IGSL
Founded 2009
Incorporated 2014

INSTITUTE OF GEOLOGY, SRI LANKA

NEWSLETTER

IGSL is the professional body of the geologists in Sri Lanka

IGSL has been enacted by the parliament Act NO. 3 of 2014 to regulate, maintain and uphold the professional and ethical principles and standards in all matters connected with the practice of Geology

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ANNOUNCEMENT

Professional Geologists of the Institute of Geology, Sri Lanka – Gazette notification of the Government of Sri Lanka

The contribution of professional geologists in various types of technical activities, such as landslide investigation and mitigation, early warning and mitigation, geological mapping, tunneling, mineral exploration and utilization, groundwater exploration and exploitation, hydropower generation, irrigation and other development projects, etc., has been vital for national development of Sri Lanka in many sectors. Moreover, the service of the geological profession has… (***Cont. to Page 22***).

This issue of the Newsletter was edited and compiled by Geol. Tilak Hewawasam

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President's Message

It is my pleasure and utmost privilege to send this message to the second volume of the newsletter published by the Institute of Geology, Sri Lanka (IGSL). After the establishment of the Institute of Geology for the betterment of the geological community, publishing of its activities through a Newsletter continues to strengthen the bond of each member to the Institute. The newsletter also provides a platform for the members to share their knowledge and information.

Publication of this newsletter fulfills one scope of the Institute to make our members aware of the activities in the field of geology and share the information of Sri Lankan geologists and the activities they are involved in for the betterment of the life of the general public and fellow geologists.

During the past two years we have been facing a global pandemic situation due to Covid 19 which caused a drawback in all sectors where many planned activities were held up and could not continue as scheduled. Amidst such situation, publishing of this newsletter will help our members and other interested community to realize the importance of staying together towards achieving our objectives.

As the President of the IGSL, I am very much happy and glad to see the release of this newsletter to the members of the IGSL as well as to the interested community. I also take this opportunity to express my sincere gratitude to the Editors and the other Council Members of the IGSL and all contributors to this volume for their unwavering efforts to make the Newsletter a success.

Geol. R. M. S. Bandara
President, Institute of Geology, Sri Lanka

A Brief History of the IGSL

1997	**The Executive Committee of the Geological Society of Sri Lanka (GSSL) initiated the concept of establishing a professional institute for Sri Lankan geologists**
2009	**The IGSL was founded by the GSSL**
2014	**The IGSL was enacted through a Parliamentary Act**
2015	**Launching of the IGSL website**
2015	**Formally approving the IGSL logo**
2016	**Regulations/rules of the IGSL were gazetted**
2016	**Twenty-two Sri Lankan geologists were conferred the title 'Founder Charted Geologist' by the IGSL**
2017	**Instrumentation of the CPD programmes to train Sri Lankan Geologists**
2018	**Awarding the first Honorary Membership of the IGSL**
2019	**Publishing of the first IGSL Newsletter**
2020	**The list of qualified professional geologists was published in the national newspapers by the IGSL for the first time**
2021	**Rules/regulations of the IGSL were amended and gazetted for the first time**
2021	**The list of qualified professional geologists was gazetted by the IGSL for the second time**

Activities Conducted under the third Council of the IGSL

During 2017-2020 term of office, the IGSL held 15 Council meetings in both Colombo and Kandy to deal with management and operational procedures of the institute. The Council held three Annual General Meetings (AGM) and Membership Award Ceremonies. The 06th AGM and Award Ceremony took place on April 27, 2018 at the Golden Rose, Boralesgamuwa with the participation of Eng. N. Rupasinghe, Secretary of the Ministry of Megapolis and Western Development, as the Chief Guest for the occasion. The Council awarded its first Honorary membership to Eng. Rupashinge at this ceremony. Archt. Thilina Kiringoda gave the keynote address on the topic "Role of a Chartered Professional". The 07th AGM and Award Ceremony took place on June 07th, 2019 at the Golden Rose, Boralesgamuwa and Prof. L.R.K. Perera, the incumbent Chairman of the AEPC Committee, gave a special presentation on ethical practices of a geologist. The 08th AGM and Membership Award Ceremony took place on July 24th, 2020 at the Golden Rose, Boralesgamuwa. The 08th AGM was held following the health regulations imposed for prevailing COVID-19 situation.

During this tenure, the Council members worked tirelessly, establishing sound management procedures and adopting best practices for the Institute's growth. The tasks include creating a personal filing system for each member of the institute, maintaining and updating the IGSL membership register and website, publishing its first newsletter, streamlining the membership application process with informative and user-friendly documents, initiating the preparation of a strategic management plan (corporate plan) for the institute by developing a draft version and organizing a seeding workshop and publishing the IGSL list of qualified professional geologists for the year 2020/2021 registered in the Institute of Geology Sri Lanka. In addition, all annual financial statements of the institute were audited by the auditor's office up to December 31st, 2018 and produced at the AGMs for the scrutiny of the members clearing a backlog of six years. Membership was increased to 176 members, including 01 honorary member, 101 members, 53 associate members and 21 licentiates. By the end of 2019, the institute had 26 chartered geologists. The Council also managed to include continuous professional development (CPD) programs on the institute's annual agenda and conducted six CPD workshops. The Council changed rules and schedules for the smooth functioning of the institute through the approval of general membership. The Council also managed to increase the institute's total deposits to 2.5 million rupees.

