line with best practice expected of a geological survey organization (GSO). The determination was also based on the high desire of achieving Botswana Government's primary imperative of successfully implementing programmes and projects that transform the lives of Botswana's citizens for the better, within time and costs as required in the National Development Plan 10 (NDP10) and subsequent National Development Plans.

BGI now has a major task to position itself as a significant creator of wealth and improving the quality of life of Botswana's citizens.



Picture: Historical geological survey work in Botswana

The creation of BGI, therefore can be seen as the renaissance of geological survey practice in Botswana, which began in 1943 during the Bechuanaland Protectorate era. The purpose of the practice was primarily to address water needs, and later focused on coal and other mineral research and exploration. In the period before Botswana Independence, the Geological Survey was basically covering the ground in order to map the geology as well as find groundwater resources.

The lack of initial geological knowledge was compounded by the unavailability of good air-photographs. However improved air photography in the late 1950s led to the first proper topographic surveys, which in turn enabled systematic geological mapping.

OUR HISTORY Continued...

The Morupule, Kgaswe and Mmamabula deposits are all a result of the Geological Survey work. The target was steam coal for the railways. The post-Independence era ushered in discoveries of base metals and diamonds, which put Botswana high on the list of priorities for several mining companies.

Though the eastern part of the country was well mapped due to its exposure, the larger part of the country covered by Kalahari sands remained unmapped. Department of Geological Survey (DGS) saw the establishment of a Mines Inspectorate Division within the Survey in 1969 as a result of the increasing contribution of the mineral industry to the economy of Botswana due to the discovery of copper-nickel in Selebi Phikwe and diamonds in Orapa.

In 1970 the Department of Geological Survey and Mines was formally established under the Ministry of Commerce, Industry and Water Affairs. A reorganization of Government in 1973 constituted a new Ministry of Mineral Resources and Water Affairs and Department of Mines was formed and moved to Gaborone. Until 2014 when BGI was formed, the practice of Geological Survey progressed and advanced with notable achievements such as; Geological mapping, Geophysics, Economic Geology, Hydrogeology, Environmental Geology, Laboratory and drilling facilities and National Geoscience Information Centre (NGIC).

BGI started operations in earnest in June 2017 and currently employs 127 staff members.

Picture: Geological survey (Field work) during the protectorate

OUR BUSINESS

The Institute, established through Botswana Geoscience Institute Act No. 29 of 2014 is mandated to undertake research in the field of geosciences, provide specialised geoscientific services and advice in all matters of geoscience and geoharzards. The Institute is also responsible for promoting the search for, and exploration of any mineral in Botswana and it is a custodian of all geoscience information.

Notwithstanding the generality above, the Institute is responsible for the following;

1) **Advancing the geoscientific knowledge of Botswana.**
2) **Promoting public understanding of geoscience.**
3) **Undertaking geoscientific research, related technological development and disseminating geoscientific research findings; Long term monitoring, effective data management and high quality applied research including and not limited to the following;**

- Geoscience information updates including digitization and web delivery enabling of data.
- Rapid map revisions to geological mapping.
- Seismicity risk reduction assessment and geohazards related to extra-terrestrial events risk reduction assessment;
- Systematic geochemical survey for mineral exploration and environmental baseline purposes.
- National resource assessment and estimate of mineral resource, petroleum and gas potential.
- Strategic aquifer mapping and underground modelling.
- Thematic mapping.
- National geotechnical indicators in response to expanding towns and villages.
- Regional impacts of mining, including water extraction or kimberlitic dewatering.

6) **Compiling and developing a comprehensive and integrated collection of knowledge and information of geology, geochemistry, geophysics, engineering geology, economic geology, geochronology, geotechnical investigations, seismology, geohazards, environmental geology and other related disciplines.**
7) **Act as an advisory body in respect of geohazards related to infrastructure and development.**
8) **Conduct geotechnical surveys.**
9) **Demonstrate the importance of geoscience to resource and environmental issues.**

Picture: Assessment of ground fissures (Kgwakgwe area)

ACRONYMS

ASTM	American Society for Testing and Materials
AFTAC	Air Force Technical Applications Center
BGI	Botswana Geoscience Institute
BIUST	Botswana International University of Science and Technology
BITRI	Botswana Institute of Technology Research and Innovation
BSN	Botswana Seismological Network
DGS	Department of Geological Survey
DoM	Department of Mines
GSO	Geological Survey Organization
IATA	International Air Transport Association
ISO	International Organization for Standardization
IRIS	Incorporated Research Institutions for Seismology
JOGMEC	Japan Oil, Gas and Metals National Corporation
LIMS	Laboratory Information Management System
MTC	Management Tender Committee
NDP	National Development Plan
NGIC	National Geoscience Information Centre
NIGIS	National Integrated Geoscience Information System
ODR	Okavango Delta Region
OHMS	Open House Management Solutions
PGMs	Platinum Group Metals
SOUR	Statement of User Requirements
SEG	Society of Exploration Geophysics
UB	University of Botswana
QDS	Quarter Degree Sheets

BOTSWANA GEOSCIENCE INSTITUTE

CORPORATE STRUCTURE

CORPORATE STRUCTURE

Botswana Geoscience Institute
Excellence in Geoscience

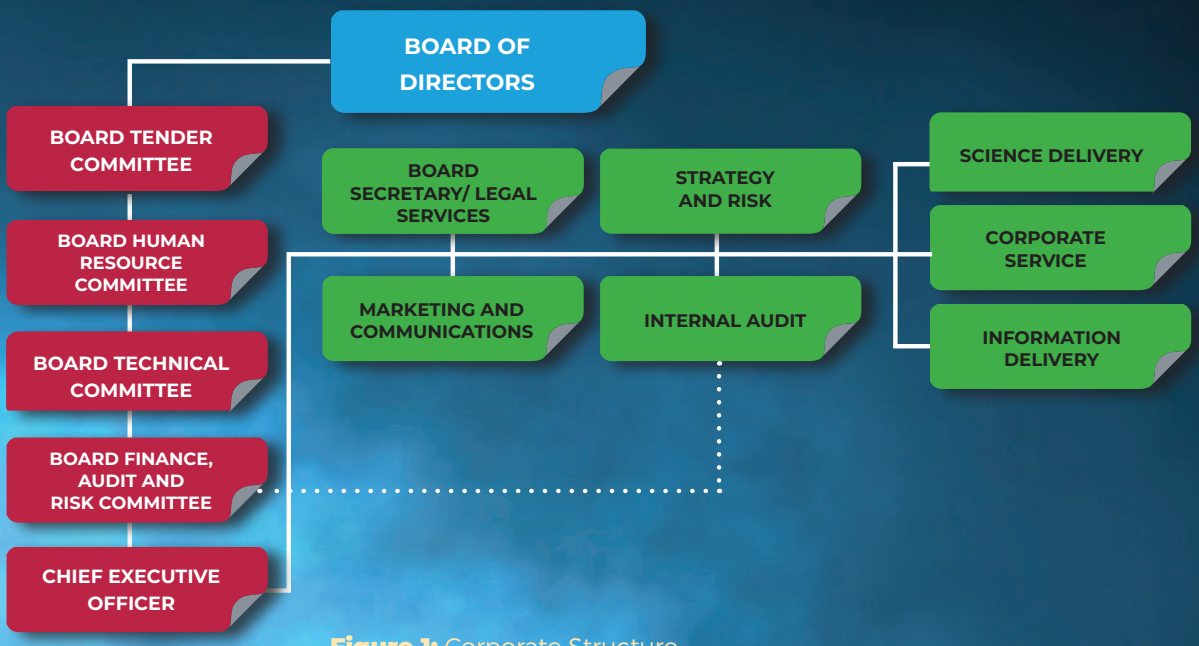


Figure 1: Corporate Structure

CHAIRMAN'S REPORT

Professor Elisha M. Shemang
Acting Chairman

OVERVIEW

It is with great pleasure that I present to you our 2018/19 Annual Report prepared pursuant to Section 31 of the Botswana Geoscience Institute Act 2014. This period marks the first year of implementation of BGI maiden corporate strategy 2018-2023. Notable and encouraging progress has been realized notwithstanding challenges that required innovative approaches to resolve them and minimize their destructive impact.

Reviewing the performance of the Institute for the financial year 2018/19 gives me a sense of inspiration and encouragement. In an environment characterised by economic uncertainty and increasingly fast evolving technology relating to geoscience research, as well as the significant growing demand in high quality geoscience products and services, we are compelled to rise to the occasion. We have to be agile and create an organization that is highly responsive to the shareholder and customer demands and be adaptable to meet emerging economic needs.

In the past year, we began a number of flagship projects that demonstrate our commitment to achieve our Mandate. As the Board, we ensured that we maintain focus on our strategic priorities and objectives as we journey to become a Renowned Geoscience Centre.

CHAIRMAN'S REPORT Continued...

A number of initiatives such as the setting up of the Research and Editorial Committee, registration and grading of our scientists at international professional bodies (such as South African Qualifications Authority (SAQA), South African Council for National Science Professions (SACNASP) and Southern African Development Community Accreditation Services SADCAS are milestones that give assurance that we are on the correct path.

We are also encouraged by the resilience of our people in the face of a variety of challenges. The confidence of our parent Ministry in our abilities as the Board to stir BGI to become a distinguished Geoscience Organisation that is demand driven and supported by ability to adapt to maintain its relevance to Botswana's economic needs is also an important matter that keeps us going, even under challenging times.

As the Board, we recognise competing needs of our country that have put a strain on the limited financial resources. With this realisation, we endeavour to do our best with less. Our financial performance for the financial year under review remains satisfactory though staff expenses increased due to activities especially fieldwork operations. We will continue to monitor this situation and ensure that there is a balance between projects expenses and staff costs.

Human Resources

We depend on skilled personnel to operate our business effectively in a rapidly changing environment. If we are unable to retain existing or hire additional personnel when needed, our ability to develop geoscience products could be harmed and in turn will affect our ability to grow our business.

I however wish to thank all one hundred and twenty-two (122) employees of BGI for their commitment. I also caution that, while the current performance is encouraging, there is always more that can still be done.

Business and partnerships

As we continue to establish ourselves, we are working on the skills, processes and technological infrastructure necessary to expedite our mandate and sustainable growth. We are confident that the significant progress we have made in forming strategic alliances with other research and academic institutions locally and internationally, will give us the certainty necessary to drive BGI forward.

Corporate governance

BGI is committed to sound corporate governance by striving to adhere to acclaimed codes of governance and standards. During the year under review, the substantive Chairperson, Mr John Farr, resigned from the Board. However, Board sub committees were re-organised to ensure their effectiveness. BGI values the many loyal partners/organisations who contribute across its business with great competence and flexibility. We express our appreciation to them and to the Members of the Board who provide considered guidance and expertise.

Looking ahead

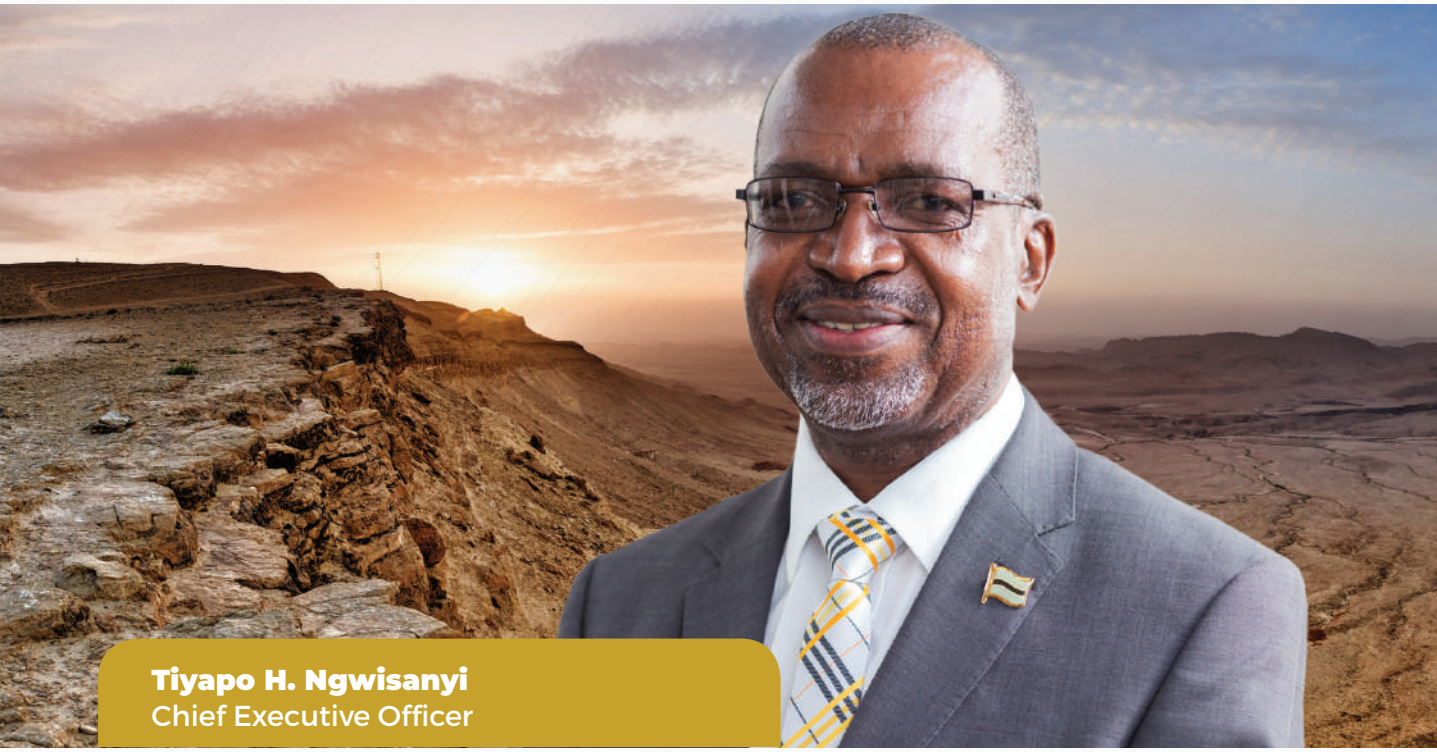
In the next financial year and years to come, the Institute will continue with its strategy and identify areas of improvement and opportunities. Our Strategy will be reviewed from time to time to ensure that it is not stagnant as our business environment evolves. Necessary support for our passionate employees will also be provided to ensure their retention and growth.

I conclude by thanking the Ministry of Mineral Resources, Green Technology and Energy Security, fellow Board Members, BGI employees and our customers, yet again, for placing their confidence in me to lead BGI as Acting Board Chairperson for the period.

Thank You

Professor Elisha M. SHEMANG
Acting Chairman
BGI Board of Directors

CHIEF EXECUTIVE OFFICER'S STATEMENT



Tiyapo H. Ngwisanyi
Chief Executive Officer

I am very humbled to present the Botswana Geoscience Institute's Annual Report for the 2018/19 financial year. This is the third Annual Report of the Institute since its formation in 2017.

The year 2018/19 focused on implementing projects and undertaking research, in line with the Institute's Strategic Plan 2018-2023. It is in this Strategic Plan where objectives and Priorities that guide the day to day operations of the Institute are defined. Therefore this report discusses progress made on key performance indicators identified in line with objectives and our priority areas.

We note with regret that projects were delayed due to a number of challenges such as prolonged planning period and resource allocation that affected the intended commencement dates and resulted in readjustments of programs of such projects. However, we are pleased to report that some amount of significant progress has been realized as highlighted below.

Strategic Priorities	2018/19 Milestones
PRIORITY 1: **Undertake high quality geoscience research for mineral exploration, promotion of sustainable development and geohazards management**	· Overall portfolio of projects that drive this key priority was at 54% compared to a planned progress of 62%. The variance is attributable to prolonged planning period while capacitating project managers. · BGI published Economic Accounting of Mineral Resources in Botswana, 2015/2016 Technical Report. The Report can be obtained from the website: www.wavespartnership.org/en/knowledge-center/economic-accounting-mineral-resources-botswana-20152016-technical-report · BGI senior scientists have registered with professional bodies in South Africa and Australia.

CHIEF EXECUTIVE OFFICER'S STATEMENT

Continued...

Strategic Priorities	2018/19 Milestones
PRIORITY 2: **Provide quality geoscience information**	• Enhancement of National Integrated Geoscience Information System (NIGIS) has commenced and a Statement of User Requirement (SOUR) report providing a detailed and accurate account of the requisite business functionality of an appropriate application/system has been produced. This was followed by system design, which will be completed in the first quarter of 2019/20, followed by system implementation. • Online Library system has been procured and installed and data uploading is continuously being done. This captures all publications including prospecting license reports and bulletins. Data uploading is ongoing and the system is expected to be live by linking the web enabled system of LIBWIN with BGI website in the coming year. • Acquisition of third-party data was obtained through collection of 1298 non-confidential prospecting reports from Department of Mines. • BGI acquired core totaling 1843.44m in depth from third party exploration activities and ongoing projects undertaken with partners. • 1820 Non-confidential Prospecting license reports were made accessible to the public, placed within 10 Public libraries. • The BGI website, which was completed in March 2019 is now live and its URL is http://www.bgi.org.bw.
PRIORITY 3: **Promote awareness and public education**	• Community/Public Engagement; Consultative meetings were held in respective districts ahead of commencement of projects in respective districts such as Palapye, Letlhakeng, Francistown and Gweta/Zoroga. • BGI participated in the 2018 Consumer Fair, Matsha Community College Career Fair and Awards Ceremony and Community service event in Molapowabojang. During the Molapowabojang event, Form 3 class of Chichi Secondary School were given a talk on careers in geoscience. • The Institute organized a Media tour to engage the media on BGI Mandate, Strategy and Geoscience knowledge. Following this tour there was significant publicity on print and electronic media. Future media engagements will include topic-specific engagements.
PRIORITY 4: **Build a sustainable Botswana Geoscience Institute**	• Financial Administration; The Institute continued to manage its financial resources in a prudent manner resulting in a 98% budget utilization. The Institute continued to adhere to financial and accounting controls resulting in strict compliance with all relevant International Financial Reporting Standards. • Income Generation/ Supplementation of Shareholder Funding; BGI embarked on building relationships and collaborations that leverage sharing of resources and funding to undertake projects that are both of national interest and are within strategic imperatives of the partners. • External Funding; Air Force Technical Applications Center (AFTAC) of the US Government continued with its funding for maintenance and operation of Magotlhwane seismic station. • CTBTO sponsored training of 2 seismologists on seismological data analysis, JICA sponsored 1 officer for leadership development and Australian Government sponsored 2 Officers for Masters degree.

CHIEF EXECUTIVE OFFICER'S STATEMENT

Continued...

Strategic Priorities	2018/19 Milestones
PRIORITY 5: **Uphold operational and service excellence**	• In order to improve projects governance and the Board's capability to effectively monitor BGI project portfolio, the Board participated in a project management training workshop. • An Enterprise-wide risk management framework has been developed.
PRIORITY 6: **Promote talent management**	**Organization and Structural Review;** The Institute initiated an organisational structure review so as to align it to the Strategic Plan and to ensure that the strategic objectives are delivered. The exercise will be completed in the next financial year.. **Staff Wellness;** As part of encouraging healthy behaviours and building productive teams, BGI organised Wellness day under the theme "My Wellness My Health". The event included health screening, health talks and financial wellness. **Staff Engagement and Development;** Two Business Review Meetings were held. The main objective was to update staff on BGI performance and consult employees on matters relating to the business going forward. **Staff Induction;** Workshops were conducted for new employees to give them insight on business processes, culture and expectations.

As I conclude and in view of the above remarks and discussion of our performance in detail under the Business Review chapter, I am confident that the Institute is on the correct path to deliver on its mandate. I am personally enthused by the support and tutelage of our passionate Board of Directors who from time to time would provide guidance as required.

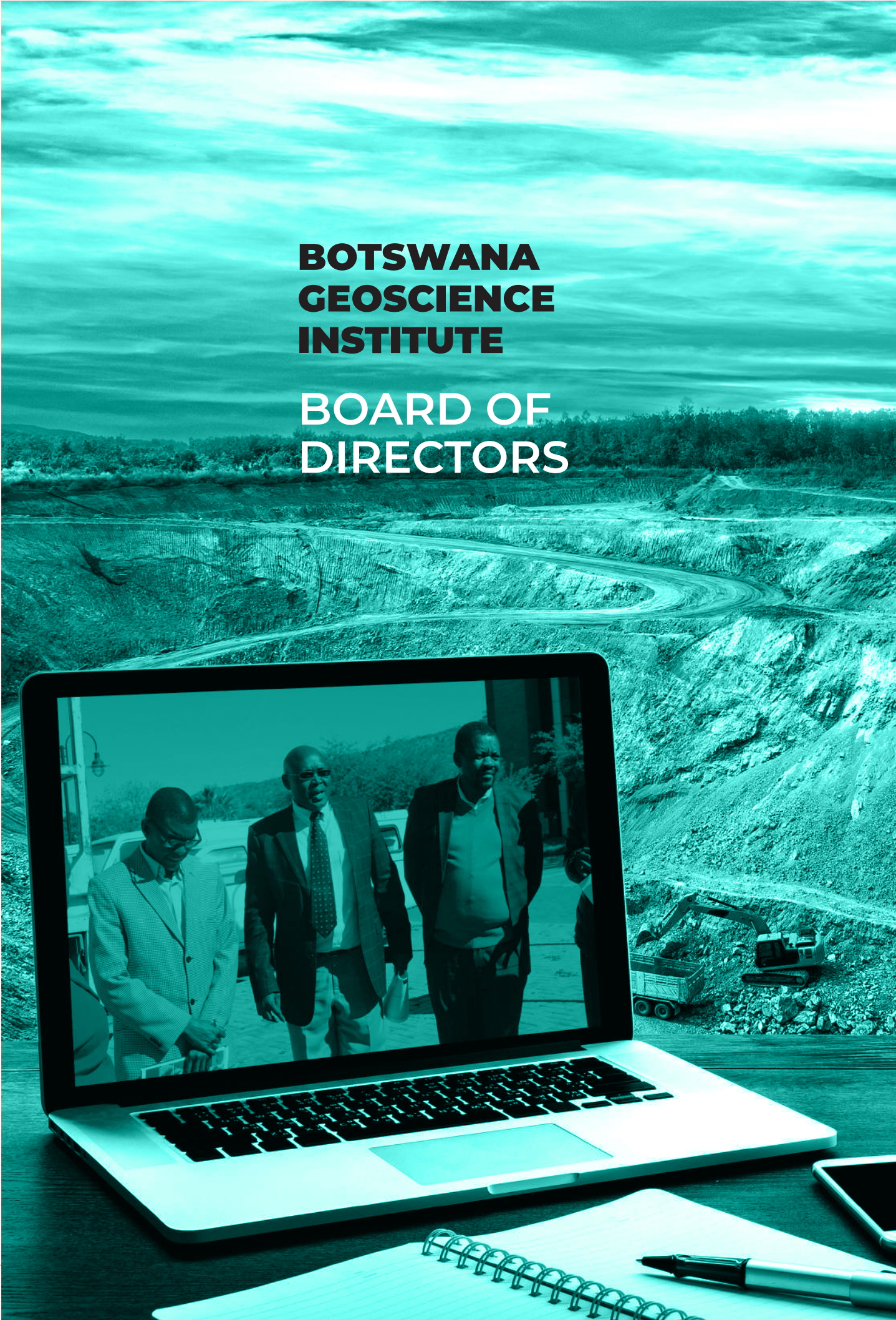
I would like to thank our acting Board Chairperson, Professor E. Shemang who led BGI during this financial year together with Board Members as collective and individually for their invaluable and unwavering support and guidance. The Management team and employees of BGI are a special team and I thank them for their focus and delivery on every aspect of BGI business.