The 2017-2020 Council members were as follows: President IGSL – Geol. K.M. Premathilake, Vice President – Geol. R.M.S. Bandara, General Secretary – Geol. (Prof.) Nalin Rathnayake, Treasurer – Geol. (Dr.) A.M.K.B. Abeysinghe, Editor Geol. Ajith Prema, Chairman of the Admissions and Ethical Practices Committee – Prof. L.R.K. Perera, Chairman of the Education Committee – Geol. (Prof.) Tilak Hewawasam, Past President – Dr. N.P. Wijayananda. Council Member – Mr. U.S. Goonasekara, Council Member – Mr. S.K. Jayawardana, Council Member – Geol. K.N. Bandara, Secretary of the Admission and Ethical Practices Committee – Dr. Ranjith Premasiri and Secretary of the Education Committee – Mr. D.L.C. Pushpakumara.

Geol. Nalin Rathnayake, General Secretary
03rd Council of the IGSL, Sri Lanka

NIMAL SRIPAL RANASINGHE (1939-2021) - AN APPRECIATION

Mr. Nimal Sripal Ranasinghe was born in Jaffna in 1939 when his father was employed in the northern city. However, his schooling from the early days till Higher School Certificate was at Wesley College, Colombo. Young Nimal Ranasinghe applied for a position at the Department of Mineralogy (later became the Geological Survey Department (GSD)) soon after his university entrance examination. His application was successful and he joined the Department of Mineralogy as a Laboratory Assistant, and received training in analysis of rocks and minerals. Since the early days at work, he developed a great interest in studying rocks and minerals which persuaded him to attend evening classes in geology at both Maradana- and Katubedda Technical Colleges.

Mr. Nimal Ranasinghe sat the London Advanced Level examination and was selected as an Assistant Geologist in Training at GSD in late 1960s. After a short training in geological mapping, he won a Colombo Plan Scholarship to follow a B.Sc. (Hons.) degree program in Geology at University of Queensland, Australia (1971-1975). He was appointed as a geologist upon returning after completion of the B.Sc. Mr. Ranasinghe was later sent to Imperial College, London for his postgraduate studies, and there he earned M.Sc. in application of aerial photography and remote sensing techniques.

Mr. Ranasinghe made significant contributions to the unraveling of complex geology and mineral occurrences in the Island. Among his major contributions were the joint mapping of the Geological sheet of Colombo, detailed exploration of three new mineral sand deposits between Nilaweli and Mullaitivu and exploration work at Seruwila Fe-Cu deposit. He diligently carried out the work assigned to him. Towards the latter part of his career, he held the positions of Deputy Director, Acting Director, and in 1990 he was appointed as the Director, Geological Survey Department. Undoubtedly, the period between 1991 and 1993 was a stressful time for him when the Government decided to transform the GSD to the Geological Survey and Mines Bureau (GSMB) under the Mines and Minerals Act of 1992. Mr. Ranasinghe made a remarkable contribution for smooth transformation of the GSD to its successor (GSMB). He also served as Additional Director and a member of the Board of Management of the newly established GSMB. Together with the Director, Mr. Ranasinghe diligently handled two extremely beneficial British and Australian Technical Assistance programmes which enabled publishing of geological maps and training of a large number of officers in both geology and mining fields.

Mr. Nimal Ranasinghe has contributed immensely to the geoscience community of Sri Lanka over the last several decades. He was one of the founder members of the Ananda Coomaraswamy Geological Club (ACGC), which was the first informal professional group of Sri Lankan geoscientists. He was one the founder members of the Geological Society of Sri Lanka (GSSL) and the Institute of Geology, Sri Lanka (IGSL), and was a member of the IGSL Council at the time of his demise. He was the 14th President of the GSSL and a recipient of the prestigious Ananda Coomaraswamy Medal. He also served as the first Chairman of the Admissions and Ethical Practices Committee of the IGSL.

Mr. Nimal Sripal Ranasinghe peacefully passed away on 29th January 2021 after a brief spell of illness. With his demise the geological community of Sri Lanka lost a senior geoscientist, a mentor, a moderator and a good friend. May his soul attain eternal rest of Nirwana!

N.P. Wijayananda, Dulip Jayawardena and Bernard Prame
Former Directors/Director Generals of Geological Survey Department (GSD)/ Geological Survey and Mines Bureau (GSMB), Sri Lanka

Ethics in Geosciences and Practices

Every profession has its ethics. One has to show a professional conduct following norms acceptable to all. Thus, to maintain the dignity of the profession and to avoid misconduct by its members, every professional organization has a code of conduct. The Institute of Geology, Sri Lanka (IGSL) also has its code of conduct which is given as two annexures to the Schedule D. Annex A – Codes of conduct, Annex B – Codes of publishing ethics. The Admissions and Ethical Practices Committee (AEPC) will investigate any reported misconduct by the members of the IGSL. Thankfully, none of our members have misbehaved to date or breached the Code of conduct of the institution for the AEPC to get involved in any kind of investigation. As members of the IGSL one has to be fully aware about the Codes of Conduct of the institution and follow them. Secondly, it is also the responsibility of the members, as persons practicing geology in the field and in the laboratory, to suggest revisions to the codes as appropriate where necessary. Such necessity for revisions naturally arises from any mis-behaviour or a true example of misconduct by a fellow member or colleague whom sometimes may not be a member of the IGSL. In the revisions to codes, one can also learn from the other professional organizations and adopt their good practices that are directly relevant to us. Any suggested revisions should be addressed to the Chairman/AEPC for necessary action. If the AEPC accepts the suggestions it will recommend to the IGSL Council for approval and finally to the AGM.