I thank you

Tiyapo H. Ngwisanyi
Chief Executive Officer

BOTSWANA GEOSCIENCE INSTITUTE

BOARD OF DIRECTORS



BOARD OF DIRECTORS

BGI is governed by a Board of Directors consisting of Eight (8) Non-Executive Directors who bring leadership, commitment and thoroughness to the business of the Institute as well as its governance in pursuance of its statutory mandate, by ensuring proper and effective control of the Institute's business and carrying out periodic evaluation of the Institute's performance.

The Board of Directors, is appointed by the Minister of Mineral Resources, Green Technology & Energy Security in accordance with section 6 of Botswana Geoscience Institute Act of 2014 on defined durations. During the year under review, BGI Board of Directors was constituted as below;

Professor Elisha M. Shemang
CHAIRMAN OF THE BOARD (ACTING)

Professor Elisha M. Shemang holds PhD in Applied Geophysics obtained from Ahmadu Bello University, Nigeria. In 2012, he joined Botswana International University of Science and Technology – BIUST, as Professor and Founding Head, Department of Earth and Environmental Sciences. He previously worked at the University of Botswana as Professor in the Department of Geology.

Professor Shemang has over 30 years of experience in teaching and research, consultancy and human resources development in geology, geophysics, groundwater and environmental science. His experience in the University systems extends over several countries in Canada, Europe and Africa, and has served and is still serving as member of high-level university administration and management committees. He is an author/co-author of 1 book and 5 book chapters and many refereed published scholarly/scientific journal articles in the subject of geoscience. He is a member of Botswana Joint Committee on Science and Technology, and member of the steering committee of the Botswana Mining Museum and Educational and Research Center. He is a member of several professional bodies amongst which are, Society of Exploration Geophysics (SEG), American Geophysical Union, European Association of Geoscientist and Engineers, International Association of Hydrogeologists, and Botswana Geoscientist Association.

Mr. Ogone Oscar Mokoko Gaboutloeloe, Esq. Sr. PCH
BOARD MEMBER

Mr. Gaboutloeloe, Esq. Sr. PCH is an admitted Attorney, a Notary Public of the High Courts of Botswana, with an LLB obtained from University of Botswana, an MSc in Strategic Management, and a Masters of Commerce in Trade Law and Policy obtained from the University of Cape Town.

He is Air Botswana General Counsel and Director Legal Services. He previously worked for Botswana Post in various roles including Government relations, Regulatory Affairs, International postal affairs, and Corporate Strategy. His professional experience has been across diverse sectors including medical insurance providers, a private hospital, the Botswana Unified Revenue Services, and the Public Procurement and Asset Disposal Board.

Mr. Gaboutloeloe is a Member of the International Air Transport Association (IATA) Legal Advisory Council - a role he was appointed to by IATA Board of Governors at the Annual General meeting held in Seoul, Korea on June 2019. He is a lifelong member of the Scout Movement, has served as Legal Advisor to Botswana Scouts Association, has sat on various Boards including Non-Governmental Organisations, a private sector property investment consultancy firm and he is a member of Labour Advisory Board. Mr. Gaboutloeloe has contributed two chapters to 'The Future is in the Post', a Postal Industry journal. He is a member of the Law Society of Botswana of good standing and a member of the FIFA club licensing committee, the First Instance Board (FIB) of the Botswana Football Association.

Ms. Bogadi T. Mathangwane
BOARD MEMBER

Ms Mathangwane holds a BSc Honours in Applied and Analytical Chemistry from UK and a Master's Degree in Water Resources from Iowa State University in the US. She is currently working for Botswana Government in the Ministry of Land Management, Water and Sanitation Services in the Department of Water Affairs.

Ms Mathangwane has extensive expertise in soil and water chemistry as well as transboundary water resources management. She has directed and coordinated national and transboundary water projects such as; a United Nations Development/GEF sponsored Project on development of Integrated Water Resources Management/Water Use Efficiency Plans and; Botswana Water Conservation and Water Demand project.

Ms. Tebogo Mmoshe
BOARD MEMBER

Ms. Tebogo Mmoshe is a Chartered Accountant (ACCA) and a Fellow member of the Botswana Institute of Chartered Accountants. She has an MBA obtained from University of Derby, UK, BSc (Hons) in Applied Accounting from Oxford Brookes University, UK. She is a Certified Risk Analyst by International Academy of Business and Financial Management (IABFM). She went through the Executive Development programme by University of Capetown (UCT) Graduate Business School, South Africa and has Diploma in Telecoms from Commonwealth Telecommunications Organisation.

She is currently holding a position of Director Compliance and Monitoring at Botswana Communications Regulatory Authority, and before that she was the Head of Finance. Previously, she worked at Botswana Unified Revenue Service as Acting General Manager and at Botswana Meat Commission as Internal auditor.

Dr. Budzanani Tacheba
BOARD MEMBER

Dr Tacheba currently works for Botswana Innovation Hub as Director – Cluster Development. He previously worked as a Research Fellow at the University of Botswana in different research projects. He also worked as Regional Coordinator for the Global Monitoring for Food Security Consortium, developing and administering geospatial products for SADC region; and interim Coordinator in the Botswana Innovation Hub Project Office, Ministry of Infrastructure Science and Technology, where he facilitated establishment of BIH as a Private Company.

He has more than 16 cumulative years' experience in academia (R&D), industry and government. He has served in the Medical Education Partnership Initiative Advisory Board. Holds a PhD in Environmental Science from University of Botswana, MSc in Remote Sensing from University of London (UCL) and an Executive Education Certificate in Science, Technology and Innovation Policy from Harvard University.

Ms. Ontlametse Mokopakgosi
BOARD MEMBER

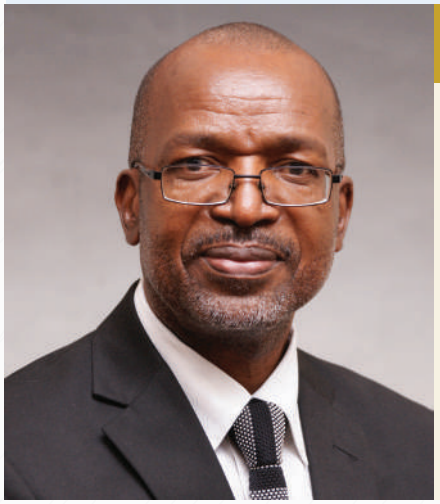
Ms. Mokopakgosi has MA in Health Policy, Planning and Management from University of Leeds, UK and a Bachelor of Commerce - BComm, from the University of Botswana.

In June 2016 she joined Human Resource Council as Manager, Human Resource Development Planning. She previously worked as Deputy Permanent Secretary at the Ministry of Mineral Resources, Green Technology and Energy Security and the Ministry of Health responsible for Corporate Services. She previously served as a member of National Vision Council, Public Service Training Advisory Committee, and SADC Human Resource Planning Sub-Committee.

Dr. Sebusi Odisitse
BOARD MEMBER

Dr. Sebusi Odisitse has a PhD in Chemistry obtained from University of Cape Town, South Africa. He joined Botswana International University of Science and Technology as Lecturer in the Department of Chemical and Forensic Sciences. He previously worked at Botswana Institute for Technology Research and Innovation as Researcher, Nanomaterials, under Natural Resources and Materials division.

He has more than 21 years of experience in teaching, tutoring, lecturing and as a researcher specializing in chemistry. He is the author and co-author of more than 8 published international scholarly/ scientific journal articles and 5 technical papers in the subject of chemistry, drugs, and chemical biology. He is a member of the Royal Society of Chemistry (UK), American Chemical Society (USA) and South African Chemical Institute (SA). He is a member of The Institute of Directors in South Africa (IoDSA). He serves in a number of Boards such as Botswana Institute for Technology Research and Innovation (BITRI) and Chemical Weapons (Prohibition) Board and in several national committees.



Mr. Tiyapo Hudson Ngwisanyi
CHIEF EXECUTIVE OFFICER

Mr. Ngwisanyi is an Ex-Officio Member of the Board. He has MSc. in Exploration Geophysics obtained from International Institute for Aerospace Survey and Earth Sciences (ITC), Delft, Netherlands. He has over 28 years of experience in geophysical surveys related to the search for minerals and groundwater, 19 years of which was from senior management level. He previously worked at Department of Geological Survey as the Director. He has published 8 technical reports and has co-authored in 5 published scientific journals.

He has served on Water Apportionment Board and on National Disaster Management Technical Committee. He is a Member of Botswana Geoscientists Association.

BOTSWANA GEOSCIENCE INSTITUTE

CORPORATE GOVERNANCE

CORPORATE GOVERNANCE

Role of the Board of Directors

BGI is governed by a Board of Directors consisting of Eight (8) Non-Executive Directors that brings leadership, commitment and thoroughness to the business of the Institute as well as its governance in pursuance of its statutory mandate, in ensuring proper and effective control of the Institute's business and carrying out periodic evaluation of the Institute's performance.

However, during the period under review, The Chairperson of the Board resigned in July 2018 and Professor Elisha M. Shemang took the Chairmanship on acting basis, pending the appointment of the substantive Chairperson

The Chief Executive Officer is an Ex-Officio Member of the Board. He is bound by a contract of employment with agreed set targets which are appraised by the board from time to time. BGI is committed to the highest organisational standards and business integrity, ethical values and professionalism in all of its activities. As an essential part of this commitment, the Board of Directors support high standard of corporate governance and the Board is accountable to the shareholder in this regard.

According to Botswana Geoscience Institute Act, 2014, the selection and appointment of members of BGI Board of Directors, lies with the Minister of Mineral Resources, Green Technology and Energy Security.

As per best practice, Board appointments are based on prescribed requisite skills and experience. As such, the appointed members of the Board have diverse skills and experience in various disciplines, which accordingly assists in ensuring BGI discharges its mandate within the stipulated provisions of the Botswana Geoscience Institute Act. Such disciplines include, Geological Engineering, Sciences, Law, Market Regulation, Finance and Accounting, Management and Business administration.

Picture: Board Technical Committee on tour of BGI facilities

COMPOSITION OF BGI BOARD OF DIRECTORS

NAME	PROFESSION/ QUALIFICATION	CURRENT OCCUPATION AND COMPANY	POSITION BOARD, (e.g. Board Chairperson, Audit\HR Committee Chairperson or Ordinary Member)	DATE OF FIRST APPOINTMENT	DURATION
Prof. Elisha M. Shemang	Professor, PhD in Applied Geophysics	Professor & Founding Head, Department of Earth and Environmental Science - Botswana International University of Science and Technology	Vice Board Chairperson Appointed Acting Chairperson of The Board in July 2018 **Member of Board HR Committee**	16 JULY 2015	**5 YEARS**
Mr. John Farr Resigned in July 2018.	MSc in Hydrogeology	Managing Director – Wellfield Geosciences Group	**Board Chairperson Resigned in July 2018**	16 JULY 2015	**5 YEARS Resigned in July 2018**
Ms. Tebogo Mmoshe	MBA, BSc (Hons) in Applied Accounting and ACCA	Director Internal Audit – Botswana Communications Regulatory Authority	**Board Member** **Chairperson - Board Finance, Audit and Risk Committee** **Member of Board Technical Committee**	16 JULY 2015	**4 YEARS**
Dr. Budzanani Tacheba	PhD in Environmental Science, MSc in Remote Sensing	Director Cluster Development – Botswana Innovation Hub	**Board Member** **Member of Board Tender Committee** **Member of Board Finance, Audit Rick Committee**	16 JULY 2015	**5 YEARS**
Ms. Bogadi T. Mathangwane	Master's Degree in Water Resources from Iowa State University, USA	Director, Department of Water Affairs, Ministry of Land Management, Water and Sanitation Services	**Board Member** **Board Human Resources Committee Member** **Board Tender Committee Member**	1 November 2017	**5 YEARS**
Ms. Ontlametse Mokopakgosi	MA in Health Policy, Planning and Management	Manager, Human Resource Development Planning – Human Resource Development Council	**Board Member** **Chairperson - Board HR Committee**	16 JULY 2015	**4 YEARS**

Table 1: Composition of BGI Board of Directors 2018/19

COMPOSITION OF BGI BOARD OF DIRECTORS

Continued...

NAME	PROFESSION/ QUALIFICATION	CURRENT OCCUPATION AND COMPANY	POSITION BOARD, (e.g. Board Chairperson, Audit\HR Committee Chairperson or Ordinary Member)	DATE OF FIRST APPOINTMENT	EXPIRY DATE
Dr. Sebusi Odisitse	Lecturer, PhD in Chemistry	Lecturer – Botswana International University of Science and Technology	Board Member Board Technical Committee Member of Finance & Audit Board Committee	16 JULY 2015	**4 YEARS**
Mr. Ogone O. M. Gaboutloeloe	Law, Bachelor of Laws (LLB), Masters of Science in Strategic Management and Masters of Commerce in Management Practice specializing in Trade Law and Policy	Government Relations, Regulatory Affairs and Internationals Postal Affairs - Botswana Post	Board Member Chairperson - Board Tender Committee Member of Board Finance, Audit & Committee	16 JULY 2015	**4 YEARS**

Picture: Board Technical Committee L-R. Dr Tacheba, Ms. Mmoshe, Dr. O disitse and Prof Shemang

RESPONSIBILITIES OF THE BOARD

BGI Board of Directors is responsible for the general control of the performance and management of the undertakings and affairs of the Institute. In particular, BGI Board of Directors' responsibilities are;

- **Determining the general performance of the Institute**
- **Determine corporate policy and provide strategic direction for giving effect to the objectives of the BGI Act**
- **Ensures compliance with applicable Laws and Regulations,**
- **Approve significant capital expenditure projects, selection of service providers and major financial proposals.**
- **Advise the Minister to change, review or formulate geosciences related policies and strategies where necessary, and**
- **Do such other things as provided by the BGI Act or as may be necessary to the proper implementation of the BGI Act.**

Compliance with the Laws and legal Requirements

The Board is conscious of its responsibility and is unequivocally committed to upholding ethical behaviour in conducting its business. The Board, through the Legal Services and Board Secretariat and the Chief Executive Office, strives to ensure that the business of the Institute complies with the laws and regulations of Botswana.

Ethics

Members of the Board and employees are required to conduct themselves according to the highest ethical standards. The Institute strives at all times to make relevant disclosures of information to stakeholders in a transparent manner including disclosures during Board meetings.

Relations with the Shareholder

The Board as a whole has responsibility for ensuring that a satisfactory dialogue with the shareholder takes place. This dialogue is facilitated through the office of the Chief Executive Officer and Board Secretary. The Chairman of the Board has sufficient access to the Minister responsible for the Institute to discuss any matters of mutual concern.

Board Committees

The following standing specialist committees were appointed by the Board to support in the governance of the Institute;

- **Technical Committee,**
- **Finance, Audit and Risk Committee,**
- **Tender Committee and**
- **Human Resource Committee.**

Technical Committee

In General, (in addition to the enumerated responsibilities below), this Committee of the Board provides oversight on technical matters of the Institute, project development and management, and systems and technology acquisition.

The Committee may also consider project economic analysis, appraisal of technical risk factors, appropriate longer-range (as well as early stage) preparations for project development and implementation, as well as such other matters as may be requested by the Board.

In addition to the general statement of responsibilities above, the Committee is responsible for;

- overseeing and reviewing the technical aspects of the Institute's geoscientific research projects' development and implementation, including reviewing all project development milestones and proposals and make recommendations to the Board for consideration.
- periodic consideration of reports on interim research results;
- periodic consideration of technical issues, challenges and risks facing the Institute with the view to giving Management advice about appropriate solutions, actions and risk mitigations.
- on behalf of the Board (but not in replacement of its jurisdiction to review and approve), overseeing the detailed technical aspects of research project implementation, as well as obtaining regular updates from Management regarding progress and performance.
- overseeing periodic benchmarking by Management of the policies, systems and monitoring processes of the Institute versus industry best practices.
- reviewing and reporting to the Board on the sufficiency of financial, technical and human resources to ensure proper and timely project implementation of projects and
- any additional matters delegated to the Committee by the Board.

RESPONSIBILITIES OF THE BOARD Continued...

The members of the Board Technical Committee are;

Professor Elisha M. Shemang	**-**	**Chairperson**
Dr Sebusi Odisitse	**-**	**Member**
Ms. Tebogo Mmoshe	**-**	**Member**
Dr. Budzanani Tacheba	**-**	**Member**

Tender Committee

The Committee ensures that all tenders within the authority of the Board are addressed in a transparent and procedural manner to enhance an effective control environment in the Institute's procurement process and that the Board encourages the necessary respect for control by management and employees of the Institute.

The Board Tender Committee has the authority to deliberate and decide tenders in excess of Pula 5 million. In order to expedite the business operations, authority for tenders of Pula 5 million and below has been delegated to a Management Tender Committee (MTC), a sub-committee consisting of Management staff and the outcomes of the tender evaluation and adjudications are reported to the Board Tender Committee on a periodical basis.

The members of the Tender Committee for the year under review were;

Mr. Ogone O.M. Gaboutloeloe	**-**	**Chairperson**
Dr. Budzanani Tacheba	**-**	**Member**
Ms Bogadi T. Mathangwane	**-**	**Member**
Ms Ontlametse Mokopakgosi	**-**	**Member**

- Making recommendations to management on ways of improving issues of procurement procedures and policies.
- Monitoring implementation of projects for which tenders have been approved.
- Ensuring adherence to corporate governance standards.
- Ensuring that the Institute complies with the relevant legislations and regulatory requirements.
- Reviewing any complaints, pending litigations or regulatory proceedings relating to tenders.

Finance Audit and Risk Committee

The Finance Audit and Risk Committee is responsible for ensuring that Executive management creates and maintains an effective control environment for BGI and that management encourages the necessary respect for internal controls among all employees. The Committee reviews Financial Controls, Accounting Systems and reporting to the shareholder.

This responsibility of the committee is achieved through;

- Assessing the Policies and procedures of the Institute to ensure that, that the accounting systems and related controls are adequate and functioning effectively.
- Identifying major risks to which the Institute is exposed and verify that the related internal control systems are adequate and functioning effectively.
- Reviewing the financial statements of the Institute to provide assurance those financial disclosures made by the Board and management portray the Institutes financial conditions, results of operation and long term commitments.
- Overseeing both the internal and external audit process, together with reviewing effectiveness of both auditors.
- Monitoring all legal and regulatory compliance.

The members of the Finance Audit and Risk Committee for the year under review were;

Ms. Tebogo Mmoshe	**–**	**Chairperson**
Dr Sebusi Odisitse	**–**	**Member**
Mr Ogone O. M. Gaboutloeloe	**–**	**Member**
Ms Ontlametse Mokopakgosi	**–**	**Member**

Human Resource Committee

The Committee was set up to regulate both substantive and procedural administration of staff and staff welfare issues, which include recruitment processes, industrial relations matters, remuneration and other compensation as may be necessary.

RESPONSIBILITIES OF THE BOARD Continued...

In particular, the Committee undertakes the following;

- Deliberate and decide on policy issues relating to remuneration and benefits, salaries and other related matters.
- Determine, for Board approval, the remuneration policy for all BGI staff.
- Determine targets and objectives for any performance to related pay schemes.
- Recommend to the Board Executive Management appointments.

The Human Resource Committee consists of four (4) Non-Executive members and are as follows;

Members of the Human Resource Committee:

Ms Ontlametse Mokopakgosi	**–**	**Chairperson**
Dr Budzanani Tacheba	**–**	**Member**
Mr Ogone O. M. Gaboutloeloe	**–**	**Member**
Ms Bogadi Mathangwane	**–**	**Member**

Executive Management Committee

The BGI Board, subject to predefined limits, has delegated its executive authority to the Executive Management Committee, (EXCO), headed by the Chief Executive Officer (CEO). The members of the EXCO are;

Chief Executive Officer	**Mr Tiyapo H. Ngwisanyi**
Director, Science Delivery;	**Mr. Puso Akanyang**
Director, Information Delivery;	**Ms. Lesego P. Peter**
Director, Corporate Services;	**Mr. Kevin K. Masupe**
Manager, Legal Services/Board Secretary;	**Ms. Obolokile C. Sekga**
Manager, Marketing and Communications,	**Mr. James B. Molosankwe.**
Manager, Strategy and Risk (A)	**Mr. Samuel Serero**
Manager, Internal Audit	**Ms. Onkemetse Samuel**

The EXCO is responsible for proposing strategic alternatives to the Board and is accountable for the implementation of strategies, policies, and other decisions approved by the Board. It manages the business and affairs of the Institute, implements strategic decisions, prioritises the allocation of capital, technical and human resources and establishes best management practices.

During the year under review, the roles of Director-Corporate Services and Manager Internal Audit were filled whereas the role of Manager Strategy and Risk remained vacant. Mr Serero was deployed from Information Technology as a temporary measure.

Internal Audit function

Internal Audit Business Unit was established in November 2018, upon recruitment of Manager Internal Audit. The objective of Internal Audit Business unit is to provide independent and objective assurance services designed to add value, with an objective to improve the institute's operations by bringing a systematic, disciplined approach to evaluate and improve the effectiveness and efficiency of risk management, internal control, and governance processes. Organizational independence of the Internal Audit function is ensured through dual reporting model. Manager Internal audit reports functionally to Board Finance, Audit and Risk Committee and administratively to the Chief Executive Officer.

Attendance and meetings of the Board and Committees

The Board met on Ten (10) occasions during the financial year 2018/2019 to consider various strategic and policy issues and other issues having material effect on the Institute's affairs. During these meetings, the Board Members have declared their interests and are free from any business or other relationships which could reasonably be said to interfere with the exercise of their judgement.

RESPONSIBILITIES OF THE BOARD Continued...

During the year under review, Members of the Board and as part of the respective committees attended the following meetings.

NAME	POSITION	BOARD	FINANCE, AUDIT & RISK COMMITTEE	HUMAN RESOURCES COMMITTEE	TENDER COMMITTEE	TECHNICAL COMMITTEE
Prof. Elisha M. Shemang	Acting Chairperson	10/10	N/A	7/7	N/A	7/7
Mr John Farr (Resigned in July 2018)	Chairperson	2/10	N/A	N/A	N/A	N/A
Ms. Bogadi T. Mathangwane	Member	2/10 She was appointed November 2018	N/A	1/3	2/3	N/A
Ms Tebogo Mmoshe	Member	9/10	6/7	N/A	N/A	6/7
Dr Budzanani Tacheba	Member	9/10	6/7	N/A	N/A	6/7
Ms Ontlametse Mokopakgosi	Member	9/10	6/7	N/A	6/7	6/7
Dr Sebusi Odisitse	Member	10/10	6/7	6/7	N/A	7/7
Mr Ogone O. M. Gaboutloeloe	Member	9/10	N/A	6/7	6/7	N/A
Mr Tiyapo H. Ngwisanyi	CEO	10/10	7/7	7/7	7/7	7/7

Table 2: BGI Board of Directors record of Meeting attendance

Remuneration Of Members Of The Board

Except for the Chief Executive Officer, members of the Board are not entitled to monthly or annual salaries. Instead, they are paid sitting allowance at Board and Committee meetings. Below is the detail of Board sitting allowance payments for the year under review.

NAME	POSITION	AMOUNT (BWP)
Prof. Elisha M. Shemang	Chairperson (Acting)	**20,790.00**
Mr John L. Farr	Chairperson (Resigned July 2018)	**3,150.00**
Mr Ogone O. M. Gaboutloeloe	Vice Chairperson (Acting)	**26,460.00**
Ms Tebogo Mmoshe	Member	**21,420.00**
Dr Budzanani Tacheba	Member	**17,640.00**
Ms Ontlametse Mokopakgosi	Member	**16,380.00**
Dr Sebusi Odisitse	Member	**21,420.00**
Ms. Bogadi Mathangwane	Member	**7,560.00**
Mr Tiyapo H. Ngwisanyi	CEO	**Not applicable**

Table 3: Remuneration of members of the Board

RESPONSIBILITIES OF THE BOARD Continued...

External auditors

In terms of the BGI Act, Section 30, the Accounts of the Institute in respect to each financial year, shall, within three months of the end of the financial year, be audited by an auditor appointed by the Board.

Under a special dispensation, this has been fulfilled and BGI Board, appointed MAZARS Certified Accountants for this purpose.

Ad hoc Committees

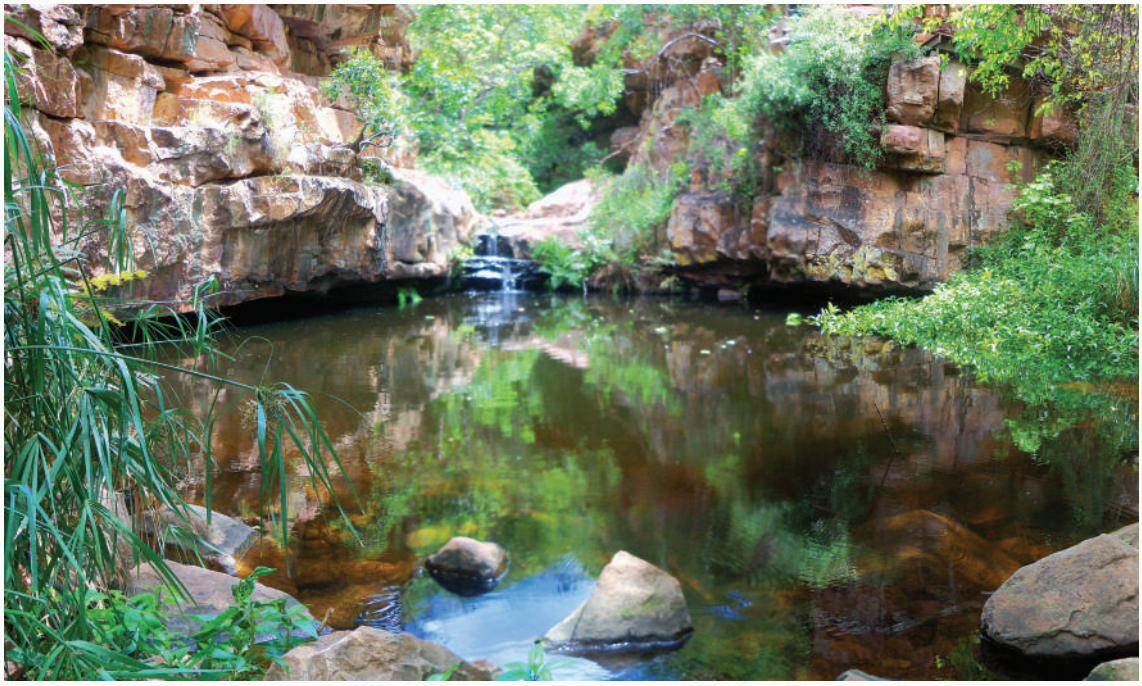
Adhoc Committees are appointed by the Board, as and when necessary, to consider specific issues before the submission of the Board for a final decision. The Board, as it finds necessary, determines the terms of reference of such committees.

Approval of Financial Statements

The Institute's Audited Financial Statements were reviewed by the Finance, Audit and Risk Committee, approved by the Board and were signed accordingly by the Acting Chairperson and the Chief Executive Officer.

Relationship with communities

The Board is ever conscious of the principles of good citizenship and the operational dimensions of the Institute's social programmes as designed from time to time by the BGI Health and Wellness Committee. The Institute ensures that, resources permitting, the needs of the society are linked to the Institute's business and social objectives.



2018/19 Highlights

01 Evaluation of Letlhakeng Cement grade Calcrete deposit

This project commenced in January 2018 and intends to evaluate limestone deposits sufficient to sustain a cement plant in order to reduce the importation of cement. In the last financial year, the project concentrated its efforts in the Letlhakeng Area where drilling of 53 boreholes was completed. The area under consideration is located Southeast of Letlhakeng village in the Kweneng District.

02 BGI & JOGMEC Remote Sensing Seminar 2018

Botswana Geoscience Institute (BGI) & Japan Oil, Gas and Metals National Corporation (JOGMEC) held the 2018 Remote Sensing Seminar on November 01, 2018 in Lobatse.

This is an annual event that follows the established a Remote Sensing Centre in Lobatse through a Memorandum of Collaboration signed in 2008 by then Geological Survey Department. Through this collaboration, JOCMEC carries out technical projects in geologic remote sensing. The agreement also involves other Member countries from the Southern African Developmenet Community (SADC) Region.

03 Mining Indaba

BGI in partnership with the Mineral Affairs Division. participated at the 25th Mining Indaba held in Cape Town.

The Mining Indaba has a unique and widening perspective of the African mining industry, bringing together visionaries and innovators from across the Globe. The one-week long exhibition is also dedicated to supporting education, career development, sustainable development and other important causes in Africa.

2018/19 Highlights

04

Palapye Geotechnical mapping

Palapye geotechnical mapping constitutes a broad and / or cursory environmental impact assessment for development planning and disaster management, which should serve as a baseline for any developers. Such information is fundamental to decision making and policy formulation on the suitability of terrain for urban development. The project is 50% complete.

05

Community Service

BGI Wellness Committee organised a clean-up Campaign in Molapowapojang village as part of the Institute's Corporate Social Responsibility initiatives.

Molapowabojang village was chosen as the village houses BGI Core shed and the event would contribute to brand profiling and awareness. The clean-up campaign also served to inspire and encourage members of the community to clean up, fix and conserve the environment for a healthy living.

06

Media Tour

BGI Communications Plan recognizes the importance of media engagement. All Media is taken on a tour of the institutes facilities such as Seismic Monitoring stations, laboratories and are briefed on the Institute's Mandate, Strategy, projects and operations.

2018/19 Highlights

07

Wellness and health

At BGI, we recognise that wellness programs are more than a benefit. We regard them as an effective way to build teams, motivate the workforce and address the rising trend of chronic diseases from diabetes to heart disease and the related. However, getting employees to participate in these programs can be a challenge. We try to maximize participation by customizing them and are specific to our workforce.

08

Exhibition - Consumer Fair 2019

This is a 5 day annual event that BGI participated August 2019. This is an organised platform generally offering direct contact with the public and various industries. Being involved in this trade fair provides the Institute with opportunities to branch out to business-to-business exchanges and create a contact list of possible customers.

09

BIUST - BGI MoU signing

The parties signed the Memorandum of Understanding (MoU) to provide basis for collaboration towards the fulfilment of their respective Mandates by engaging in projects of mutual benefit and purpose.

BOTSWANA GEOSCIENCE INSTITUTE

BUSINESS REVIEW

BUSINESS REVIEW

Botswana Geoscience Institute's work aligns with the Botswana Government's socio-economic developmental priorities through parent Ministry of Mineral Resources, Green Technology and Energy Security. The institute supports these priorities through its six (6) impact focus areas.

We are in a dynamic growth environment that cuts across a number of industries. BGI, as other geoscience organisations worldwide, are national institutions mandated to provide geological data and information required by stakeholders primarily in mining, civil engineering, agriculture and the public. It is therefore obvious that, this Institute affects every segment of human life and development. With this understanding, the Institute continued to pursue a number of activities and projects to harness and optimise national economic activity and development. The Institute is fully aware that, all of its activities, as prescribed in its fandate, functions and the Corporate Strategy, are a blueprint for inclusive and sustainable development mainly those concerning social and economic development.

These projects are undertaken in pursuit of the Institute's ambitions to strengthen and reconstruct the geoscience research in Botswana.

Evaluation of Letlhakeng Cement grade Calcrete deposit

Introduction

Botswana currently imports 100% of its cement after the closure of Matsiloje cement production plant in northeast part of Botswana. This closure led to intensified efforts to reduce importation of raw construction materials for cement production. A collaboration between BGI and Botswana Institute of Technology Research and Innovation (BITRI) is one such effort to identify and assess cement grade limestones and Calcretes in Letlhakeng, Tsokung, Serorome and Nakalaphala. These areas were identified after a reconnaissance study, which covered the Kweneng, Ghanzi, Ngamiland and Central Districts and their selection was based analysis of samples collected from the ground surface and exposed rocks.

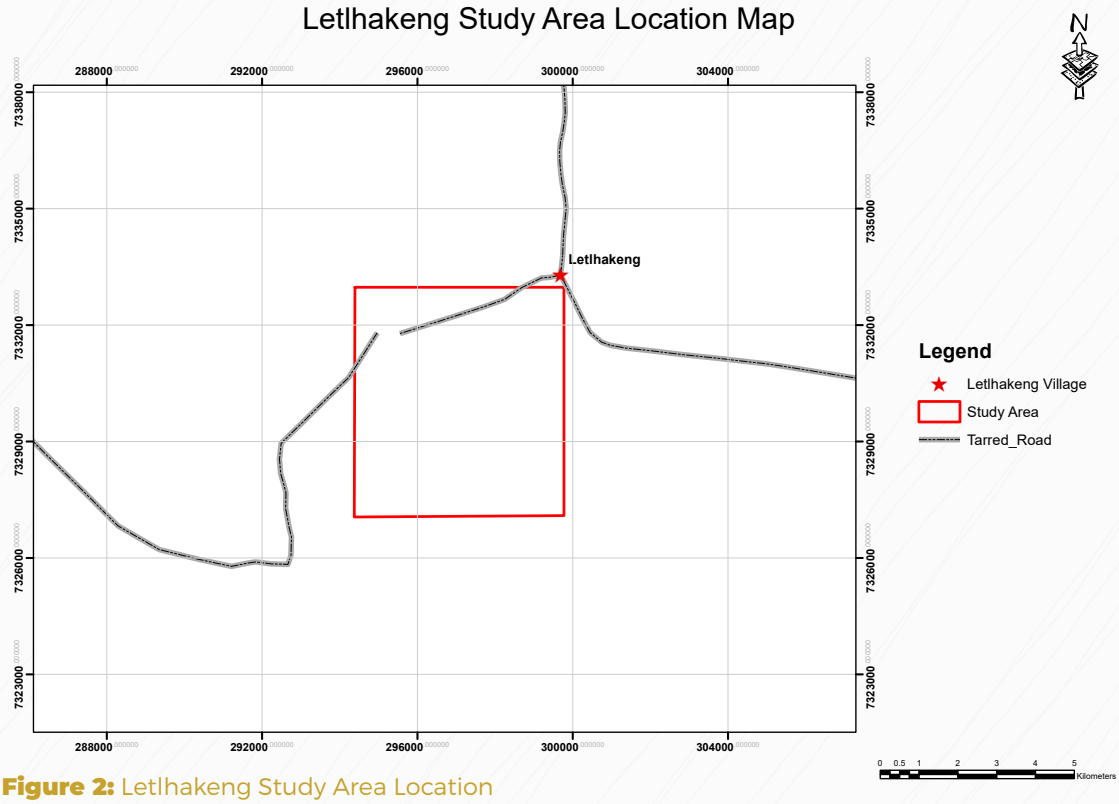


Figure 2: Letlhakeng Study Area Location

This project, which commenced in January 2018, intends to evaluate limestone deposits sufficient to sustain a cement plant in order to reduce the import of cement.

In the last financial year, the project concentrated its efforts in the Letlhakeng Area where drilling of 53 boreholes was completed. A total expenditure of the project was BWP 1,646,583.00 inclusive of drilling and analysis. The area under consideration is located Southeast of Letlhakeng village in the Kweneng District as shown by figure 2.

Local Geology

According to Smith, 1984 the study area occurs in the southeast Karoo sub-basin which is the edge of the Karoo super group and there are only two lower Karoo super groups present in the area which are Dwyka (glaciogenic) and Ecca (arenaceous), these overly the Precambrian basement comprised mainly of meta-sandstones of the Waterberg Supergroup.

Calcretes cover most of the study area alongGaotlhobogwe fossil valley. In some areas these calcretes are covered by Kalahari bed. Very few basalts outcrops were observed within the vicinity of the study area. The interpretation of aeromagnetic data suggests that there are Karoo sediments within the study area represented mostly by low magnetic anomalies. Intermediate magnetic anomalies probably suggests shallow fresh rocks within the area. In the western part of the area a NW-SE trending magnetic high feature is observed which could be a deep seated magnetic basement rocks or might be a fault according to an interpretation by Geotechnics international Botswana, 2009. In some borehole interpretation, they reveal presence of dolerites, which could be associated with the magnetic anomalies in the area. During geological mapping, no Karoo dolerites dykes or sills were observed in the area.

The drillcores from the Letlhakeng area by BGI show an overburden of the Kalahari bed (loose fine sand) with thickness ranging between 2m to 6m while the calcrete thickness can go up to 18m underlain by siltstone of about 6m and deeply weathered mudstone of up to 5m thick. This formation form part of the Lower Ecca Group rocks, which mostly comprise of deeply weathered mudstones belonging to the Kwetla formation and arkosic sandstones probably part of the Boritse formation.

There are no geological structures mapped within the study area but the area is surrounded by atleast three local faults that trends N-S, NW-SE and NE-SW to the West, East and North respectively. The three faults have an average length of 20km with the longest of 25km and shortest is 18km (Key, 1997). There might be local small faults that are below our maximum drill depth which were not reached during drilling and those faults can be interpreted from the aeromagnetic data. There were no evidence of faults intersected during drilling. Only evidence of cavities were noticed during drilling because there were significant core loss experienced and water.

Field observations

Whitish - grey hardpan calcrete as well as soft friable calcrete was found in numerous exposures along the dry valleys as shown by picture below. All the collected samples were observed to react with hydrochloric acid.

Picture: A hardpan calcrete

BUSINESS REVIEW Continued...

Surface sampling

Surface sampling is the immediate follow up to the reconnaissance survey that involves surface sampling of calcrete at about 500m interval spacing. Sampling was done in March 2018 in dry valleys around the village as shown in fig 3 below. A total of 103 samples have been collected in the area for analysis.

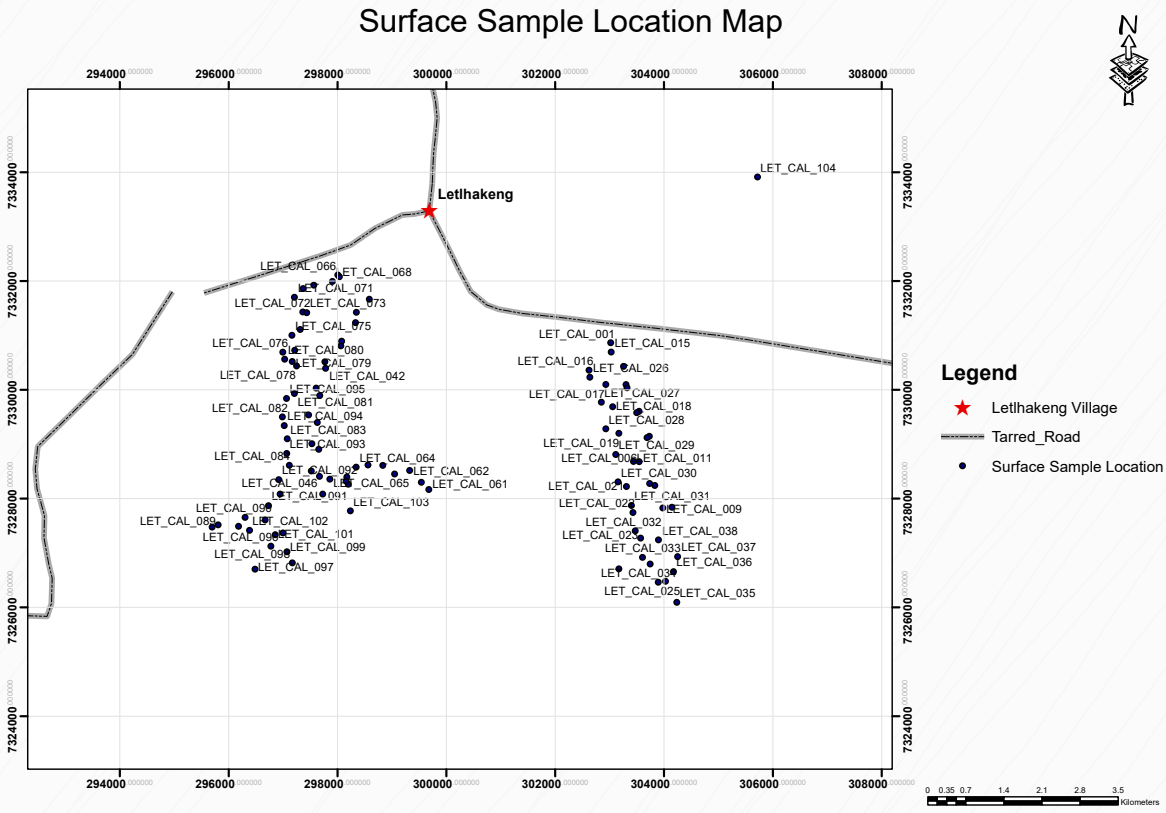


Figure 3: Surface Sampling Points – Cement Grade and Calcrete Deposit

Surface Sampling Results

The South African Bureau of Standards (SABS) was used in the interpretation of the surface sample analysis. According to this standard CaO should be between 42.7 to 45% or more and MgO should be less than 3.6 % for high grade cement while low grade cement CaO should be 39.9% or better and MgO should be less than 5%.

From all the surface samples collected 8 out of 98 did not qualify as per SABS for both high and low grade cement. The rest of the samples (90) qualified for high grade cement as shown in figure 4 below in the red box, hence needed further investigation by drilling to check thickness and the quality of the calcrete in Letlhakeng.

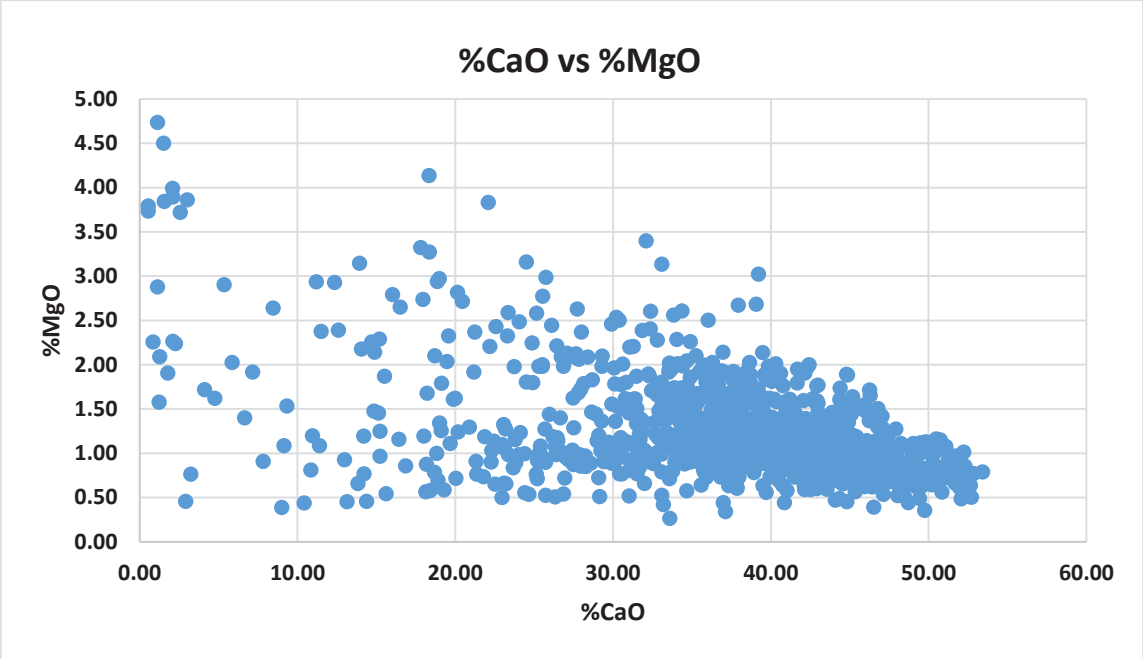


Figure 4: Surface sample results of the Letlhakeng project

Drilling

Drilling was done between September 2018 and March 2019. Surface sample results guided borehole siting and drilling of 53 boreholes which gave 888 samples and total drilling depth of 858.8 metres. Figure 5 below shows the distribution of drill holes in the Letlhakeng project area.

These boreholes were drilled at 500m spacing interval with varying depths between 6 and 41m depending on the geology. The thickness of the calcrete varies from 3 to 18 m and the average is about 8m. Three types of calcretes were observed in the area as shown in figure 6; these are whitish hardpan calcrete, soft friable calcrete and whitish brown calcrete sand.