As members of a professional institution geoscientists have to conduct themselves in a truly professional manner through demonstrable scientific approaches to geological problems to win public trust and confidence, and they should be talented to effectively communicate their findings and recommendations to the community. This demands excellent personal and professional qualities and behavior (Boland and Mogk, 2018). Geoscientists work at the human-earth system interface where the community on the one hand benefits from exploitation of earth resources and on the other suffers from natural and man-made geological disasters. Thus, this interface brings huge interaction between geology and the community where geoscientists become involved in many ethical issues and dilemmas. On the other hand, since geology is not an exact science and geology of every location is unique, geoscientists have to work with uncertain, ambiguous, and incomplete information on a dynamic planet where complex and heterogeneous geological forces of unknown magnitude are operating. Thus, geoscientists have to prepare themselves for emerging ethical issues, ethical decision making, and respond, mitigate and prevent ethical issues. To enable these, geoscientists need a Code of Conduct to ensure an ethical behavior of a true professional.

Honesty in all activities is the prime factor that guides a true professional. From the point of making observations, gathering data, and knowing the limitations and possible errors of the observations and data collected, and reporting and acknowledging similar work of others, a true professional will not falsify, fabricate, mislead or omit any facts, plagiarize others work, and acknowledge the contributions of others involved in any study by placing their authorships as appropriate. A true professional is aware that the interpretations are subject to change as the data and knowledge base and the facts and observations evolve. He or she will respect and listen to others views irrespective of whether it is a close colleague, an employee of the work place, a student or a member of the general public. He or she may not disclose sensitive information unless it is a threat to public safety and welfare, and will use technical skills and knowledge to protect public health, safety, and welfare. Where real or perceived conflicts of interest arise a true professional will disclose those and act appropriately. Throughout his activities the geoscientist will show legal compliance and take a humane approach. Through such true professional behavior, a geoscientist will demonstrate his personal integrity, responsibility, accountability and will earn public trust and confidence and will aid in the continuous professional development and growth of own colleagues and all geoscientists in general (Boland and Mogk, 2018)

Disclaimer: The ideas presented in this short document are not totally the authors own. The author has tried to summarize some useful points in a few selected chapters, particularly, chapter 4 of Boland and Mogk, (2018) in the reference given below. Further, it is recommended for members to read the following reference for more details.

Reference: Gundersen, L. C. (Editor) (2018). Scientific Integrity and Ethics in the Geosciences. American Geophysical Union. Special Publication, 73, John Wiley and Sons, 327 pp.

L.R.K. Perera, Chairman, Admissions and Ethical Practices Committee
04th Council of the IGSL, Sri Lanka

Engineering Geology and Role of Engineering Geologist

What is Engineering Geology?

Engineering Geology is the application of geology into engineering studies in order to ensure that the geological factors related to the location, design, construction, operation and maintenance of engineering works, are recognized and taken into account. Engineering Geology provides geological and geotechnical recommendations, analysis and designs related to, social development and different types of structures.


Engineering geological mapping

Geological engineering studies are performed during the phases of planning, environmental impact analysis, civil or structural engineering design, value engineering and construction of public and private works


Boring investigation

projects, post – construction and forensic studies of projects, geological hazard assessments, geotechnical, selection of construction materials, stabilization of landslides and slopes, earth erosion, flooding, dewatering, and seismic investigations, etc.

Geological engineering studies are conducted by an engineering geologist who is educated, trained and has experience in recognizing and interpreting natural processes; Understanding how these processes affect human – made structures (and vice versa) and knowledge of ways to mitigate hazards caused by adverse natural or human – made conditions.

The practice of Engineering Geology is very closely linked to the practice of geological engineering and geotechnical engineering.

The Importance of Engineering Geology

The construction of civil or mining engineering projects requires knowledge of the engineering geological conditions and related geotechnical parameters of the sub surface of the area concerned. The Geology and Engineering Geology of an area dictates the location and nature of each of the structures such as Dams, Tunnels, Powerhouses & farms (hydro / wind / solar / tidal / wave / nuclear etc.), Channels, Canals, Buildings, Roads & Railways, Bridges, Ports & Airports, Slopes, Solar & Wind Power Farms, Pipe lines etc. The engineering geology concerns the causes of failure of the structures and possible preventive measures, which will be discussed in feasibility study, detail study, analyses and design stages.

The design process of any project should be adequately supported by the outcome of engineering geological studies. Also Engineering Geology helps to site selection, to ensure a stable and cost-effective model for construction, planning, design, finding of construction material and construction.

Who is an Engineering Geologist?

An engineering geologist is a person sufficiently educated, adequately trained and professionally qualified in the discipline of engineering geology and in related disciplines of geotechnical engineering, which are required to carry out engineering geological assessments.


Mackintosh test

Role of Engineering Geologist

One of the most important role, among many others, of the Engineering Geologist is the interpretation of landforms and earth processes under different stress conditions, to identify potential geologic and related manmade hazards that may impact civil structures and human development, enhancing the quality of developments while minimizing the cost of the developments and mitigation measures.

An Engineering Geologist will use detailed geological and geotechnical analyses of natural and artificial subsurface conditions, as well as the risk assessment of geological hazards, to determine the suitability of a site for development and to determine the suitable geotechnical measures to be adopted to make a site will be suitable or free of danger. He will deal with geological factors and geotechnical parameters and behaviors of the subsurface material influenced by the human and natural activities and may work as an adviser to private and public bodies, who would be responsible for the concerned designs of development and mitigation activities.

He should be capable and conversant with:

1. Collection of available engineering geological and geotechnical engineering data regarding the project sites.
2. Planning and designing and supervision including management and administration of geotechnical investigations in order to collect necessary and adequate data.
3. Analyzing of collected data, interpretation of results of the analyses and producing quality reports.
4. Oversee the activities during the execution phase of the concerned project in order to ensure that his recommendations are accurately implemented.