The topmost part of the boreholes comprises fine-grained whitish hardpan calcrete overlying the fine grained whitish soft friable calcrete. The soft friable calcrete grades into whitish brownish fine grained calcareous sand underlain by brownish fine grained mudstone where the boreholes were terminated.

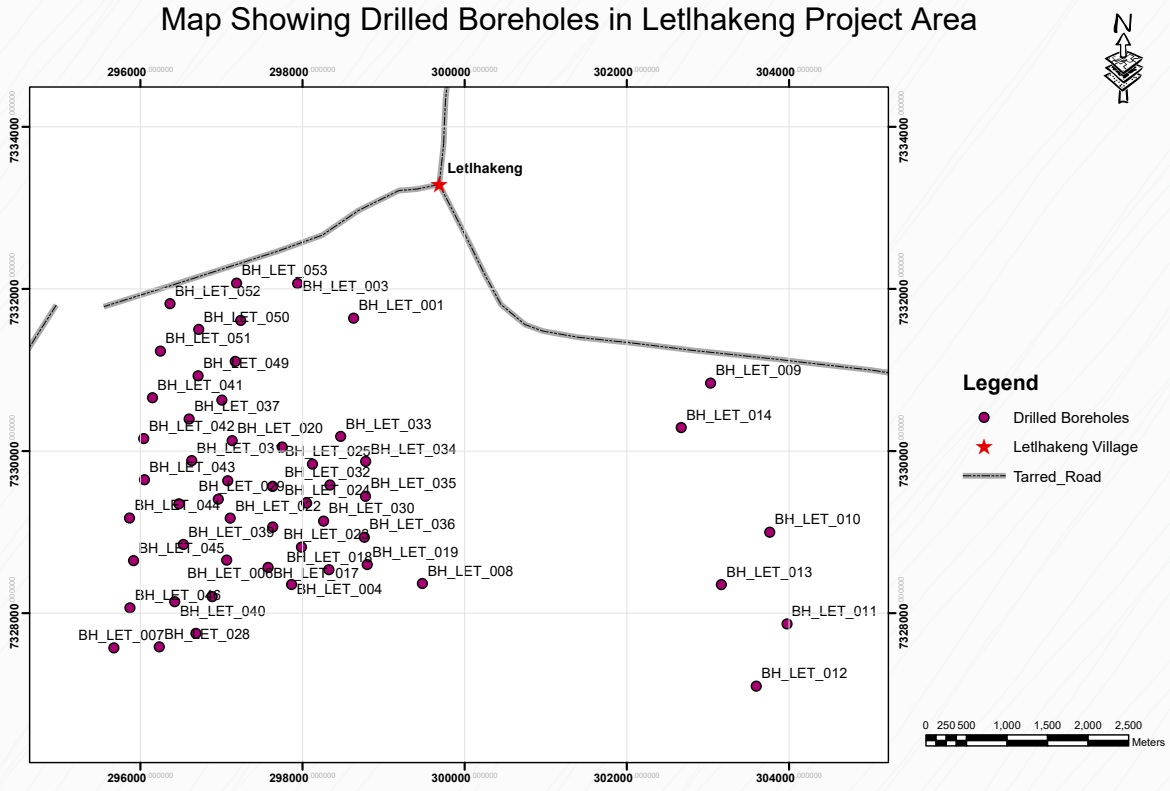


Figure 5: Distribution of the drillholes in the Letlhakeng Project Area.

Figure 6: Downhole core of the Letlhakeng Boreholes.

Eight (8) boreholes have been interpreted and the results show a decrease in CaO percentage and increase in SiO2 percentage with increasing depth as shown by figure 7. Samples from the top parts of the boreholes have CaO values well above the minimum required with an average thickness of 8 meters of calcrete complying to the SABS low grade cement. In most of the boreholes, after 9 m the CaO values decrease and doesn't meet the criteria of the standard.

Note: This interpretation is preliminary as downhole analysis is still ongoing and eighteen (18) more boreholes are still to be analysed.

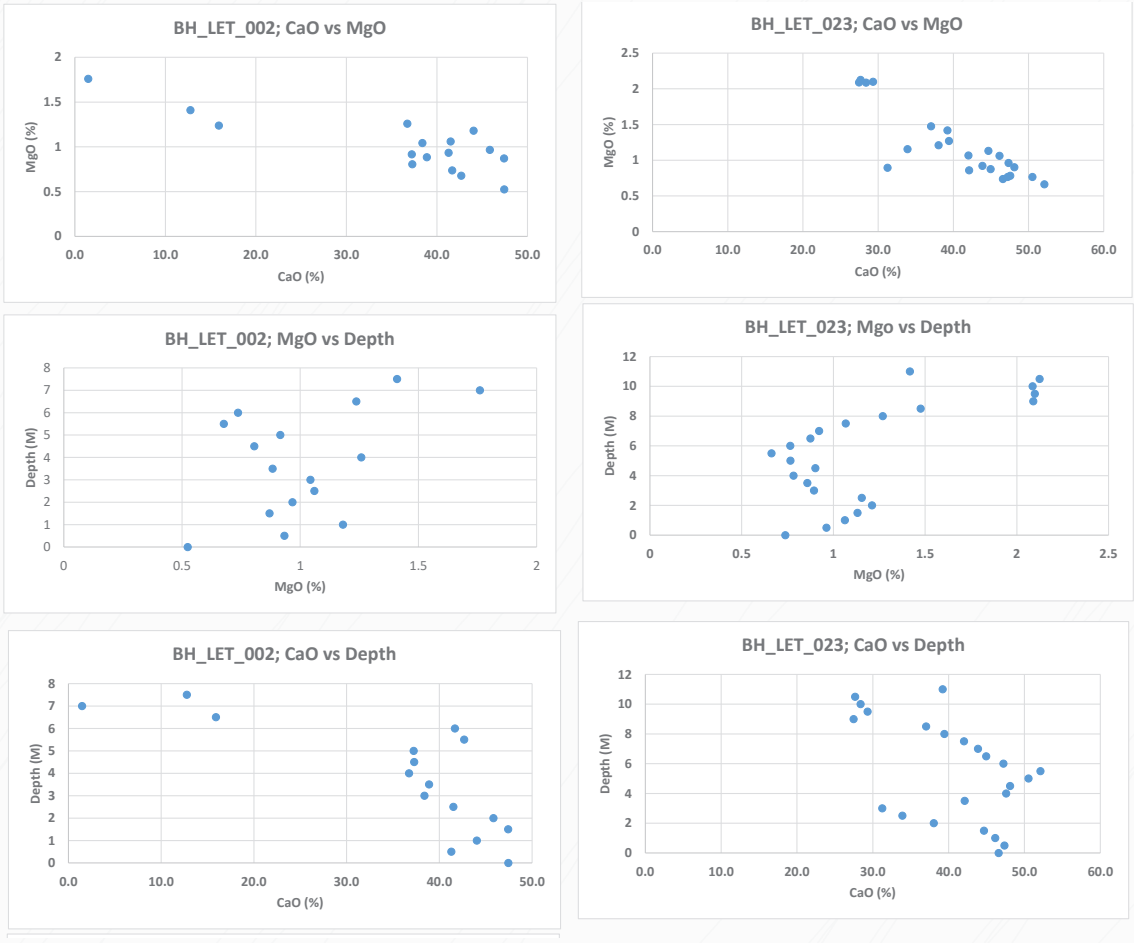


Figure 7. Downhole analysis results of some boreholes in the Letlhakeng project area.

Conclusions

The following conclusions can be drawn from the preliminary interpretations:

- From the 8 boreholes interpreted, the Letlhakeng calcretes seem to have a potential of producing low grade cement;
- On average a thickness of 8 meters which is qualifying according to SABS low grade cement standard can be mined;
- The presence of dolerite in the area suggests in situ weathering/ secondary replacement in order to form the calcrete. X –Ray Diffraction (XRD) results would be ideal in interpretation of the calcrete genesis.

Compilation of Industrial Minerals of Botswana

The project intends to identify new industrial mineral deposits, re-assess previously documented deposits, assess all the old and newly discovered industrial minerals resources which could aid in encouraging Batswana to venture into small-scale mining and beneficiation. Targeted industrial minerals include construction aggregate, clay, limestone and shales. The project will focus on data compilation of industrial mineral occurrences from resource reports and prospecting licences to produce a mineral occurrence map.

Industrial minerals are found in almost all rock formations in Botswana, these rocks range from crystalline basement rocks (Archean in age) to the most recent quaternary rocks in the stratigraphy of Botswana. Aggregates are manufactured from hard rocks or high strength rocks mostly igneous and metamorphic rocks; clays are mostly from sedimentary Karoo rocks; carbonates are mostly Quaternary rocks.

Aggregates

Any naturally occurring geological material can be used as construction aggregate as long as it satisfies the requirements of the end-use specification. Primary aggregates are produced from two main sources, 'crushed rock' and sand and gravel. Crushed rock aggregate is produced from hard, strong rock formations including igneous (andesite, basalt, diorite, dolerite, gabbro, granite, rhyolite, tuff), metamorphic (hornfels, gneiss, quartzite, schist) and sedimentary (sandstone, limestone) rock.

The basement rocks of Botswana are found almost everywhere in Botswana even though at times are covered by either Karoo rocks or recent sediments. They outcrop in the eastern part of the country and in the Ngamiland area. These are Archean tectonic (Ayres & Key, 2000) units of Zimbabwe craton and Kaapvaal craton with Limpopo mobile belt sandwiched between them. The western part of the central district Archean rocks is concealed beneath a cover of Karoo rocks and Kalahari sediments.

Early Proterozoic tectonic units of Kheis and Mangondi orogenic belts, and Eburnian crust are found in the north west of the district overlain by late Proterozoic volcanic and sedimentary sequences (Ayres & Key, 2000). Typical rocks in the central district are migmatite, porphyritic granite, undifferentiated metasedimentary rocks, amphibolite (in part are at least metavolcanic), gabbroic anorthosite, gneissic granite, undeformed granite and undifferentiated gneisses.

This section focus on technical analysis used for quantitative evaluation of aggregate quality. It is essential to assess the quality of the rock material and thereby its suitability for use as aggregates for both road construction and concrete production. The technical methods or analysis considered crucial for different uses was compiled and in areas where there is no data the minimum analysis were done in the BGI laboratories. The compilation on will include the test given in the table below:

AGGREGATES FOR CONCRETE	AGGREGATES FOR ROAD
a) 10% FACT	a) 10% FACT
b) Flakiness index	b) Water absorption
c) Aggregate Crushing Value (ACV)	c) Los Angeles value (LAV)
d) Methylene blue adsorption value	d) Aggregate Impact value (AIV)
e) Gamma radiation	e) Polished stone value (PSV)
f) Concrete or mortar rheology, plastic viscosity	f) Shape of aggregates (flakiness index)
g) Soundness and durability	g) Aggregate Crushing Value (ACV)
h) Water absorption	h) Californian Bearing Ratio (CBR)
i) Alkalisilica-reactivity (ASR)	
J) Presence of sulfates or sulfides	
h) Bulk density	

Table 4. Aggregates for concrete and road

Conclusion

Aggregates are required in almost everywhere, BGI compilation of aggregate site is continuing and to date 129 site have been documented in the Kgalagadi, Gaborone, Francistown. Some outcrops have been identified which could be suitable for aggregates but tests still to be conducted.

Clays

This is a presentation of information on all available clays and brick earth deposits around Botswana. The term brick-earth and clay, in this report, cover alluvial sediments capable of producing poor quality common bricks by simple clamp firing techniques; as well as deposits derived from the weathering of mudstones, shales and siltstones, and capable of producing high quality, high strength factory fired bricks.

Most of the data used in the compilation of this report have been undertaken by the Department of Geological Survey, more assessment need to be done on these deposits so that new reports can be compiled based on new results. The terms clay, silt and sand refer only to the distribution of grain size fractions (clay :< 0.02 mm; silt: 0.002 mm-0.063 mm; sand: 0.063 – 2 mm).

Geological Environment

Clays in Botswana are found within the Karoo Supergroup. In a regional geological framework, the Botswana calcrete deposit lies along the Karoo sequence, that rests with major unconformity on a Precambrian basement of various ages and types. According to Smith (1984), The Karoo is dominated by arenaceous-rudaceous and argillaceous sediments, largely terrestrial in character and deposited mainly in intracontinental basins between the end of carboniferous period and the end of Triassic (120 to 213 Ma).

The basal Dwyka Group is mainly represented by the Dukwi Formation, which comprises a succession of diamictites, pepply mudstones and varvites with subordinate sandstones, mudrocks and conglomerates, and is of a glaciogene nature.

The Ecca Group overlies the Dukwi Formation, and in this group, up to four formations are recognized. According to (Clarke et al, 1986), the lower part of the Group comprises sandstones with mudrocks and coals. The upper part consists predominantly of carbonaceous clays and coals deposited in a continental to marginal swamp environment with local sandstones. All those formations within the Ecca Group, reflect a deposition in a fluvial swamp environment.

Results

The Ecca Group is overlain by massive, non-carbonaceous often calcareous mud rocks assigned to the Thabala formation or its equivalent. A fluvio-lucustrine environment under mildly arid conditions is suggested for the deposition of this unit which is succeeded unconformably by upper Karoo red beds (Lebung Group) and volcanics (the Stomberg lava Group).

All the mentioned brickearth are found as flood plain sediments and are characterized by a high amount of quartz and insufficient plastic clay materials. Raw materials derived from in-situ weathering of shales, siltstones and mudstones show favourable firing characteristics even at moderate temperatures. These were found at:

- **Kanye – the area is now developed.**
- **Lobatse Woodhall – now mined by Lobatse Clay Works for their face brick raw material.**
- **Letlhakeng – recently confirmed and tendered.**

Some weathered shales, siltstones and mudstones with high mica content have acceptable firing characteristics only in more than 1050 degrees when mica has decompose completely. Materials of this nature are less suitable for brickmaking purposes and they were found at the following places.

- **Diabo**
- **Ramotswa Station**
- **Tsokwane Hills (South of Ramotswa)**

Areas like Dukwi, Tlapana, Mokgoopetsane, Moshaneng, Maitengwe, Masunga , Lebung, Mathangwane and Sekakangwe have clay content of more than 20%. The material is classified as shown in the soil texture triangle below.

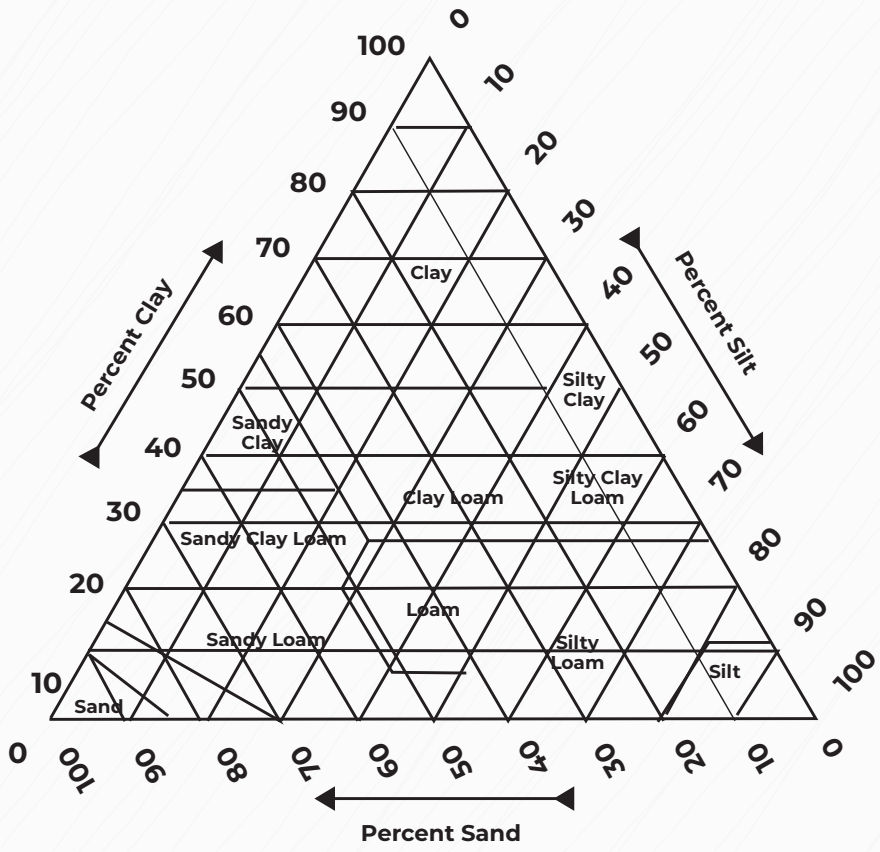


Figure 8: Classification of materials in soil texture trangle

Based on the information above, further investigations need to be done at the following areas Dukwi, Tlapana, Mokgoopetsane, Moshaneng, Maitengwe, Masunga , Lebung, Mathangwane and Sekakagwe.

Carbonate Rocks

Carbonate rocks are limestone, dolomite, marble, and calcrete. It is through comprehensive study that we can produce products such as cement, quick lime and basic flux which are in much industrial demand using these locally available raw material. Carbonates occur in several geological units in Botswana. Early Precambrian marbles are reported in central district from Mmadinare, Makoro, Shashe Tautswe and elsewhere. Late and middle Precambrian limestones, dolomitic limestones and dolomites occur at Mahibitswana, Ramotswa and around Lobatse. Calcrete deposits were formed in recent geological times.

REGION	RECOMMENDED USE	Range of $CaCO_3$ / CaO content	Range of $MgCO_3$/ MgO content	Total No. of sites
Central district	Agricultural lime, carbonate aggregate and cement production	**2.05%-91.9% $CaCO_3$ 31.2%-51.3% CaO**	**1.5%-83.57% $MgCO_3$ 0.6-20.22% MgO**	21
North-East district	Cement production	**17.5%-85.1% $CaCO_3$**	**2.3%-57% $MgCO_3$**	4
Ngamiland district	Ornamental stone and road construction	**53.1%-59.2% $CaCO_3$ 29.8% CaO**	**4.55-11.7% $MgCO_3$ 15.9% MgO**	2
South East district	Manufacture of bottle/ container glass because of their iron (Fe_2O_3) content of 0.95% and 0,72%	**51.1%-61.3% $CaCO_3$ 34.4% CaO**	**18.5%-41.45% $MgCO_3$ 9.8% MgO**	2
Ghanzi district	Cement production or quick lime production	**66.7%-74.5% $CaCO_3$**	**3.35-4.1% $MgCO_3$**	3
Kweneng district	Cement production and quick lime burning	**51.4%-80.4% $CaCO_3$**	**1.1%-3.4% $MgCO_3$**	1
Southern district	Road construction	**78.0% $CaCO_3$ 36.4%-44.3% CaO**	**5.0% $MgCO_3$ 2.4%-4.12% MgO**	3

Table 5: Classification of Carbonate rocks and their classification

Carbonates suitable for quick lime burning have been identified mostly in central district in Botswana. In Precambrian rocks considerable reserves of dolomitic marbles and dolomitic limestones are located at Mmadinare, Makoro, Shashe, Tautswe, Nakala-Phala and Ramotswa. Calcitic units have been identified in distinctive horizons of variable thickness at Mmadinare, Makoro, Mahibitswana.

Calcrete deposits are superficially developed over large areas around Letlhakeng, in the Barolong Farms areas, in the Bonwapitse and Serorome Valley and at certain localities in the Ghanzi district. However, variation in the chemical composition, laterally and vertically, are a major drawback of calcrete deposits. Carbonates suitable for cement production have shown limited reserves for cement production.

Shales

Shales are found in the Karoo Supergroup, within the Ecca which has already been described. They are mostly found in the Lobatse area, Central District, Kweneng District, South-East Disrict and Southern District. The main objective of compiling information on shale was to identify areas which could developed for small scale or artisanal mining. The project is still on going and the compilation continues. The table below shows the areas which have already been mapped. Mogobane and Molepolole are not included in the table because the are found in developed areas.

LOCATION	COORDINATES	DESCRIPTION
Palapye site 1	519232-7506704	Redish, greyish to dark brown shales with thick laminations. The shales form a ridge. The shales are intruded by dolerite north of the rifge. The dip of the shales is 10 N and they strike 154 W-E.
Palapye site 2	519772-7506421	Pink to reddish micaceous shales which are exposed south-west of a stream. The exposure is fractured and it is intruded by the dolerites. The shales that were observed to be in contact with the dolerites are more hard and dark brown to black in colour.
Palapye site 3	518779-7506864	Redish to dark brown shales located 4.3km east of palapye. The shales have been intruded by the dolerite. The dip of the shales is 20N and they strikes 115 west-east. The shales become hard and dark brown in colour at the contact with the dolerite.
Palapye site 4	519783-7506404	Exposure of shales north-east of a stream bank. The shales are greyish to dark brown in colour. The exposure is highly fractured. They are normal faults in the exposure and dominant fractures which are normal faults. The shales are perpendicular to the faults. The shales are 5mm high from the base of the stream which is covered by shales particles.
Botepetepe	0490948-7221955	Exposure of grey to dark brown shales. They form a small ridge. They are some shales particles which are not in-situ (Floats) around the ridge and they cover a large area.
Dipotsane	0341328-7209256	Grey to reddish fine grained laminated shale that forms a ridge that covers an area of 355,527 m. the lamination varies in thinkness from 2cm to about 10cm. Towards the edges of the ridge the shales shows ripple mark structure. They are shear zones observed in the area.
Malaka	525538-7500083	Riddish-dark brown with shiny platy minerals (mica minerals), they have variation in laminations from thin less 2cm to 10cm. They also have random dips with range flat and 20N.

Table 6: Location and description of carbonates

BUSINESS REVIEW Continued...

Compilation of industrial minerals is going well and the project is 60% complete. The project has a number of achievements which are listed below:

- The draft compilation map is attached (Fig 9).
- Compilation of clays is complete and they are mostly found in the Kweneng and Central Districts.
- Compilation shales has just started but good outcrops which can be used for small scale mining have been identified in Dipotsana and the around the Palapye area.
- Suitable aggregates are mostly from basement rocks are found almost every in the country except for the areas around Letlhakeng.
- Carbonates are well distributed in Botswana and these occur as calcareous material which in most cases are siliceous therefore not suitable for cement manufacturing.

It is hoped that this project will facilitate small scale mining. It will help in the creation of employment for both village trusts and youth. This could be the government achievement in empowering locals to participate in mining.

Picture: Drilling - Cement grade and calcrete deposit (Letlhakane)

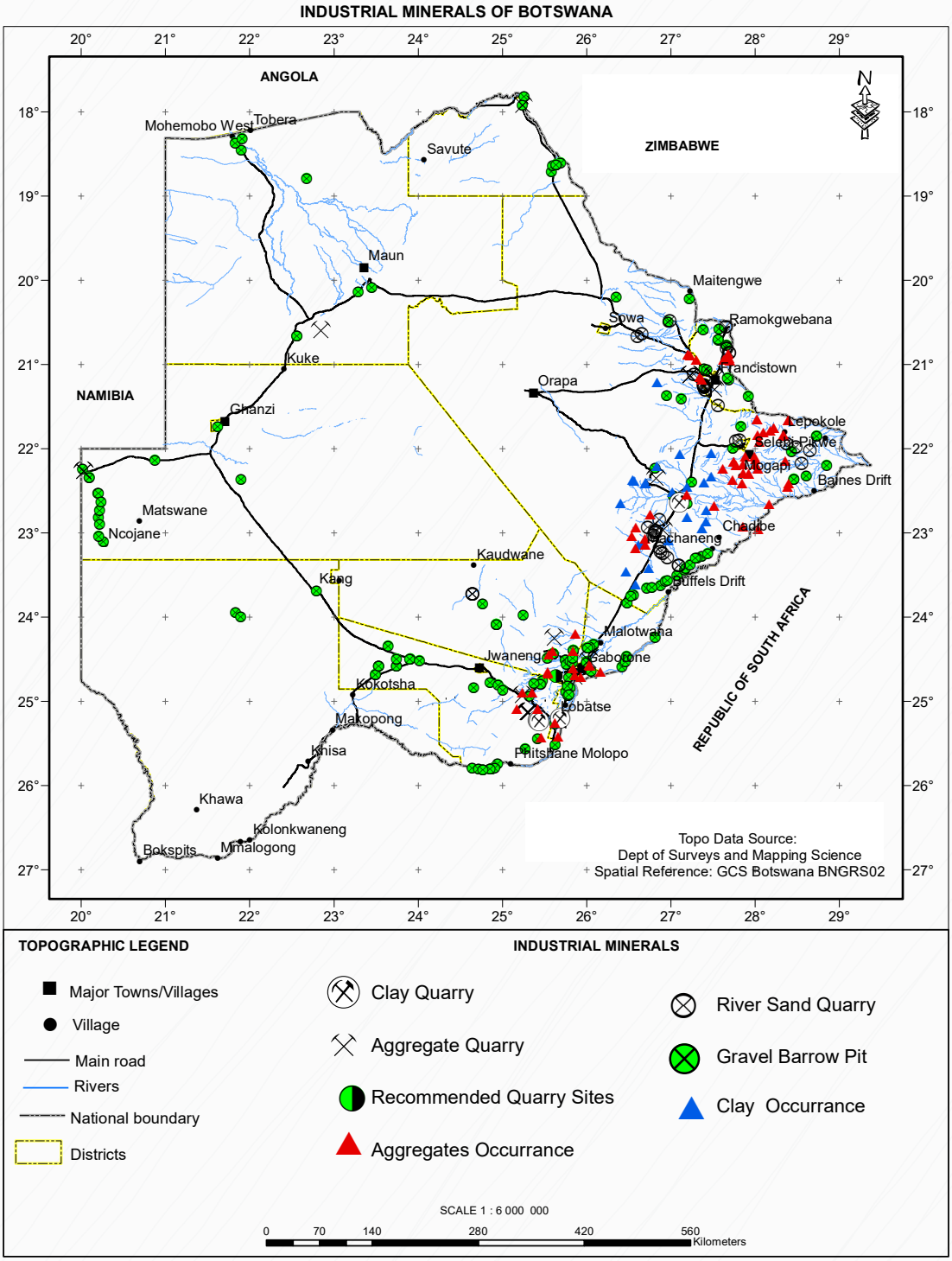


Figure 9: Industrial minerals Map of Botswana

Seismic monitoring and risk reduction

The town of Selebi-Phikwe, in the northeastern part of Botswana, experienced a phenomenon of localised tremors ever since mid-December 2018. Following reports by residents, investigations were immediately carried out by a joint team from Department of Mines (DoM) and the Botswana Geoscience Institute (BGI) in January 2019. The DoM-BGI team inspections included visual inspections and macro-seismic surveys conducted both underground in the BCL Mines of Phikwe No.3 and South East Extension Shafts and on surface in the town.

Preliminary macro surveys (Fig 10) indicated areas of highest intensities to be concentrated in the South East of the town. The reconnaissance investigation recommended an urgent need for engaging experts in micro-tremors related to mining environments to monitor the activity on a short-term basis, with the aim of determining the sources of the local micro-tremors in order to assess the seismic hazard these vibrations pose to people, property and the mine infrastructure in selebi-Phikwe.

By March 2019, BGI had secured a partnership with a South African company, Open House Management Solutions (OHMS), which is in partnership with a local consultant, Aqualogic, to conduct investigations on the tremors and advise accordingly. The investigation will primarily focus on determining the causes (sources) as well as the magnitudes and frequency of the seismic events, in order to advise on the safety of the town residents and infrastructure. The monitoring exercise is planned to take a maximum of two months before a comprehensive report if delivered. This project further advances BGI's mandate to monitor geohazards.

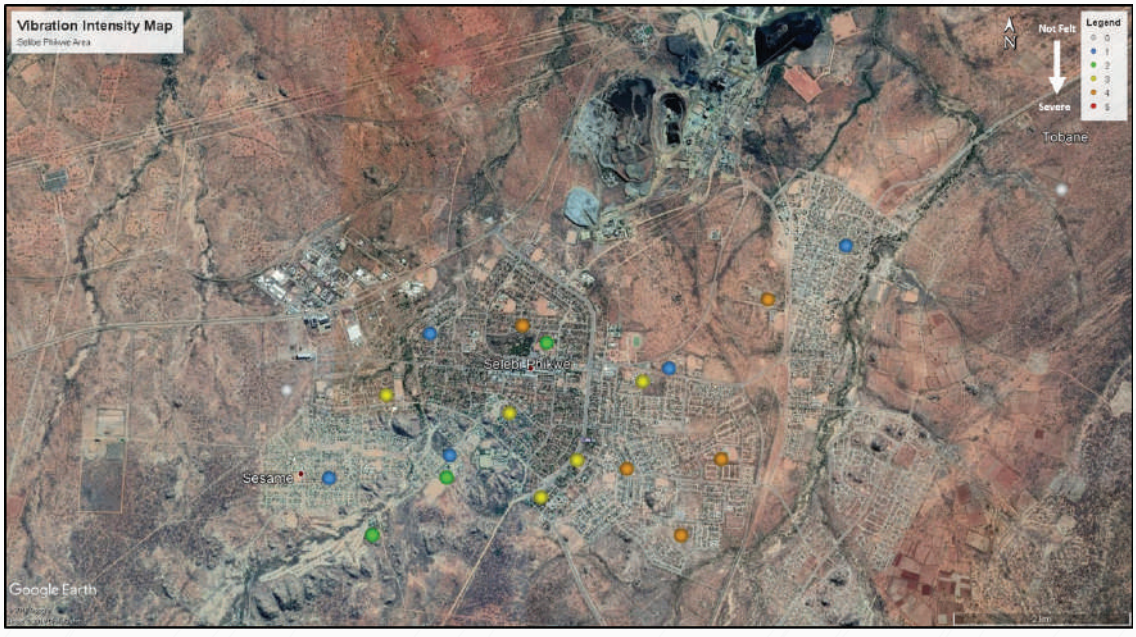


Figure 10: Selebi-Phikwe preliminary Macro-Seismicity survey results

BUSINESS REVIEW Continued...

Whilst these seismic events currently continue to occur unabated in Selebi-Phikwe, the broadband national seismic network (the Botswana Seismological Network or BSN) (Fig 11) operated by the BGI has not recorded any significant seismicity anomalies in the country, implying that the reported tremors are fairly localised. The nearest BSN stations at Moremi village (78km away southward) and Borolong village (110km northward) have not indicated any significant signals that correlate with the tremors in Selebi-Phikwe.

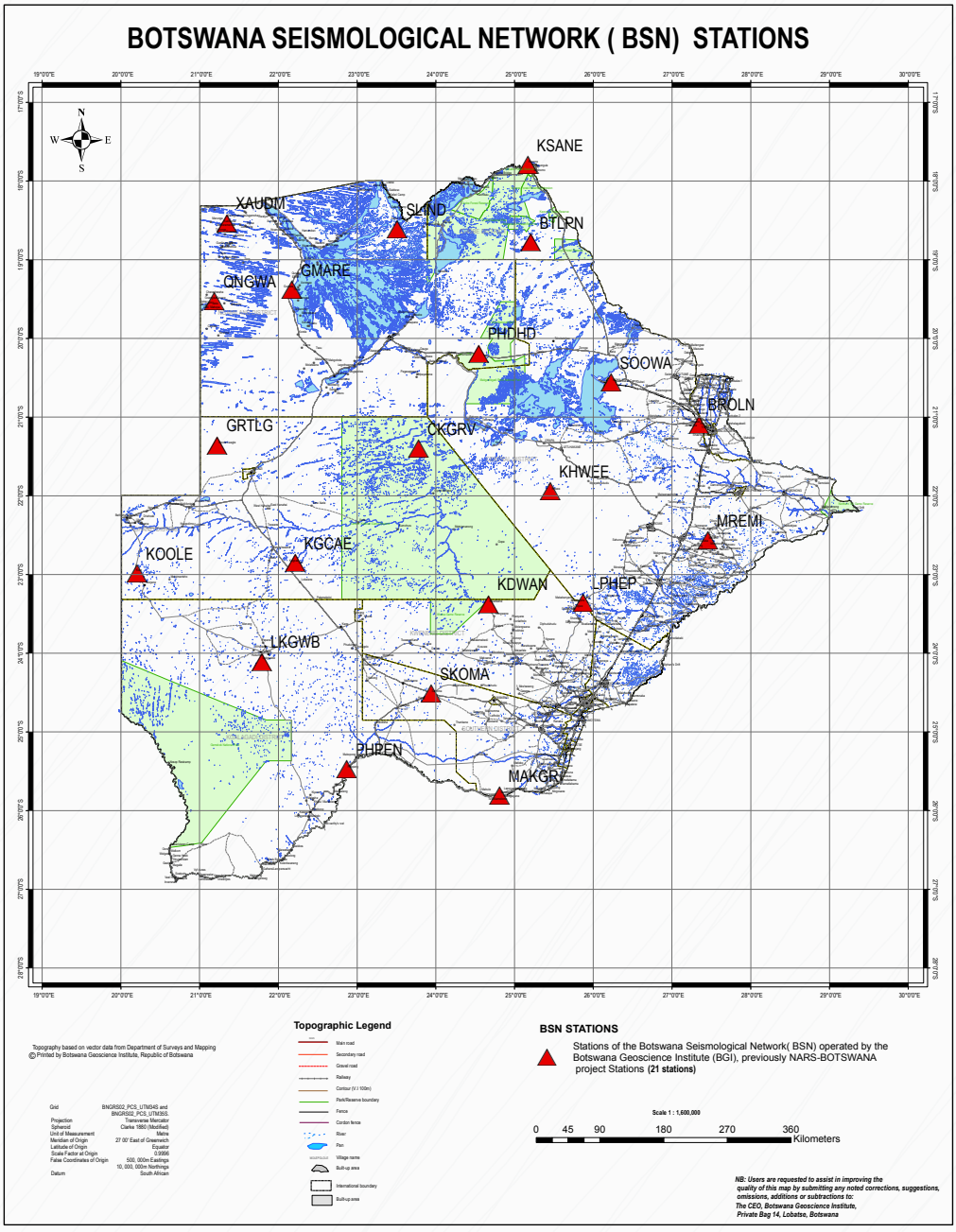


Figure 11: Map showing the distribution of the BSN stations (red triangles)

BUSINESS REVIEW Continued...

BGI continues to effectively monitor earthquakes country-wide with its twenty-one (21) broadband, regional network, BSN (Fig 12). Eighteen (18) of these stations which are telemetered are sending real time data to the centre at the BGI. The other three stations continue to operate on a stand-alone basis, using flash disks. Data from the BSN has been used to produce two bulletins in the reporting year. BGI's ambitions in seismic monitoring is evidenced by its aggressive efforts in the development of the seismology section into a bigger research centre.

An initiative to establish a Botswana Seismology Research Centre (BSRC) kicked off during the year with key stakeholder consultations in Botswana and benchmarking with frontier institutions in the USA. Furthermore, in order to hype its seismology development, BGI has successfully bid to host the third African Seismological Commission's General Assembly in 2020.

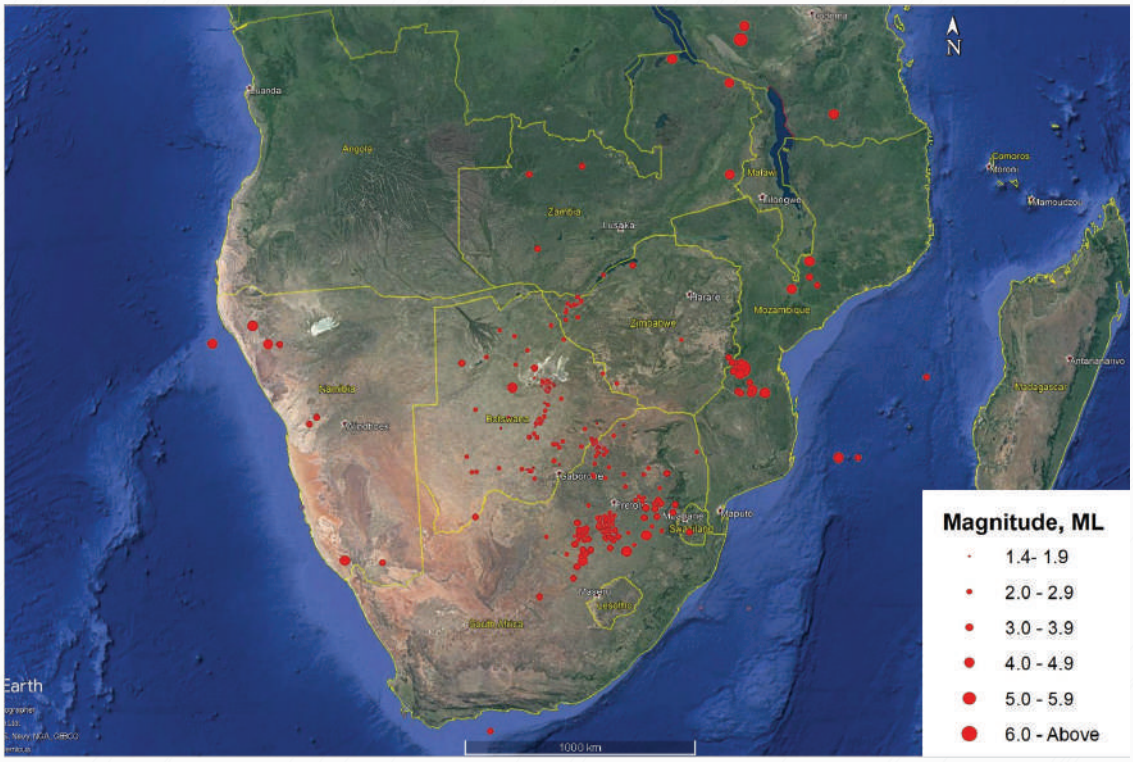


Figure 12: Seismic Events located by the BSN stations for the period 2018/2019 Financial year

Environment monitoring

The Gweta and Zoroga villages in the Tutume sub-district were affected by floods that came as a result of heavy rainfalls in February 2018. More than one hundred homes were destroyed by the floods, leaving hundreds of people homeless.

Botswana Geoscience Institute was assigned by the Ministry of Mineral Resources Green Technology and Energy Security (MMGE) to investigate and establish the cause of floods, with a view to recommend mitigation measures. A reconnaissance study was conducted in Zoroga and Gweta villages and a preliminary report with recommendations was produced. A detailed technical assessment of the floods by BGI as part of a multi-sectoral team coordinated by the National Disaster Management Office (NDMO) is still to be completed once funds have been allocated for the project.

Picture: Boreholes and farms submerged under floodwaters

The Institute undertook an environmental audit on the Botswana Meat Commission (BMC) premises and processes as part of a multi-disciplinary audit team. The main focus was on identifying existing and potential environmental impacts associated with BMC operations pertaining to both surface and groundwater pollution. A comprehensive report, with reference to the Environmental Management Plan (EMP) developed in 2007 was completed highlighting possible adverse environmental impacts.

BGI also undertook a hydrogeological study in Area-L, Francistown. In a particular area (plot 3244), 'high water infiltration" into a residential area was being experienced. Water was seeping through the house foundation due to high groundwater table after heavy rains. BGI investigated the area and found out that the water was due to unusual groundwater recharge during the wet season leading to a shallow water table that intersects the ground surface. BGI is still to conduct detailed studies that will culminate in recommendations for specific mitigation measures to be taken.

Picture: Groundwater level measurements (Piezometric surface / water-table) intersected between 2.3 and 2.8 metres

Botswana Earthquakes analysis and probability

Inspired by recommendations from a plethora of previous local and regional seismic studies, the Department of Geological Survey (now Botswana Geoscience Institute) embarked on the implementation of a national development project entitled the "Botswana Seismological Network" (BSN). The BSN project was launched during the period between 2000 and 2001, and involved the installation of a network of seven accelerometric stations distributed across the Okavango Delta region (ODR) in North-western Botswana which is the most seismically active area in the country. The BSN accelerometric stations reached the end of their lifetime of operation in 2015, and were consequently de-installed from the field in 2016.

The current BSN stations were born from a five-year collaborative project between BGI and the Netherlands based University of Twente and Utrecht University (UU) between 2013 – 2018. These twenty-one (21) broad band stations are spread throughout Botswana and eighteen of them are telemetered to relay real-time data to the server at BGI. It is on the basis of this new BSN tool that quality data is collected and analysed to study the earthquake situation in the country. Other seismological stations used to supplement the BSN data are from both AfricaArray, Global Telemetered Seismographs Network (GTSN) and the International Federation of Digital Seismograph Networks (FDSN). Datasets from these sources was used to produce two seismological bulletins this year.

- The highest magnitude recorded by the BSN were the 4.8 ML events located in Lake Tanganyika and Kunene regions in Tanzania and Namibia respectively. A significant number of events was recorded in the South African Bushveld and Witwatersrand mining areas suspected to either be anthropogenic explosions or mine-induced earthquakes.

In Botswana, most events cluster around Orapa-Letlhakane mining areas. The waveforms from nearby BSN stations exhibit an explosion signal and this is supported by the timing of these events. Other events in the central part of the country are associated with the aftershocks from the 6.5 ML April 2017 Earthquake in Central Botswana.

- During the second half of the year, the highest magnitude recorded by the BSN was the ML 6.2 event located in the source region along the border between Zimbabwe and Mozambique followed by the ML 5.9 event located in South-East Tanzania.

As in the previous bulletins, there was a significant number of events that were recorded in the Bushveld and Witwatersrand mining areas in South Africa, most of which are probably mine-induced earthquakes. Again, most events in Botswana, are clustered around the Orapa-Letlhakane mining areas and in the South-eastern part of the Central Kgalagadi Game Reserve (CKGR). There were three (3) events that were recorded in the Okavango Delta Region (ODR), including the ML 3.1 event that occurred on 30th October 2018.

Geotechnical Mapping of Palapye

Picture: Soil sampling. Palapye GeoTech project

Urban development all require geological, geotechnical, topographical, hydrological and hydrogeological information as key inputs to preliminary site investigations. These assessments are carried out to inform town planners on potential environmental issues that may need attention to avert or mitigate geohazards. BGI has elected to focus for this project, on the geotechnical assessment, which is one of the most important aspects of development in Palapye.

Palapye geotechnical mapping constitutes a broad and /or cursory environmental impact assessment for development planning and disaster management which should serve as a baseline for any developers. Such information is fundamental to decision making and policy formulation on the suitability of terrain for urban development. The project, which is fifty percent complete, will identify any geotechnical constraints and other natural geohazards (for example, flooding, landslides etc) in advance to assist mitigate against potential risks and associated costs. The project is contributing towards BGI's mandate of advancing geoscientific research and dissemination of information to various national and international interested parties.

Project deliverable will include; 2D and 3D subsurface models, geotechnical report and maps, topographical maps, as well as flood zonation maps. These products translate into information on the development suitability of Palapye for both current and future developments. The information will be utilised by various stakeholders including; Physical Planners, Engineers, Utility service providers (WUC, BPC, BTC), Land-board authorities, Environmental practitioners, Land Surveyors and the general public. BGI has collaborated with BIUST in this project, with BIUST assisting mainly with laboratory testing facilities. The project has two primary components namely, Geotechnical component and Topographical & Hydrological component. The geotechnical component which is at an advanced stage involves field work (in-situ testing, trial pit profiling, sampling), laboratory testing, report writing and map production. Currently field work has been completed and laboratory testing and analysis is in progress. The compilation of geotechnical report and map is expected to be complete by September 2019. The topographical and hydrological component will be implemented at a later stage with inputs from relevant expertise.

Trial pits with depths up to 4 metres were excavated to allow for sample collection and systematic description of soil and rock profiles in accordance with international standards and best practice. Soil profiling and rock description provides the basis for preliminary assessment of engineering properties before laboratory testing. Preliminary results show Palapye to be generally situated in well-drained collapsible silty sands with localised or sporadic poorly drained clays. The sands largely overlie pedogenic ferricretes and clacretes. Such soils require careful planning for infrastructural development to avoid or mitigate against geohazards.