Lugeon test

In addition to the above, an engineering geologist should get his knowledge and status enhanced by participating into professional development programs, while contributing his own community with dissemination of knowledge he has gathered through his carrier. Further it is his prime responsibility to take whatever the necessary and acceptable actions in order to upgrade the status of his fellow Engineering Geologists.

Susiri K. Jayawardana
Consultant Engineering Geologist / Geotechnical Engineer, Sri Lanka

Evaluation of Stability Condition of Kadugannawa Road Tunnel and Repairing by the CECB

The Engineering Geological Section of Central Engineering Consultancy Bureau (CECB) conducted an investigation and rectification for the Kadugannawa tunnel on the request of the Road Development Authority (RDA). This tunnel had been constructed during the period of 1828-1830 under the British Rule by Engineer William Dawson. The location at the tunnel can be considered as a landmark and the gateway into the hill country of Sri Lanka. To the best of our knowledge, no repair has been done to the tunnel after the construction though it is still being used for one way-traffic, allowing only light vehicles.


View of the tunnel during British colonial period

A comprehensive field survey was carried out to identify the actual geological condition of the tunnel with special emphasis on engineering aspects. The rock blocks associated with the tunnel are surrounded by roads and stand as an isolated hillock. Bedrock exposures of Hornblend Biotite Gneisses can be seen on the upper road cut. To our observations, tunnelled rock blocks and the associated rock blocks are detached boulders from the upper slope parent rock as evidenced by foliation planes directed at different directions. Engineering geological problems identified by our study are illustrated in the photographs. These studies lead us to make recommendations and then to employ mitigation measures for stabilization and rectification of the tunnel as illustrated in the photographs.

Geological Issues Identified

Remedial Measures Adopted


Removal destabilized portion of the tunnel supports


Stabilization of rock block by column


Attaching of rock blocks by anchoring and sealing of open joint by grouting


Construction of supports for the tunnel block


Construction of supports for the tunnel block


Demolishing of existing wall


Construction of stone wall to the ancient look


Construction of down slope wall with anchors


Finished wall inside the tunnel


Construction of cascade drains


Lower slope side retaining wall construction


Finished wall to ancient look


Condition before repairing


Condition after repairing


Team work of engineering geologists and staff

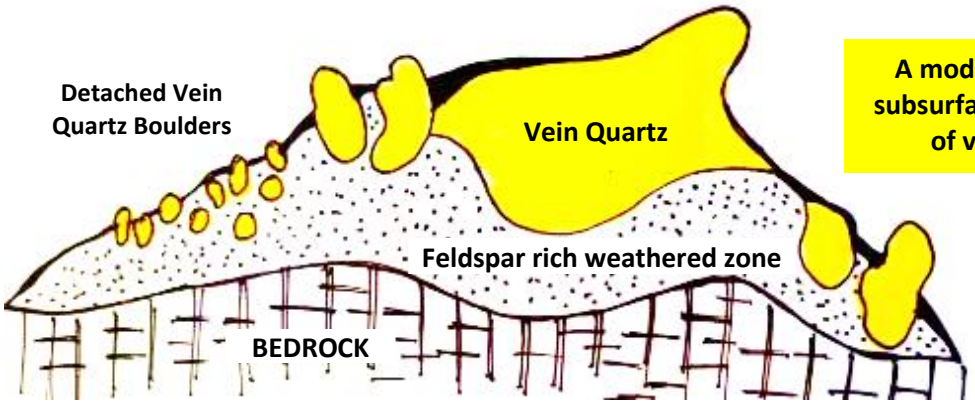
D.L.C. Pushpakumara
Central Engineering Consultancy Bureau (CECB), Sri Lanka

Vein Quartz Investigation of Sri Lanka by the GSMB


A vein quartz outcrop

Vein quartz, simple chemistry with Si and O atoms arranged in tetrahedral framework, possesses unique physical characteristics that can be utilized as raw material for a wide range of products. Since last few decades high-purity vein quartz (HPQ) become the exceedingly focused mineral type with the revolution of Information Technology (IT) where key utilities basically run on micro-chips and fiber optics; both being products of HPQ. The importance of HPQ has been further heightening, as the world is heading towards green-energy with major contributor as the solar power, which the cells are composed of HPQ. The competitive edge of Sri Lankan vein quartz is its ultrahigh intrinsic quality that is suitable for almost all high-end products.

The Geological Survey and Mines Bureau has been engaged in the quantification of vein quartz occurrences since last 20 years. These continuous studies at major vein quartz occurrences, particularly along the Highland / Vijayan boundary, reflect unique characters in contrary to the conventional thinking. Instead of vein-like extensions, these studied deposits have a limited thickness with lens-like formations. This unique character of vein quartz occurrences simply misguides the reserve estimations, based only on the surface exposures.

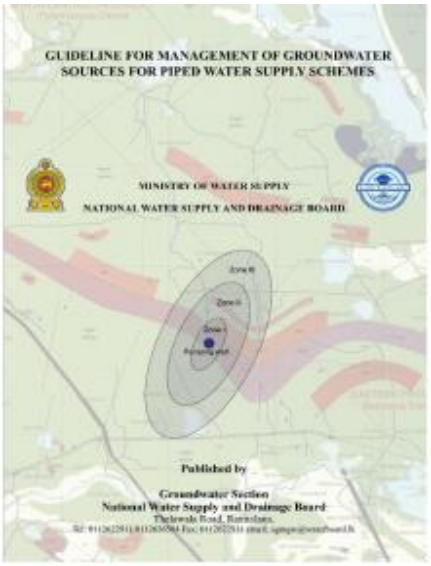


A model illustrating subsurface distribution of vein quartz

Geophysical techniques such as resistivity measurements coupled with drill-holes provide a feasible framework to characterize subsurface extension of vein quartz, avoiding exaggerated reserve estimates based on surface observations with vein-like approach. This model is synthesized via knowledge gathered from vein quartz occurrences at Mahagama, Kotikambokke and Ilukpalessa, along the Highland / Vijayan boundary. However, this model may require further modifications accommodating vein quartz occurrences in Highland Complex, as limited experience reveal more vein-like character for vein quartz in Highland complex compared to the vein quartz occurrence along the Highland / Vijayan boundary.

Nalin De Silva
Geological Survey and Mines Bureau (GSMB), Sri Lanka

"Guideline for Management of Groundwater Sources for Piped Water Supply Schemes" - A Manual Published by the NWS&DB



Groundwater is used for about 4000 rural and semi urban piped water supply schemes within different aquifer systems and also in different climatic zones of the country. It is identified that most of the Pipe Water Supply Schemes (PWSS) are facing issues related to gradual deterioration of water quality and reduction of the pumping capacity of the groundwater sources, several years after commissioning. Both scenarios are contributing to the decrease of life span of the wells and are directly related to both natural and man-made activities.

The average lifetime of most groundwater intakes of the country is about 10-15 years which is very short compared to that of the developed countries which is about 40 years. As per the recent NWS&DB study, the relationship between conditions of pumping well and well life span and controlling factors in hard rock terrain are given below.

Well condition	Average life span (years)	Maintenance condition
Pumping rate is less than the recommended rate with good water quality.	25	Frequency of maintenance is naturally low.
Pumping rate is less than the recommended rate with high iron concentration.	15	Frequent well development is needed to increase the well life.
Pumping rate is more than the recommended rate with good water quality.	20	Controlling the rate is needed to increase the well life.
Pumping rate is more than the recommended rate with high iron concentration.	10	Frequent well development and controlling the rate is needed to increase the well life.
Over pumping wells.	8	Life time of some wells is less than 5 years. Replacement well is needed.

The contributing factors for the depreciation of groundwater source should be carefully assessed to identify the actual condition of that particular source. The annual rainfall variations and its effects are categorized with respect to the change and effect to the natural recharging process. This, together with the groundwater extraction is used to assess the condition of the aquifer and the need for artificial recharge. Lack of proper well design and operational practices is a major cause for the deterioration of well performance. Therefore, it is important to monitor the specific capacity of an intake in order to identify its trends and take precautionary actions.

Groundwater quality deterioration is caused either from the changes in groundwater environment or due to the contamination of the sources. The former includes factors such as over extraction, decreasing recharge, climatic

change effects, and surface and sub-surface physical and chemical changes. Changes in the chemical environment are hard to prevent but well maintenance, management of groundwater storage and management of groundwater withdrawal can avoid adverse groundwater quality deterioration. Contaminated sources causing groundwater pollution should be managed through a good network of monitoring and quick precautionary actions, mainly achieved by the implementation of a Well Head Protection Areas (WHPA). A stepwise process is introduced for the identification of potential hazards, assessing and prioritizing the risks, identification of existing control measures and assessing their effectiveness, ultimately allowing the selection of the most effective countermeasures through Water Safety and Security Plans (WSSP).

The identification of groundwater problems, assessment and preparation of mitigation strategies are essentials for an effective groundwater management system and for the preparation and implementation of Water Safety and Security Plans (WSSP) and Well Head Protection Areas (WHPA) which includes groundwater sources and intakes of PWSS. However, literature related to groundwater issues and practices for overcoming issues relevant to country situations are limited. Therefore, this document “Guideline for Management of Groundwater Sources for Piped Water Supply Schemes” will be very useful for all the authorities, governing bodies and management entities, entire Operation & Maintenance staff of NWS&DB, Water Community Based Organization (CBO), groundwater professionals, groundwater users on how to utilize this invaluable groundwater resource in a sustainable manner for the current population and future generations.

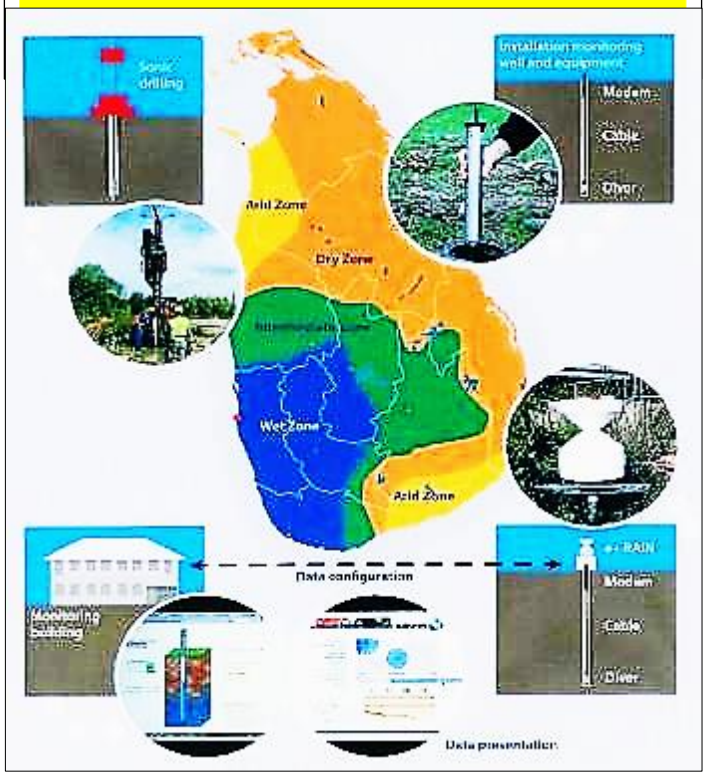
Geol. K.M Prematilaka
National Water Supply and Drainage Board (NWS&DB), Sri Lanka