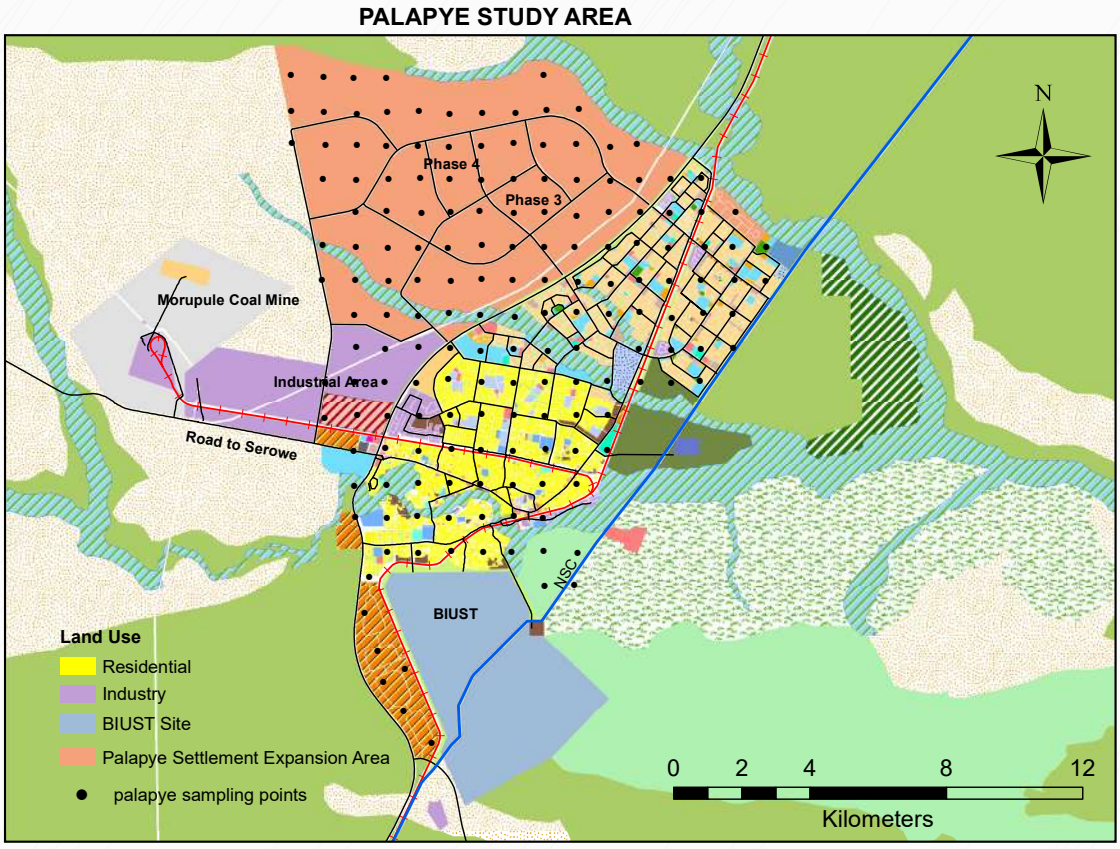


Figure 13: Study area - Palapye Geotechnical Assessment project

Information management database

The Institute embarked on the implementation of prudent information management in line with its mandate as a custodian of all Geoscience information, aiming at leveraging on technology to effectively and efficiently disseminate geoscience information to all.

The development and implementation of an information management database for the collection, collation and dissemination of geoscience information was commissioned in February 2019 and its scope entails the following;

- the institution's geoscience field projects,
- prospecting license details, and
- exploration and water boreholes.

The database currently has the following datasets which are accessible both internally and externally.

- 36 Projects & 11 Prospecting license;
- 66 Prospecting companies;
- 220 records of BGI staff and other prospecting geologists;
- 672 prospecting location around Botswana;
- 20, 649 boreholes;
- 15, 994 water boreholes;
- 4, 655 Exploration boreholes.

BGI Geoscience Portal

The Botswana Geoscience Institute launched an online portal in 2006 aimed at offering access to free geoscience data of the Ngamiland district. The aim of the portal is to attract investment in resource exploration, improve transparency and stimulate collaboration between the government and industry.

The available data sets include airborne geophysics, ground geophysics and geochemistry. Future implementations will include multidisciplinary geoscience datasets such as borehole data, GIS data, reports and documents.

The charts below depict download statistics by countries as at end of June 2019.

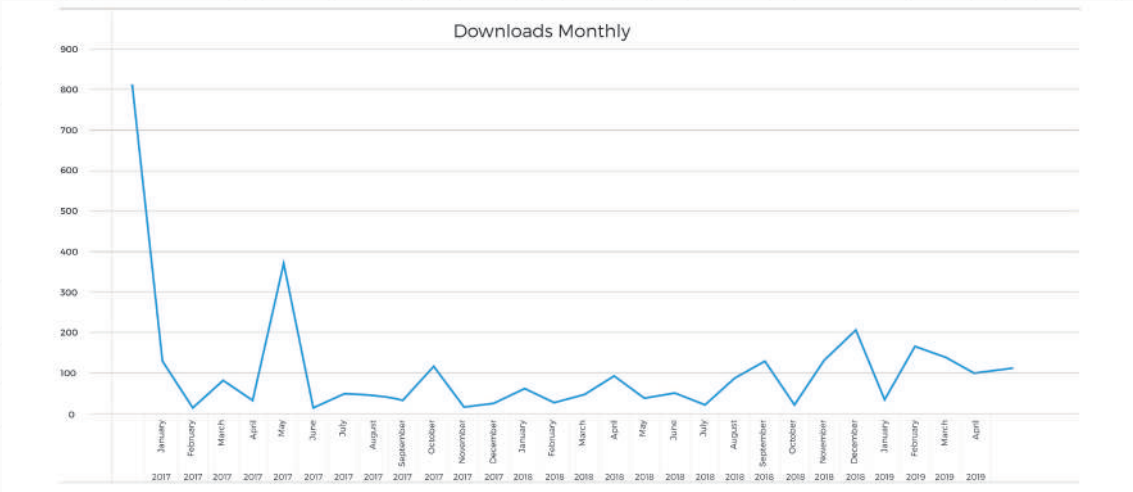
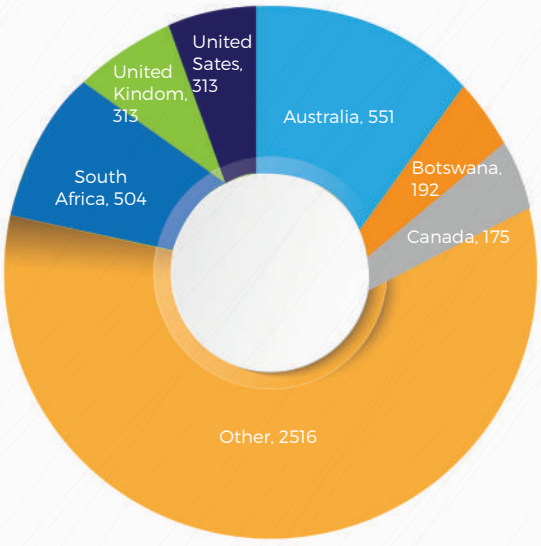


Figure 14: Date extracted by Country



Other Countries include: France, Morocco, Mozambique, Peru, India, Denmark, Brazil, Ethopia, Zimbabwe, Netherlands, Nigeria, Norway, Romania, Malaysia, Egypt, Namibia, Mexico, Russia, Sierra Leone, Taiwan, New Zealand, Pakistan, Mali, Mongolia, Angola, Algeria Indonesia, Kazakhstan, Laos, Libya, Uruguay, Zambia e.t.c

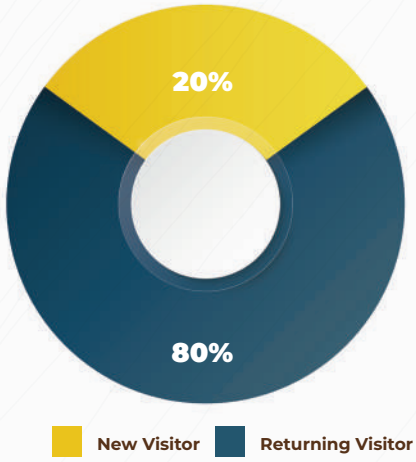
Figure 15: Monthly downloads of Geoscience information through portal - by country

BGI Website

The Institute implemented and launched its website in March 2019 as an avenue to extend its footprint both locally and internationally. The BGI website offers our clientele various forms of information and services ranging from BGI geoscience projects' progress and scientific findings, geoscience data packages, access to BGI collections and services price lists.

The BGI website has attracted audience from various countries across the globe following its launch. The below analytics depicts the BGI website hits during the month of April 2019.

COUNTRY	USERS	% USERS
1. United States	82	53.95%
2. Botswana	44	28.95%
3. India	7	4.61%
4. Japan	3	1.93%
5. South Africa	3	1.93%
6. Croatia	2	1.32%
7. Netherlands	2	1.32%
8. Philippines	2	1.32%
9. United Arab Emirates	1	0.66%
10. China	1	0.66%

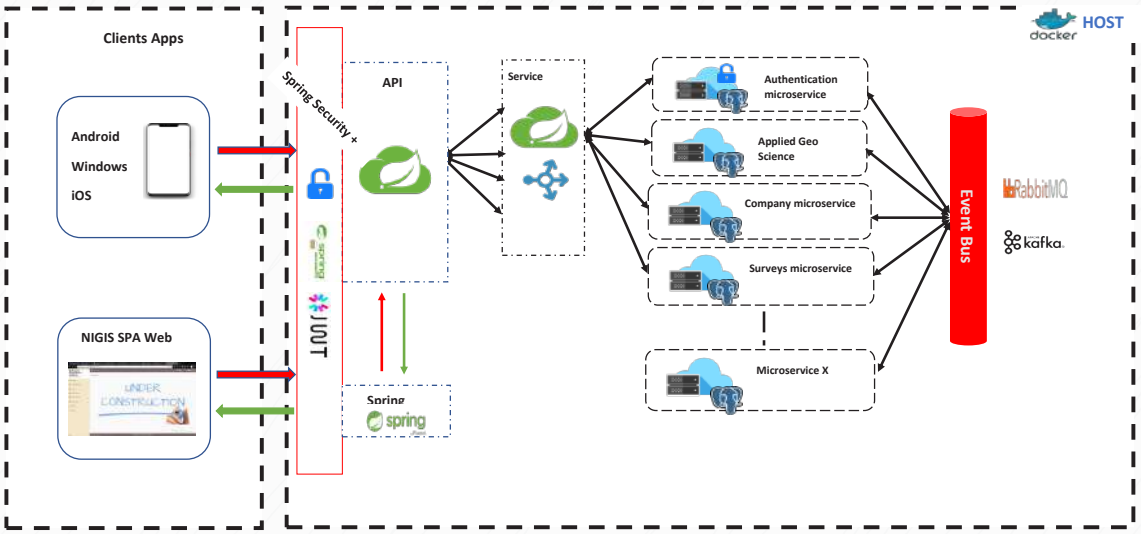


Technological innovations and plans

The Institution has commenced the phase 2 of the National Integrated Geoscience Information System (NIGIS) project following the successful delivery and approval of the Statement of User Requirements (SOUR) documentation in December 2018.

This second phase entails the implementation of the proposed overarching geoscience information management proposed system architecture. The proposed architecture as seen below comprises of units divided into single deployable micro services.

Figure 16: National information Geoscience information system project architecture



The planned micro services include; Applied Geoscience, Surveys, Mineral Resources and Hydrocarbons. The technological implementation aims to leverage on REST APIs to integrate BGI modules being; The already implemented Library Information Management System (LIBWIN) and the planned Laboratory Information Management System (LIMS).

The project implementation approach is agile allowing for cumulative delivery of sub components with time. Development of the NIGIS architecture has thus gained traction with the data capture component of the Applied Geoscience micro service completed. The project is estimated to complete in December 2022.

Quality Management and standards at BGI Laboratories.

Quality management and standards at BGI laboratories are an important function. In pursuit of this imperative, BGI laboratory implemented ISO/I5EC 17025 Accreditation Standard for Testing and Calibration for laboratories. This aims to drive towards the success of BGI strategic priorities namely; Providing quality geoscience information; Upholding operational and services excellence and Undertake high quality geoscience research for mineral exploration, promotion of sustainable development and geohazards management.

The standard assures quality and reliability of tests results as well as to establish the competence of laboratory personnel.

The laboratory previously implemented the requirements of the above-mentioned standard, which was a 2005 edition. This standard was revised in 2017 and publicized in November of the same year. To ensure implementation of this standard, BGI personnel, fourteen (14) laboratory personnel and six (6) geologists underwent relevant training in Understanding and Internal Auditing courses of the new standard. It was necessary for geologists to attend training to upskill them in sample collecting as per the dictates of the Standard.

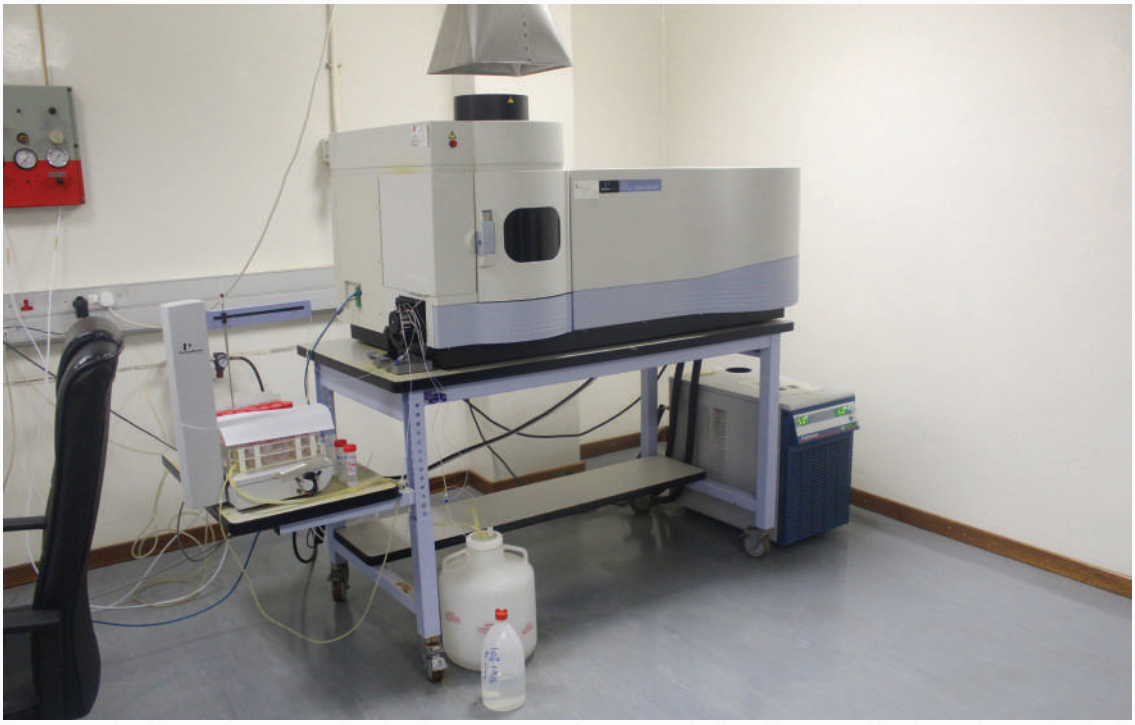
The laboratory also capacitated ten (10) laboratory personnel on Method Validation and Estimation of Measurement Uncertainty so that they are able to validate laboratory test methods, which is a requirement of the accreditation standard. The laboratory has a quality manual and waiting to validate test methods and submit to Southern African Development Community Accreditation System (SADCAS) for review and accreditation.

Impact of laboratory services

BGI Laboratory Testing Services consist of the Physical and Chemical testing laboratories which provide timely and quality analytical services and assessments on geological raw materials such as soil, rock, ores, vegetation and water as well as material testing for research projects of BGI, mineral exploration companies and the general public. The laboratory is staffed with competent personnel and a wide range of maintained and calibrated modern equipment that enables it to produce quality and timely analytical results. Quality of results are assured by use of Quality control protocols.

Test methods used in Laboratory services are internally developed and validated as per ISO/IEC 17025 requirements. The Laboratory services also perform testing according to internationally recognized standards provided by standardization organizations such as American Society for Testing and Materials (ASTM), International Organization for Standardization, ISO.

In the year under review, the laboratory provided services to internal and external customers for various analysis including sample preparation, geochemical, water, geotechnical, ceramic, mineral identification and aggregates analysis. Suspected gold and diamond samples were also analysed for legal advice.



Picture: Optical Emission Spectrometer (ICP - OES 7300 DV)

Service provided to internal customers **2018-19**

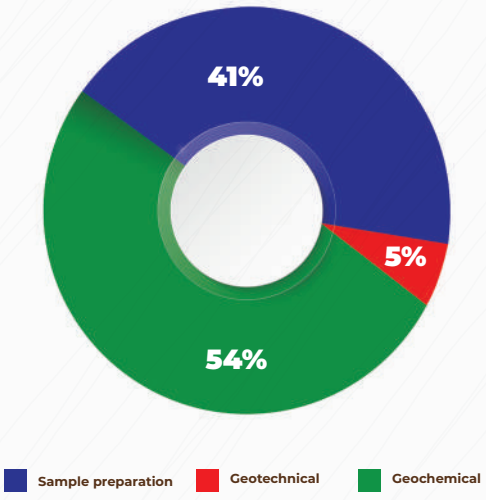


Figure 17: Laboratory Analytical Service to internal customers

Service provided to external customers **2018-19**

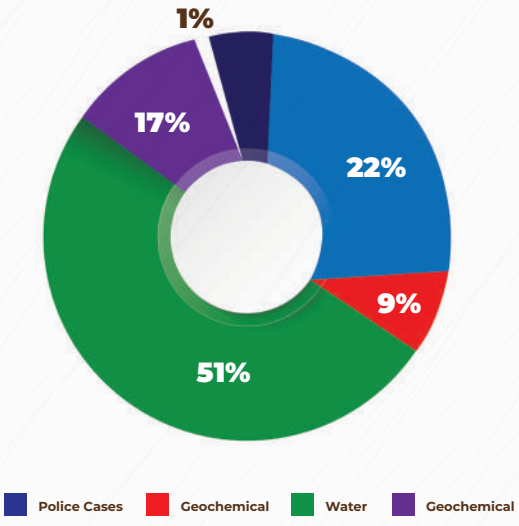


Figure 18: Laboratory Analytical Service to external customers & Cost recovery

Identification and Assessment of Mafic, Ultramafic and Granitic Complexes

This project was approved in National Development Plan 10 (NDP 10) but was deferred due to lack of funds. However during the third quarter of 2017, partial funding was approved which called for a modified project scope. The initial project scope was first to fill up data gaps by flying high-resolution aeromagnetic survey in the western part of Botswana. Subsequently carry out the mineral potential assessment in the rest of the country as an incentive to private sector investment in mineral exploration.

The geological terranes started above (i.e. Mafic, Ultramafic and Granitic complexes), have not been fully explored though known elsewhere to host base metals and Platinum Group Metals (PGMs).

The modified project scope aims to interpret aeromagnetic data of northern Botswana together with available geoscience information to produce geological, geophysical, hydrogeological and mineral potential maps, and subsequently update the National Geological Map of Botswana, which was last updated in 1997. This will in addition to improving information availability, stimulate mineral exploration activities in the Northern part of Botswana in particular, as well as the rest of the country.

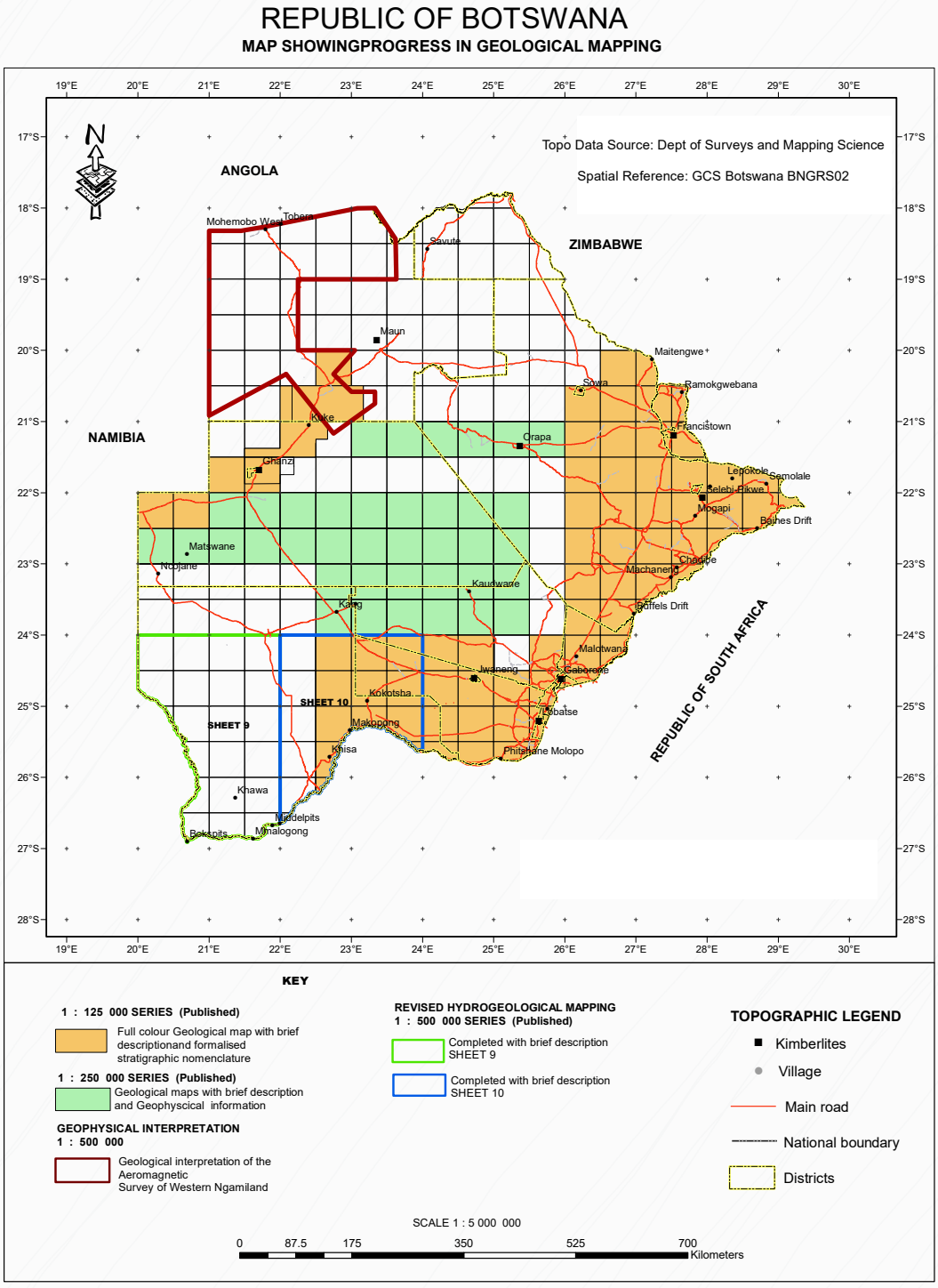


Figure 19: Map showing progress in geological mapping

The project is still at tendering stage as it was delayed due to re-tendering. It is currently at tender evaluation stage and will be implemented over 3 years.

Geological Revision Mapping of Southeastern Botswana

This project entails geological revision of Quarter Degree Sheets (QDS) and standardization and formalization of litho-stratigraphic units in the South East part of Botswana.