Establishment of Real-time Groundwater Monitoring Network - Pilot Project for Malwathu Oya, Maduru Oya and Kumbukkan Oya River Basins by the Water Resources Board

Groundwater is the only water source in some part of the country specially Jaffna Peninsula of Northern region, Kalpitiya, Puttalam and certain areas of Mannar and Vavuniya Districts. All other areas of the country are dependent on groundwater at different levels as conjunctive use with surface water sources. Therefore, groundwater resources play an inevitable role in the country’s water requirement towards the well-being and socio-economic development. However, the present status on the groundwater resources under these external stresses has not yet been systematically assessed. This is facing off to a level where the resources cannot be further utilized soon if not assessed and monitored to regulate through a sustained management.

Considering this situation, the baseline information of the present situation and long-term monitoring of these resources are essentially required for planning and protection while use of these resources at optimum level through effective groundwater monitoring and management systems. In this context, the Water Resources Board was started a pilot project with the support of the Government of Netherlands in year 2018 to establish a real-time groundwater monitoring networks in selected river basins (Malwathu Oya, Maduru Oya and Kumbukkan Oya river basins, Jaffna Peninsula & Puttalam groundwater basins) focusing to expand into the other basins as well covering the entire country in the long run.

The automated logger system transmission of information on groundwater resources to the centralized data center



Monitoring well construction and final well assemblage equipped with real-time logger system installed at Kahatagadigiliya

The Project was aimed to establish of 150 real-time monitoring locations and 20 rainfall stations. The selection of monitoring locations was based on the hydrogeological condition, vulnerable areas where quality deterioration and groundwater depletion had occurred due to anthropogenic activities.

A Centralized Data management centre is established where the data retrieval, processing, analysis and interpretations are carried out. The major outcome of this project is to forecast groundwater related issues and remediation strategies while use the finally developing models as an application tool to implement management Plans (control, protection, development i.e. Regulations on GWR at river basin levels).

In addition, the heavy metal concentration in groundwater is periodically assessed to understand the changes of contamination with time in the three basins. The main objective is to implement it as an initiative step towards the establishment of National Groundwater Monitoring Network for Sri Lanka to collect more comprehensive and accurate real time data on (a) Groundwater Level (b) Water Quality.

The main beneficiaries from the outcome of this project are the groundwater dependent major and minor rural water schemes, domestic users, commercial entrepreneurs where groundwater being utilized as a raw commercial material, agriculture, industrial, mining, healthcare and forestry or natural eco system.

Ruwan Rajapaksha
Water Resources Board (WRB), Sri Lanka

Sri Lankan Plumbago – a Promising Avenue for Foreign Investment

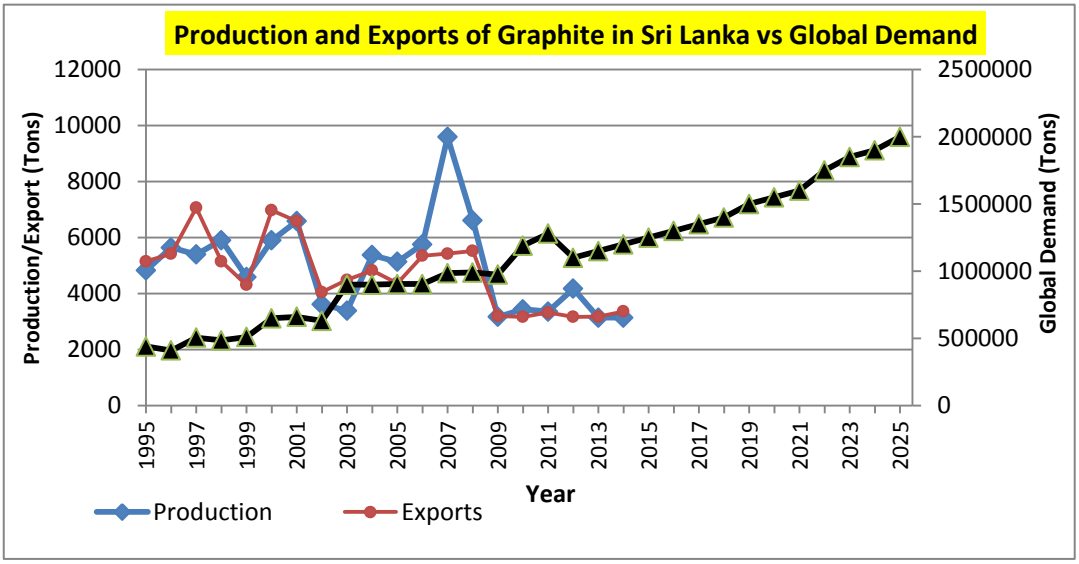
The Sri Lankan graphite industry has a very long history which dates back to 1824. Presently only few mines are being operated; Bogala, Kahatagha and Ragedara and the recently established Karasanagala mine. These mines produce world's finest natural vein graphite known as Plumbago comprising over 99% carbon content. Historical information and literature reveal that before World War II, there had been over 2,500 graphite pits and mines located in the South West and Central Highlands in Sri Lanka and the evaluation of the Graphite Industry in Sri Lanka can be performed by categorizing it into several phases as (i) The fledgling phase (1850s to 1870) (ii) The

prosperity and maturity phase (1870 to 1917) (iii) The decline and selective phase (1917 to 1973) and (iv) the industry operated as surviving phase (1973 to date).