Project execution includes interpretation and integration of existing geological maps (QDS) with other geoscience datasets (e.g. exploration, geophysics, geochemistry, remote sensing, aerial photos, and borehole data) to produce updated geological maps and reports. These will address inconsistencies identified on existing QDS maps by adding structural data, mineral occurrences as well as improving information accessibility through development of databases. The latter will enhance effective and efficient exploration and development of the mineral sector in SE Botswana. The project is done with collaboration with Japan Oil, Gas and Metals National Corporation.

JOGMEC who are providing specialized services in the area of remote sensing as well as some laptops and associated software.

The project is at execution stage. Data acquisition, collation and preparation is complete. Preliminary data integration and field verification are complete. Identification of data gaps and issues to be addressed have also been completed in southern part of the project area.

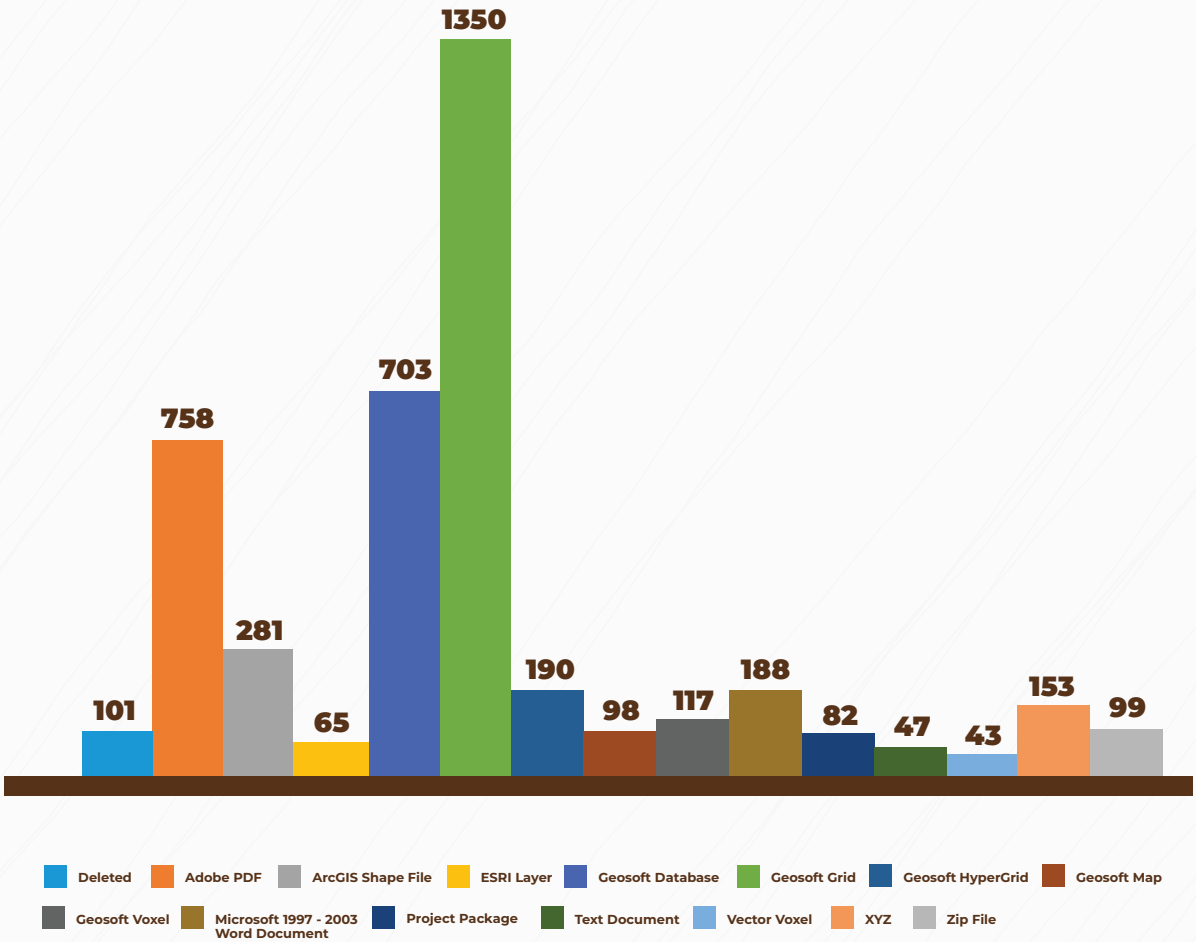
A pilot area within the project area has been selected to try out remote sensing techniques/ imagery and integrate with other datasets such as geophysics, borehole data, field observations and reconnaissance data to develop a systematic mapping approach to the rest of the area. Some field measurements were taken and satellite image processing tried to see if it could distinguish between different granites. Meanwhile construction of the lithostratigarphy of the area is underway as geologists are carrying reconnaissance field excursions.

Surveys' Assets

BGI as the country's custodian and repository for all geoscience data and information manages all geophysical data collected by government, private companies and institutions as well as individuals through the Geosoft DAP Server.

The server facilitates both easy of storage and dissemination of data to clients who are primarily exploration companies, research institutions and individuals. However, the dissemination of data is still done manually and limited to physically coming to the Institution to collect the data. Other avenues to change this are being pursued to enable access to data through a web or on-line mechanisms. One such avenue is the pilot project with Geosoft Incorporated on its Geosoft Portal that has been running since 12th April 2016 to date. This Portal is populated with geoscience data from Ngamiland District continues to generate traffic in the web space and has had a positive impact on Botswana's mineral investment climate and rating on the Fraser Institute Annual Survey of Mining Companies. The following shows the downloads from the portal and the countries the downloads were from.

Figure 20: Downloaded Database by Type



Partnerships and collaborations

In line with Botswana Government's policy and intent to lure investors to Botswana and thereby increase foreign direct investment, BGI is expected to open avenues for collaboration in research and mineral discovery and the overall sustainable development of Botswana's mineral sector and related activities such as the monitoring of geohazards. Some of the notable collaborations and partnerships are discussed below.

Botswana International University of Science and Technology (BIUST), signed a Memorandum of Understanding. (MoU) with BGI that benefited the implementation of the engineering project on the Urban Geotechnical Mapping of Palapye. As BGI did not have laboratory testing capacity to carry out the project, it leveraged on the MoU with BIUST, to ensure the project was successfully executed with samples tested at the BIUST laboratories. BGI is a member of BIUST Department of Stakeholder Advisory Council (DSAC) under Department of Computer Science, which focuses on aligning the University Syllabus against market demand.

The South African Council for Geoscience has continued to informally support BGI in various ways including training BGI's seismologists on data analysis using SeisComp3 software. The Council has also been very instrumental in the successful bid by BGI to host the third General Assembly of the African Seismological Commission.

In pursuit of establishing the Botswana Seismological Research Centre, BGI established critical working relationship with Incorporated Research Institutions for Seismology (IRIS) Data Management Centre in the USA that is strategic in seismic data management. Through this relationship, IRIS donated a high capacity server to host BGI's seismic data. BGI will benefit from this collaboration in various ways including relevant training.

The Netherlands universities (University of Twente and Utrecht University (UU), continued to support BGI in the operation and maintenance of its seismic network. Similarly, BGI's seismologists have enjoyed partially and fully sponsored training courses by the CTBTO in Vienna, Austria in the reporting year.

The two organisations agreed to build and strengthen capacity through staff and student exchange programmes, attachments and mentorship in order to enhance skills and palette. The MoU also seeks alignment of course content in identified areas for promotion of knowledge transfer and enhance capacities of the two institutions as they undertake the delivery of their mandates.

Picture: Memorandum of understanding signing ceremony between BGI and BIUST

BOTSWANA GEOSCIENCE INSTITUTE

HUMAN RESOURCE AND ADMINISTRATION

HUMAN RESOURCES AND ADMINISTRATION

Building a high performing organisation incorporates appropriate strategies, policies and procedures to manage human capital and build capability. A significant progress in initiating these instruments was realised and are pending approval by the Board.

Structure review

The Structure/Organisational Review Team, was appointed by the Chief Executive Officer of Botswana Geoscience Institute, Mid July of 2019. The Mandate of the Task Team is to review the Institute's organisational structure and processes to ensure efficiencies and effectiveness across all business functions and roles and to ensure that all functions support the BGI broad Mandate and its Strategy. The Terms of Reference (TORs) in particular, of this engagement are as follows;

- To develop high level business processes
- Review the current structure, align to strategy and make recommendations
- Review/develop job profiles for each position/role, including nomenclature
- Make recommendations on grading of positions

The team has completed its first phase and has submitted its preliminary findings from for consideration by the BGI Executive Management and the other phases of the task will be considered in the 2019/20 period.

Staffing/ Recruitment

During the year under review, BGI commenced a number of projects which resulted in an increase of staff from 112 to 122. This growth is against the ceiling of 225 which has been approved by the Board since BGI inception. It must however be noted that the initial establishment of 225 was reviewed to 127 due to budgetary constraints. The recruitment exercise has progressed well with critical positions filled and this has shown a growth of 8.1% into the establishment as compared to 2017/2018 financial year.

	2018/2019	2017/2018
Total number of employees as at the end of March 2019	122	112
Women	36	32
Men	86	80

Table 7: Above depicts the number of employees (Women vs Men and) in comparison to 2017/2018 financial year

HUMAN RESOURCES AND ADMINISTRATION

Continued...

The Institute continues to utilise the Government youth programmes to transfer skills and to empower the youth/ graduates. For the period under review, a total of **twelve** (12) **interns** and one **(1) Tirelo Sechaba (National Service) Participant** have been engaged and deployed to different Business units for skills acquisition.

Performance management

The Institute continued to manage employee performance. The reviews are conducted bi-annual for the Executives and on a quarter basis for Band 3 (manager level) and below. In order to improve monitoring, the Institute plans to automate its Performance Management to improve efficiency of the performance processes.

Training and development

The institute embraces the need for training and development of staff through short term, long term, part time and Donor Funded Training Programmes. The Institute continues to build capacity in order to strengthen research capabilities. Though there is still a challenge of funding, a total amount of **BWP1, 352,766.65** was allocated towards identified training priorities.

Industrial relations

BGI continues to recognise that as an organisation there is a need to be responsive to Industrial relations issues. This is based on the premise that strong employer / employee relations is a key to the success of the organization. In view of this, the Institute has signed a Collective Labour Agreement with Botswana Public Employees' Union as representative of eligible employees in the Institute to create a harmonious industrial relations environment.

Staff retention

A notable achievement for the Institute is the rate of staff retention which stood at **96.7%** at the closure of the 2018/2019 financial year.

Staff Wellness

The Institute embraces the notion of staff wellness. The adopted staff Welfare initiatives are intended to educate, empower and share information with staff regarding issues that concerns their lives outside their normal work, and to motivate them to ensure high staff morale and excellent work performance. A number of wellness activities that were identified for the period under review include hosting of weekly welfare meetings, BGI wellness day and participation during MMGE sports games. Further, a team building exercise in the form of a Christmas party was hosted for BGI Staff, with a purpose of bringing staff together under a relaxed environment.

Retirement Annuity Fund

Botswana Geoscience Institute has a contributory Retirement Annuity Fund for its Pensionable Employees. The fund provides for the purchase of retirement Annuity Policies which is administered by Botswana Life Insurance Limited. These policies belong to the TAPOLOGO Retirement Annuity product which is a Retirement Savings fund approved by the regulatory authority, NBFIRA, as well as by BURS. The fund has registered 104 policies with an investment value amounting to **P6,548,300. 00**.

The total premiums collected and the total investment value as at 31 March 2019 are as captured in the table bellow:

Gross investment value	**BWP6,843,136.00**
Less administration expenses	**BWP294,836.00**
Less premiums paid to March 2019	**BWP6,190,40.00**
Fund Growth	**BWP357,900.00**

BOTSWANA GEOSCIENCE INSTITUTE

CORPORATE SOCIAL RESPONSIBILITY

CORPORATE SOCIAL RESPONSIBILITY STATEMENT

Botswana Geoscience Institute applies geoscientific knowledge to support communities in challenges they encounter. BGI CSR is actively involved in Corporate Social Responsibility (CSR) initiatives led by its Staff Health and Wellness Committee designed to empower the communities within which the Institute operates. These events demonstrate BGI's strong commitment to its customers, shareholders, employees and the nation.

The Institutes understands that corporate citizenship starts with running a successful geoscience business; producing the right solutions the customers need, creating jobs for the citizens, fulfilling its Mandate as pronounced in the Act. Our commitment to being a good corporate citizen goes beyond the economic realms of our operations. We want our stakeholders to look at us for leadership to make a tangible difference in the communities in which we operate.

We perceive community relationship as a core competency that adds value to our business. This includes building critical relationships, contributing to the well being of the communities, developing corporate image and enhancing corporate reputations.

With our aspiration to become a Renowned Geoscience Center, during the year BTC participated in a variety of community related initiatives such as;

- Student/Scholar career guidance at various schools.
- Village/Communities cleaning campaigns.
- Pre-project commencement kgotla briefings (Palapye and Letlhakeng projects).
- We have participated in forums and events which promote the country as an investment destination such as Botswana Resource Centre Conference and Mining Indaba.

Communications play an integral and vital role in disseminating information on the Institute to the shareholders, whether on our performance or on our principles and policies. Dedicated Marketing and Communication department manage the flow of information to the media, the public, the customers and the other stakeholders. Our front offices, particularly at National Geoscience Information Center (NGIC), liaise with the customers to ensure flawless flow of information. The new BGI website is ably managed ensuring that a continuous flow of information reaches every stakeholder and interested party within and outside Botswana. Online Library System stores uploaded data which is targeted to be linked with BGI website.

Picture: BGI Employees cleaning the environment in Molapowabojang


BOTSWANA
GEOSCIENCE
INSTITUTE

BOTSWANA GEOSCIENCE INSTITUTE

FINANCIAL STATEMENTS

FOR THE YEAR ENDED 31 MARCH, 2019

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

FINANCIAL STATEMENTS

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

General Information

COUNTRY OF INCORPORATION AND DOMICILE	Botswana
NATURE OF BUSINESS AND PRINCIPAL ACTIVITIES	Responsible for research in the field of geosciences, providing specialised geoscientific services and promoting the search for, and exploration of any minerals in Botswana.
DIRECTORS	Prof. Elisha M. Shemang - Acting chairperson of the board Mr. John L. Farr - (Resigned) Mr. Ogone M. Gaboutloeloe - Board Member Ms. Tebogo Mmoshe -Member Ms. Ontlametse Mokopakgosi - Member Dr. Sebusi Odisitse - Member Mr. Tiyapo H. Ngwisanyi - Chief Executive Officer (ex-officio) Board member Dr. Budzanani Tacheba - Member Ms. Bogadi Mathangwane- Member
REGISTERED OFFICE	Plot 1734 Khama 1 Avenue Lobatse
POSTAL ADDRESS	Private Bag 14 Lobatse
BANKERS	First National Bank Botswana Limited
AUDITORS	Mazars Certified Auditors
BOARD SECRETARY	Obolokile Sekga

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Members of Board Responsibilities and Approval

The Members of Board are required in terms of the Botswana Geoscience Institute Act, 2014 to maintain adequate accounting records and are responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is their responsibility to ensure that the annual financial statements fairly present the state of affairs of the institute as at the end of the financial year and the results of its operations and cash flows for the period then ended, in conformity with International Financial Reporting Standards.The external auditors are engaged to express an independent opinion on the annual financial statements.

The annual financial statements are prepared in accordance with International Financial Reporting Standards. and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The Members of Board acknowledge that they are ultimately responsible for the system of internal financial control established by the institute and place considerable importance on maintaining a strong control environment. To enable the Members of Board to meet these responsibilities, the board sets standards for internal control aimed at reducing the risk of error or loss in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the institute and all employees are required to maintain the highest ethical standards in ensuring the institute's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the institute is on identifying, assessing, managing and monitoring all known forms of risk across the institute. While operating risk cannot be fully eliminated, the institute endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The Members of Board are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or loss.

The Members of Board have reviewed the institute's cash flow forecast for the year to 31 March, 2020 and, in light of this review and the current financial position, they are satisfied that the institute has or had access to adequate resources to continue in operational existence for the foreseeable future.
The external auditors are responsible for independently auditing and reporting on the institue's annual financial statements. The annual financial statements have been examined by the institute's external auditors and their report is presented on pages 73 to 74.

The annual financial statements set out on pages 75 to 97, which have been prepared on the going concern basis, were approved by the board on 28 October 2019 and were signed on their behalf by:

Prof.Elisha M.Shemang
Acting chairperson of the board

Tiyapo Hudson Ngwisanyi
Chief Executive Officer

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Independent Auditor's Report

To the member of Botswana Geoscience Institute

Opinion

We have audited the annual financial statements of Botswana Geoscience Institute set out on pages 75 to 97, which comprise the statement of financial position as at 31 March, 2019, and the statement of profit or loss and other comprehensive income, statement of changes in accumulated fund and statement of cash flows for the year then ended, and notes to the annual financial statements, including a summary of significant accounting policies.

In our opinion, the annual financial statements present fairly, in all material respects, the financial position of Botswana Geoscience Institute as at 31 March, 2019, and its financial performance and cash flows for the year then ended in accordance with International Financial Reporting Standards.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the annual financial statements section of our report. We are independent of the institute in accordance with the International Ethics Standards Board for Accountants Code of Ethics for Professional Accountants (Parts A and B) (IESBA Code) and other independence requirements applicable to performing audits of annual financial statements in Botswana. We have fulfilled our other ethical responsibilities in accordance with the IESBA Code and in accordance with other ethical requirements applicable to performing audits in Botswana. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the directors for the Annual Financial Statements

The Members of Board are responsible for the preparation and fair presentation of the annual financial statements in accordance with International Financial Reporting Standards and the requirements of the Botswana Geoscience Institute Act, 2014, and for such internal control as the directors determine is necessary to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the annual financial statements, the Members of Board are responsible for assessing the institute's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Members of Board either intend to liquidate the institute or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the Annual Financial Statements

Our objectives are to obtain reasonable assurance about whether the annual financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with International Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these annual financial statements.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Independent Auditor's Report

As part of an audit in accordance with International Standards on Auditing, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the annual financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Members of Board.
- Conclude on the appropriateness of the Members of Board use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Institute's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the annual financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Institute to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the annual financial statements, including the disclosures, and whether the annual financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the Members of Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Mazars
Certified Auditors
Practicing Member: Shashikumar Velambath
Practicing number - 19980076

Date: 30th October 2019
Gaborone

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Statement of Financial Position as at 31 March, 2019

Figures in Pula	Note(s)	2019	2018
Assets			
Non-Current Assets			
Property, plant and equipment	2	249,770,169	253,819,786
Current Assets			
Inventories	3	399,910	-
Trade and other receivables	4	1,000,181	456,962
Cash and cash equivalents	5	7,802,730	6,546,998
		9,202,821	7,003,960
Total Assets		**258,972,990**	**260,823,746**
Equity and Liabilities			
Equity			
Capital grant	6	249,770,566	253,819,786
Accumulated surplus		902,696	859,941
		250,673,262	**254,679,727**
Liabilities			
Current Liabilities			
Trade and other payables	7	7,768,813	3,974,908
Deferred income	8	530,915	2,169,111
		8,299,728	**6,144,019**
Total Equity and Liabilities		**258,972,990**	**260,823,746**

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Statement of Profit or Loss and Other Comprehensive Income

Figures in Pula	Note(s)	2019	2018
Income	9	62,174,080	29,803,811
Other operating income	10	10,765,065	19,954,424
Other operating gains	11	40,499	-
Other operating expenses		(72,939,148)	(49,043,163)
Operating surplus	**12**	**40,496**	**715,072**
Investment income	13	2,257	28,986
Surplus for the year		**42,753**	**744,058**

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Statement of Changes in Equity

Figures in Pula	Capital Grant	Accumulative Surplus	Total equity
Balance at 1 April, 2017	**253,650,094**	**115,883**	**253,765,977**
Surplus for the year	**-**	**744,058**	**744,058**
Assets capitalised	7,061,971	-	7,061,971
Amortisation of capital grant	(6,892,279)	-	(6,892,279)
	169,692	**-**	**169,692**
Balance at 1 April, 2018	**253,819,786**	**859,943**	**254,679,729**
Surplus for the year	**-**	**42,753**	**42,753**
Assets capitalised	3,271,497	-	3,271,497
Armotisation of capital grant	(7,320,718)	-	(7,320,718)
	(4,049,221)	**-**	**(4,049,221)**
Balance at 31 March, 2019	**249,770,565**	**902,696**	**250,673,261**
Note(s)	6		

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Statement of Cash Flows

Figures in Pula	Note(s)	2019	2018
Cash flows from operating activities			
Surplus for the year		42,753	744,058
Adjustments for:			
Depreciation and amortisation		7,320,718	6,892,279
Gains on disposals, scrappings and settlements of assets and liabilities		(40,499)	-
Interest received		(2,257)	(28,986)
Changes in working capital:			
Inventories		(399,910)	-
Trade and other receivables		(543,219)	(181,715)
Trade and other payables		3,793,908	2,214,942
Deferred income		(1,638,196)	(18,103,983)
Cash generated from operations		**8,533,298**	**(8,463,405)**
Cash flows from investing activities			
Purchase of property, plant and equipment	2	(3,271,499)	(7,061,971)
Sale of property, plant and equipment	2	40,897	-
Interest Income		2,257	28,986
Net cash from investing activities		**(3,228,345)**	**(7,032,985)**
Cash flows from financing activities			
Armotisation of capital grant	6	(7,320,718)	(6,892,279)
Capitalised assets	6	3,271,497	7,061,971
Net cash from financing activities		**(4,049,221)**	**169,692**
Total cash movement for the year		**1,255,732**	**(15,326,698)**
Cash at the beginning of the year		6,546,998	21,873,696
Total cash at end of the year	5	**7,802,730**	**6,546,998**

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Accounting Policies

1. Significant accounting policies

The principal accounting policies applied in the preparation of these annual financial statements are set out below.

1.1 Basis of preparation

The annual financial statements have been prepared on the going concern basis in accordance with, and in compliance with, International Financial Reporting Standards ("IFRS") and International Financial Reporting Interpretations Committee ("IFRIC") interpretations issued and effective at the time of preparing these annual financial statements and the Botswana Geoscience Act, 2014.

The annual financial statements have been prepared on the historic cost basic, expect for the measurement of certain financial instruments at fair value, and incorporate the principal accounting policies set out below. They are presented in Pulas, which is the Institute's functional currency.

These accounting policies are consistent with the previous period.

1.2 Significant judgements and sources of estimation uncertainty

The preparation of annual financial statements in conformity with IFRS requires management, from time to time, to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets, liabilities, income and expenses. These estimates and associated assumptions are based on experience and various other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates. The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised and in any future periods affected.

Key sources of estimation uncertainty

The annual financial statements do not include assets or liabilities whose carrying amounts were determined based on estimations for which there is a significant risk of material adjustments in the following financial year as a result of the key estimation assumptions.