High Purity Vein Graphite from Sri Lanka

High purity vein graphite occurrences fall within the high grade metamorphic terrain dominated by granulite facies rocks. The origin of vein graphite has been interpreted as solid phase lateral secretion origin, derived by hydrothermal solutions or of biogenic origin. CO_2 rich fluid could promote hydraulic fracturing and precipitation of vein graphite. Textures and structures of the vein graphite indicate syntectonic deposition by a crack-seal process under granulite facies metamorphic conditions or which took place in the latter part of the peak metamorphism.

Graphite production and exports from 1995 up to now do not show significant growth though the global demand for vein graphite has increased dramatically. Sri Lankan graphite industry is totally not in concurrence with the global trends though there exists a very high potential to develop the industry. As the only country to export commercial quantities of Vein graphite, Sri Lanka recognises the mineral's value in creating significant foreign investment from both local and foreign private sectors. Thus, a strategic focus encouraging a conducive environment, investment promotion, research and innovation are needed to uphold the Sri Lankan plumbago industry.

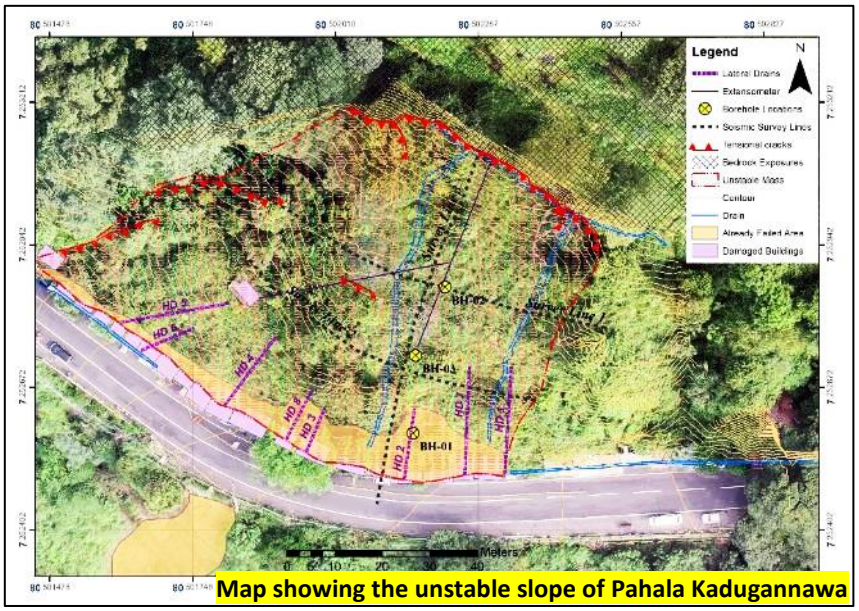


Sri Lankan Graphite production and global demand
(Sources Mineral year book GSMB, USGS)

Geol. Ranjith Premasiri
University of Moratuwa, Sri Lanka

Geological Investigation on Kadugannawa Landslide by the NBRO

Due to the heavy rain received on 09/11/2021, a significant volume of talus debris accumulated on the Kadugannawa escarpment has slipped damaging a stretch of fruit stalls situated at the roadside. This disaster led to an entire cease of the traffic on the Kandy – Colombo main road at the 97th kilometre post for two weeks. Immediately, the NBRO carried out a rapid investigation on underground geological setting and employed a mitigation measure to lower the water pressure trapped in the unstable mass by installing eight long horizontal drainages. As a result of this immediate slope rectification measure, the NBRO was able to solve these geological related issues in order to secure the public safety and provide recommendation to open the road for traffic. In addition, NBRO also conducted a seismic retention survey, detailed geotechnical investigation and a final engineering design for permanent mitigation solution.



Map showing the unstable slope of Pahala Kadugannawa

Installation of horizontal drains

Discharge measurements from horizontal long drains during rapid mitigation measures before reopening the road:

HD No	Discharge (l/min) 16/11/2021	Discharge (l/min) 18/11/2021	Discharge (l/min) 19/11/2021	Discharge (l/min) 22/11/2021
1	11.25	4.30	3.00	0.40
2	5.30	4.00	3.75	3.06
3	1.10	0.70	0.40	0.05
4	1.50	0.50		
5	7.50	5.40	4.45	2.55
6	10.00	6.55	6.00	3.85
7	36.00	13.00	11.10	7.25
8	9.80	5.30	4.60	3.65
Total/Min	82.45	39.75	33.30	20.81
Daily Total	118728	57240	47952	29966

The discharge measurements from the long horizontal drainages revealed that the water volume stored within the unstable mass has deducted drastically proving that underground water pressure has been lowered increasing the factor of safety of unstable mass.