1.3 Property, plant and equipment

Property, plant and equipment are tangible assets which the institue holds for its own use or for rental to others and which are expected to be used for more than one year.

An item of property, plant and equipment is recognised as an asset when it is probable that future economic benefits associated with the item will flow to the institute, and the cost of the item can be measured reliably.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Accounting Policies

Property, plant and equipment is initially measured at cost. Cost includes all of the expenditure which is directly attributable to the acquisition or construction of the asset.

Expenditure incurred subsequently for major services, additions to or replacements of parts of property, plant and equipment are capitalised if it is probable that future economic benefits associated with the expenditure will flow to the institute and the cost can be measured reliably. Day to day servicing costs are included in profit or loss in the year in which they are incurred.

Property, plant and equipment is subsequently stated at cost less accumulated depreciation and any accumulated impairment losses.

Depreciation of an asset commences when the asset is available for use as intended by management. Depreciation is charged to write off the asset's carrying amount over its estimated useful life to its estimated residual value, using a method that best reflects the pattern in which the asset's economic benefits are consumed by the institute. Leased assets are depreciated in a consistent manner over the shorter of their expected useful lives and the lease term. Depreciation is not charged to an asset if its estimated residual value exceeds or is equal to its carrying amount. Depreciation of an asset ceases at the earlier of the date that the asset is classified as held for sale or derecognised.

The useful lives of items of property, plant and equipment have been assessed as follows:

Item	Depreciation method	Average useful life
Buildings	Straight line	50 years
Plant and machinery	Straight line	6 - 7 years
Furniture and fixtures	Straight line	10 years
Motor vehicles	Straight line	5 years
Office equipment	Straight line	4 - 20 years
Laboratory equipment and instruments	Straight line	15 years

The residual value, useful life and depreciation method of each asset are reviewed at the end of each reporting year. If the expectations differ from previous estimates, the change is accounted for prospectively as a change in accounting estimate.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The depreciation charge for each year is recognised in profit or loss unless it is included in the carrying amount of another asset.

Impairment tests are performed on property, plant and equipment when there is an indicator that they may be impaired. When the carrying amount of an item of property, plant and equipment is assessed to be higher than the estimated recoverable amount, an impairment loss is recognised immediately in profit or loss to bring the carrying amount in line with the recoverable amount.
An item of property, plant and equipment is derecognised upon disposal or when no future economic benefits are expected from its continued use or disposal. Any gain or loss arising from the derecognition of an item of property, plant and equipment,

determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item, is included in profit or loss when the item is derecognised.

1.4 Financial instruments

Financial instruments held by the Institute are classified in accordance with the provisions of IFRS 9 Financial Instruments.

Broadly, the classification possibilities, which are adopted by the Institute ,as applicable, are as follows:

Financial assets which are equity instruments:

- Mandatorily at fair value through profit or loss; or

Financial assets which are debt instruments:

- Amortised cost. (This category applies only when the contractual terms of the instrument give rise, on specified dates, to cash flows that are solely payments of principal and interest on principal, and where the instrument is held under a business model whose objective is met by holding the instrument to collect contractual cash flows); or

Financial liabilities:

- Amortised cost; or

Note 18 Financial instruments and risk management presents the financial instruments held by the Institute based on their specific classifications.

All regular way purchases or sales of financial assets are recognised and derecognised on a trade date basis. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

The specific accounting policies for the classification, recognition and measurement of each type of financial instrument held by the Institute are presented below:

Trade and other receivables

Classification

Trade and other receivables, excluding, when applicable, VAT and prepayments, are classified as financial assets subsequently measured at amortised cost (note 4).

They have been classified in this manner because their contractual terms give rise, on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding, and the Institute's business model is to collect the contractual cash flows on trade and other receivables.

Recognition and measurement

Trade and other receivables are recognised when the Institute becomes a party to the contractual provisions of the receivables. They are measured, at initial recognition, at fair value plus transaction costs, if any.

They are subsequently measured at amortised cost.

The amortised cost is the amount recognised on the receivable initially, minus principal repayments, plus cumulative amortisation (interest) using the effective interest method of any difference between the initial amount and the maturity amount, adjusted for any loss allowance.

Impairment

The institute recognises a loss allowance for expected credit losses on trade and other receivables, excluding VAT and prepayments. The amount of expected credit losses is updated at each reporting date.
The institute measures the loss allowance for trade and other receivables at an amount equal to lifetime expected credit losses (lifetime ECL), which represents the expected credit losses that will result from all possible default events over the expected life of the receivable.

Measurement and recognition of expected credit losses

The Institute makes use of a provision matrix as a practical expedient to the determination of expected credit losses on trade and other receivables. The provision matrix is based on historic credit loss experience, adjusted for factors that are specific to the debtors, general economic conditions and an assessment of both the current and forecast direction of conditions at the reporting date, including the time value of money, where appropriate.

The customer base is widespread and does not show significantly different loss patterns for different customer segments. The loss allowance is calculated on a collective basis for all trade and other receivables in totality. Details of the provision matrix is presented in note 4.

An impairment gain or loss is recognised in profit or loss with a corresponding adjustment to the carrying amount of trade and other receivables, through use of a loss allowance account. The impairment loss is included in other operating expenses in profit or loss as a movement in credit loss allowance (note 12).

Write off policy

The Institute writes off a receivable when there is information indicating that the counterparty is in severe financial difficulty and there is no realistic prospect of recovery, e.g. when the counterparty has been placed under liquidation or has entered into bankruptcy proceedings. Receivables written off may still be subject to enforcement activities under the institute recovery procedures, taking into account legal advice where appropriate. Any recoveries made are recognised in profit or loss.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Accounting Policies

Trade and other receivables

Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account, and the amount of the loss is recognised in profit or loss within operating expenses. When a trade receivable is uncollectable, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in profit or loss.

Trade and other receivables are classified as loans and receivables.

Trade and other payables

Trade payables are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand and demand deposits, and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially and subsequently recorded at fair value.

1.6 Impairment of assets

The institute assesses at each end of the reporting period whether there is any indication that an asset may be impaired. If any such indication exists, the institute estimates the recoverable amount of the asset.

If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. If it is not possible to estimate the recoverable amount of the individual asset, the recoverable amount of the cash- generating unit to which the asset belongs is determined.

The recoverable amount of an asset or a cash-generating unit is the higher of its fair value less costs to sell and its value in use.

If the recoverable amount of an asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. That reduction is an impairment loss.

An impairment loss of assets carried at cost less any accumulated depreciation or amortisation is recognised immediately in profit or loss. Any impairment loss of a revalued asset is treated as a revaluation decrease.

A reversal of an impairment loss of assets carried at cost less accumulated depreciation or amortisation other than goodwill is recognised immediately in profit or loss.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Accounting Policies

1.5 Financial instruments: IAS 39 comparatives

Classification

The Institute classifies financial assets and financial liabilities into the following categories:

- Loans and receivables
- Financial liabilities measured at amortised cost

Classification depends on the purpose for which the financial instruments were obtained / incurred and takes place at initial recognition. Classification is re-assessed on an annual basis.

Initial recognition and measurement

Financial instruments are recognised initially when the institute becomes a party to the contractual provisions of the instruments.

The institute classifies financial instruments, or their component parts, on initial recognition as a financial asset, a financial liability or an equity instrument in accordance with the substance of the contractual arrangement.
Financial instruments are measured initially at fair value.

Subsequent measurement

Loans and receivables are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses.

Financial liabilities at amortised cost are subsequently measured at amortised cost, using the effective interest method.

Derecognition

Financial assets are derecognised when the rights to receive cash flows from the investments have expired or have been transferred and the institute has transferred substantially all risks and rewards of ownership.

Impairment of financial assets

At each reporting date the institute assesses all financial assets, other than those at fair value through profit or loss, to determine whether there is objective evidence that a financial asset or group of financial assets has been impaired.

For amounts due to the institute, significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy and default of payments are all considered indicators of impairment.

Impairment losses are recognised in profit or loss.

Impairment losses are reversed when an increase in the financial asset's recoverable amount can be related objectively to an event occurring after the impairment was recognised, subject to the restriction that the carrying amount of the financial asset at the date that the impairment is reversed shall not exceed what the carrying amount would have been had the impairment not been recognised.

Where financial assets are impaired through use of an allowance account, the amount of the loss is recognised in profit or loss within operating expenses. When such assets are written off, the write off is made against the relevant allowance account. Subsequent recoveries of amounts previously written off are credited against operating expenses.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Accounting Policies

1.7 Employee benefits

Short-term employee benefits

The cost of short-term employee benefits, (those payable within 12 months after the service is rendered, such as paid vacation leave and sick leave, bonuses, and non-monetary benefits such as medical care), are recognised in the period in which the service is rendered and are not discounted.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs.

Post employment benefits

Contract staff members of the Institute are entitled to gratuities at the end of their contracts in accordance with the terms specified in their contracts of employment.

Gratuity benefits are recognised at the end of each financial year as they are accrued and a provision is made equal to the liability estimated as the employee renders services to the Institute up to the year end date.

1.8 Government grants

Government grants are recognised when there is reasonable assurance that:

- the Institute will comply with the conditions attaching to them; and
- the grants will be received.

Government grants are recognised as income over the periods necessary to match them with the related costs that they are intended to compensate.

A government grant that becomes receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the entity with no future related costs is recognised as income of the period in which it becomes receivable.

Government grants related to assets, including non-monetary grants at fair value, are presented in the statement of financial position by setting up the grant as deferred income or by deducting the grant in arriving at the carrying amount of the asset. Grants related to income are presented as a credit in the profit or loss in the statement of comprehensive income.

1.9 Income

Interest is recognised.In the statement of comprehensive income, using the effective interest rate method.

1.10 Comparative figures

Certain comparative figures are reclassified in the Detailed Income Statement.

Figures in Pula	2019	2018

2. Property, plant and equipment

	Cost or revaluation	Accumulated depreciation	Carrying Value	Cost or revaluation	Accumulated depreciation	Carrying Value
Buildings	230,290,000	(13,817,400)	216,472,600	230,290,000	(9,211,600)	221,078,400
Plant and machinery	7,309,000	(207,580)	7,101,420	7,309,000	(207,580)	7,101,420
Motor vehicles	6,561,799	(2,374,508)	4,187,291	6,561,799	(1,544,995)	5,016,804
Office equipment	6,500,101	(1,583,825)	4,916,276	4,365,264	(799,475)	3,565,789
Laboratory plant and equipment	19,649,038	(2,556,456)	17,092,582	18,512,775	(1,455,402)	17,057,373
Total	**270,309,938**	**(20,539,769)**	**249,770,169**	**267,038,838**	**(13,219,052)**	**253,819,786**

Reconciliation of property, plant and equipment - 2019

	Opening Balance	Additions	Disposals	Depreciation	Total
Buildings	221,078,400	-	-	(4,605,800)	216,472,600
Plant and machinery	7,101,420	-	-	-	7,101,420
Motor vehicles	5,016,804	-	-	(829,513)	4,187,291
Office equipment	3,565,789	2,135,236	(398)	(784,351)	4,916,276
Laboratory equipment and Instruments	17,057,373	1,136,263	-	(1,101,054)	17,092,582
	253,819,786	**3,271,499**	**(398)**	**(7,320,718)**	**249,770,169**

Reconciliation of property, plant and equipment - 2018

	Opening Balance	Additions	Depreciation	Total
Buildings	225,684,200	-	(4,605,800)	221,078,400
Plant and machinery	7,208,067	-	(106,647)	7,101,420
Motor vehicles	5,433,035	373,899	(790,130)	5,016,804
Office equipment	2,524,836	1,523,634	(482,680)	3,565,789
Laboratory equipment and Instruments	12,799,957	5,164,438	(907,022)	17,057,373
	253,650,095	**7,061,971**	**(6,892,279)**	**253,819,786**

3. Inventories

Stock	399,910	-

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Notes to the Annual Financial Statements

Figures in Pula	Note(s)	2019	2018
4. Trade and other receivables			
Financial instruments:			
Receivables		101,691	34,888
Trade receivables: Limestone Investigation- Clinker Project		337,443	-
Other receivables		134,045	-
Trade receivables at amortised cost		573,179	34,888
Withholding tax interest and other receivables		84,695	419,807
Board and manager recoveries		77,900	-
Imprest		264,407	-
Non-financial instruments:			
Employee costs in advance		-	2,267
Total trade and other receivables		**1,000,181**	**456,962**
5. Cash and cash equivalents			
Cash and cash equivalents consist of:			
Cash on hand		2,257	847
Call accounts		7,845,701	6,546,584
Current accounts		(45,228)	(433)
		7,802,730	**6,546,998**

6. Capital Grant

Capital grant relates to grant received for the purpose of capital expenditure.The grant is amortised on an annual basis. The annual amortisation is equivalent to the depreciation on the assets that were financed from the grants.

Opening balance		253,819,786	253,650,095
Capital assets purchased		3,271,498	7,061,971
Amortisation		**249,770,566**	**253,819,786**
7. Trade and other payables			
Financial instruments:			
Payables		2,376,141	1,702,165
Payroll liabilities		5,392,672	2,272,743
		7,768,813	**3,974,908**

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Notes to the Annual Financial Statements

Figures in Pula	Note(s)	2019	2018
8. Deferred income			
Deferred income represents grants received from the government that have not been utilised yet.These amounts will be recognised when they are applied for the purposes as defined under the grant convention.			
Opening Balance		2,169,111	20,273,094
Grant Income		65,030,965	-
Revenue expenditure		(63,397,662)	(11,042,012)
Capital expenditure		(3,271,498)	(7,061,971)
		530,916	**2,169,111**
9. Income			
Government grants		62,174,080	29,803,811
10. Other operating income			
Rental income		1,172,551	536,250
Amortisation of capital grant		7,320,719	6,892,279
Other income		1,592,747	148,074
Limestone Investigation- Clinker project Income		337,443	-
Limestone Investigation- Other income		134,045	-
Deferred income utilised		207,560	12,377,821
		10,765,065	**19,954,424**
11. Other operating gains (losses)			
Gains (losses) on disposals, scrappings and settlements			
Property, plant and equipment	2	40,499	-
12. Operating profit (loss)			
Operating surplus for the year is stated after charging (crediting) the following, amongst others:			
Auditor's remuneration - external			
Expenses		191,218	-

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Notes to the Annual Financial Statements

Figures in Pula	Note(s)	2019	2018
Remuneration, other than to employees			
Consulting and professional services		413,274	1,465,970
Employee costs			
Salaries, wages, bonuses and other benefits		37,114,833	23,379,881
Gratuity expenses		2,237,754	1,261,404
Retirement benefit plans: defined contribution expense		2,958,341	1,678,688
Total employee costs		**42,310,928**	**26,319,973**
Depreciation and amortisation			
Depreciation of property, plant and equipment		7,320,718	6,892,279
13. Investment income			
Investments in financial assets:			
Bank and other cash		2,257	28,986
14. Taxation			
No provision has been made for tax as the Institute is exempt from tax.			
15. Commitments		7,320,719	6,892,279
Authorised capital expenditure			
Not yet contracted for and authorised by directors		-	1,244,460

This committed expenditure relates to revenue and capital expenditure and will be financed by available Grant income.

Figures in Pula	Note(s)	2019	2018

16. Related parties

Relationships	
Member of board	Refer to page 1 (General Information)
Members of key management	Senior management

	2019	2018
Related party transactions		
Income		
Government of Botswana - Grant received	62,174,080	29,803,810
Employee costs		
Senior management salaries	6,866,882	4,062,950
Total employee costs	**42,310,928**	**26,319,973**
Board expenses		
Board Fees Allowances	194,583	194,120
Board Meetings	208,898	162,386
Benchmarking and corporate governance training	-	46,769
Board communication expenses	-	62,199
	403,481	**465,474**
Amounts included in trade receivables related parties		
Board and manager recoveries	77,900	-

Figures in Pula	Note(s)	2019	2018

17. Members of the Board fees

Executive

2019

	Sitting allowances	Total
Prof.Elisha M.Shemang - Acting chairperson of the board	20,790	20,790
Mr.John L.Farr - (Resigned)	3,150	3,150
Mr.Ogone M.Gaboutloeloe - Board Member	26,460	26,460
Ms.Tebogo Mmoshe -Member	21,420	21,420
Ms.Ontlametse Mokopakgosi -Member	17,640	17,640
Dr.Sebusi Odisitse - Member	21,420	21,420
Dr.Budzanani Tacheba - Member	17,640	17,640
Ms. Bogadi Mathangwane- Member	7,560	7,560
	136,080	**136,080**

2018

	Sitting allowances	Total
Prof.Elisha M.Shemang - Acting chairperson of the board	22,680	22,680
Mr.John L.Farr - (Resigned)	18,900	18,900
Mr.Ogone M.Gaboutloeloe - Board Member	35,280	35,280
Ms.Tebogo Mmoshe -Member	18,900	18,900
Ms.Ontlametse Mokopakgosi -Member	16,380	16,380
Dr.Sebusi Odisitse - Member	16,380	16,380
Dr.Budzanani Tacheba - Member	23,100	23,100
	151,620	**151,620**

Figures in Pula	Note(s)	Amortised Cost	Total	Fair Value
18. Financial instruments and risk management				
Categories of financial instruments				
Categories of financial assets				
2019				
Trade and other receivables	4	1,000,181	1,000,181	1,000,181
Cash and cash equivalents	5	7,847,958	7,847,958	7,847,958
		8,848,139	**8,848,139**	**8,848,139**
2018				
Trade and other receivables	4	454,695	454,695	454,695
Cash and cash equivalents	5	6,547,431	6,547,431	-
		7,002,126	**7,002,126**	**454,695**

Figures in Pula	Note(s)	Amortised Cost	Total	Fair Value
18. Financial instruments and risk management				
Categories of financial instruments				
Categories of financial assets				
2019				
Trade and other receivables	4	1,000,181	1,000,181	1,000,181
Cash and cash equivalents	5	7,847,958	7,847,958	7,847,958
		8,848,139	**8,848,139**	**8,848,139**
2018				
Trade and other receivables	4	454,695	454,695	454,695
Cash and cash equivalents	5	6,547,431	6,547,431	-
		7,002,126	**7,002,126**	**454,695**
Categories of financial liabilities				
2019				
Trade and other receivables	7	7,768,814	7,768,814	-
2018				
Trade and other receivables	7	3,974,909	3,974,909	-

Capitla risk management

The institutes's objectives when managing capital are to safeguard the institutes's ability to continue as a going concern in order to provide returns for stakeholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The Institute is funded by the Government.Consistent with this objective, the Institute does not monitor capital on the basis of the gearing ratio.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Notes to the Annual Financial Statements

Financial risk management

Overview

The institutes's objectived when managing capital are to safeguard the institutes's ability to continue as a going concern in order to provide returns for stakeholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The institute is funded by the Government. Consistent with this objective, the Institute does not monitor capital on the basis of the gearing ratio.

Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash, the availability of funding through an adequate amount of committed credit facilities.

Interest rate risk

As the institute has no significant interest-bearing assets, the institute's income and operating cash flows are substantially independent of changes in market interest rates.

19. New Standards and Interpretations

19.1 Standards and interpretations effective and adopted in the current year

In the current year, the company has adopted the following standards and interpretations that are effective for the current financial year and that are relevant to its operations:

Standard/ Interpretation:	Effective date: Years beginning on or after	Expected impact:
• IFRS 9 Financial Instruments	1 January, 2018	The impact of the standard is not material.
• IFRS 15 Revenue from Contracts with Customers	1 January, 2018	The impact of the standard is not material.
• Amendments to IFRS 15: Clarifications to IFRS 15 Revenue from Contracts with Customers	1 January, 2018	The impact of the standard is not material.

19.2 Standards and interpretations not yet effective

The institue has chosen not to early adopt the following standards and interpretations, which have been published and are mandatory for the Institute's accounting periods beginning on or after 1 April, 2019 or later periods:

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Annual Financial Statements for the year ended 31 March, 2019

Notes to the Annual Financial Statements

Standard/ Interpretation:	Effective date: Years beginning on or after	Expected impact:
• Amendments to IAS 12 Income Taxes: Annual Improvements to IFRS 2015 - 2017 cycle	1 January, 2019	Unlikely there will be a material impact.
• IFRS 16 Leases	1 January, 2019	Unlikely there will be a material impact.

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Detailed Income Statements

Figures in Pula	Note(s)	2019	2018
Revenue			
Government grants		62,174,080	29,803,811
Other operating income			
Amortisation of capital grant		7,320,719	6,892,279
Deferred income utilsed		207,560	12,377,821
Limestone Investigation- Other income		134,045	-
Limestone Investigation- Clinker project income		337,443	-
Other income		1,592,747	148,074
Rental income		1,172,551	536,250
	10	**10,765,065**	**19,954,424**
Other operating gains (losses)			
Gains on disposal of assets or settlement of liabilities		40,499	-
Other operating expenses			
Administration expenses		582,179	576,415
Advertising and Marketing		1,792,178	1,147,304
Auditors remuneration - external auditors	12	191,218	-
Bank charges		34,993	28,030
Board expenses		403,482	465,474
Cleaning		721,653	372,689
Computer expenses		222,710	996,774
Consulting and professional fees		413,274	1,465,970
Consumables- Lab services		764,117	-
Consumables- other		710,508	996,774
Cooperate & Stratergy		182,593	403,898
Data management expenses		1,722,171	1,086,290
Depreciation		7,320,718	6,892,279
Drilling services		3,470	92,915
Employee Costs		42,310,928	26,319,973
General expenses		688,729	-
Insurance		888,008	372,074
Laboratory expenses		371,539	368,933
Limestone Investigation- Clinker project expenses		337,443	-
Limestone Investigation- Other expenses		134,045	-
Motor vehicle expenses		1,830,100	1,238,265
Postage		208,791	116,531
Protective clothing		210,947	864,654
Repairs and maintenance		1,707,957	935,663
Research and development costs		1,037,524	-
Security		1,057,482	852,894
Staff development and training expenses		1,232,142	377,749
Staff welfare		6,475	199,715
Subscriptions		60,596	55,314
Travel - external		1,172,423	591,747
Travel - local		869,034	621,693
Utilities		3,036,014	1,572,562

BOTSWANA GEOSCIENCE INSTITUTE

Annual Financial Statements for the year ended 31 March, 2019

Detailed Income Statement

Figures in Pula	Note(s)	2019	2018
		72,939,148	49,043,163
Operating profit	**12**	**40,496**	**715,072**
Investment income	13	2,257	28,986
Surplus for the year		**42,753**	**744,058**

The supplementary information presented does not form part of the annual financial statements and is unaudited

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Botswana
Geoscience
Institute
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Botswana Geoscience Institute

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