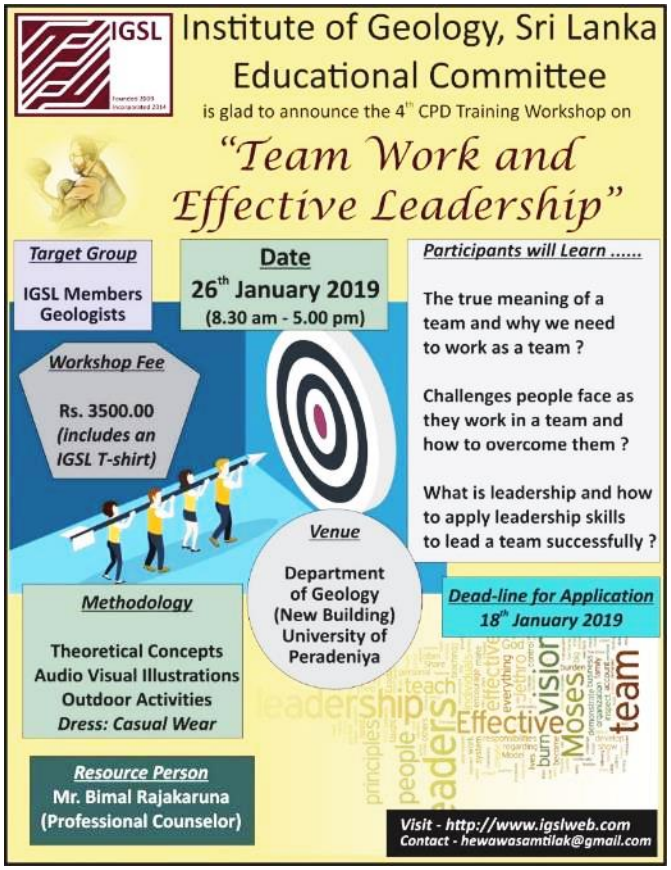
Geol. K.N. Bandara, Geol. R.M.S. Bandara and Ranjan Weerasingha
National Building Research Organization (NBRO), Sri Lanka

Continuing Professional Development Programmes 2020-2021

The Institute of Geology, Sri Lanka is pleased to inform that, the IGSL have successfully completed four CPD programmes from year 2019 to 2021. All programmes were organized by the Educational Committee of the Institute of Geology, Sri Lanka (IGSL). The participants were invited by circulating a flyer among the members of IGSL and the Geological Society of Sri Lanka (GSSL).

04th CPD programme

In February 2019, IGSL successfully presented the 04th CPD course "Team work and effective Leadership" at Department of Geology, University of peradeniya. This CPD Programme is conducted by Mr. Bimal Rajakaruna (Professional Counselor).



05th CPD programme

The IGSL successfully conducted its 05th CPD course "Corporate Plans: Development, Strategies and Implementation" on 07th June 2019 at the Golden Rose Hotel, Boralesgamuwa. Mr. Kithsiri Jayewardene, a Professional Marketer and Trainer, was the resource person.

Opinions from the IGSL members to develop a cooperate plan for the institute was also a part of this training session.

06th CPD programme

The 06th CPD programme of the IGSL on "An Overview of the EIA Process in Sri Lanka" was conducted on 24th July 2020 at the Golden Rose Hotel, Boralesgamuwa. Dr. Sugath Yalegama, Director General of the Sri Lanka Sustainable Development Council, Ms. Nilmini Attanayake, Director of the Environmental Impact Assessment (EIA) of the Central Environmental Authority (CEA), Mr. Jagath Gunawardana, Environment Lawyer and Ms. Kanthi de Silva, Deputy Director General of Environmental Management and

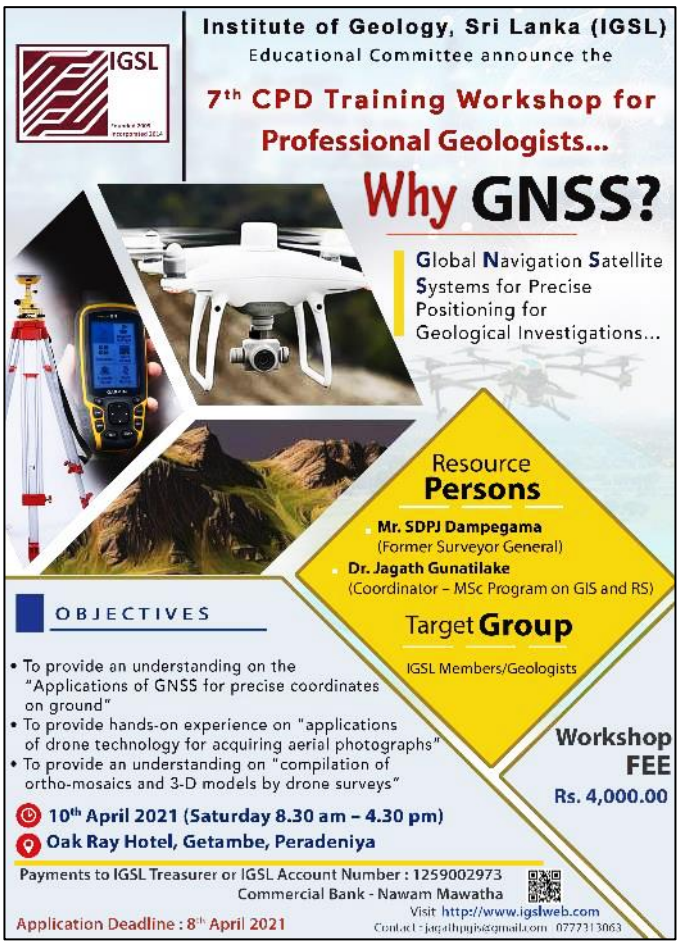
Assessment Division of the CEA were the resource persons. Panel discussion of the workshop was led by Dr. NP Wijayananda, Former Director/Former Chairman of the Geological Survey and Mines Bureau (GSMB). This training programme was well attended by 97 participants.

05th CPD Programme

05th CPD Programme

07th CPD programme

In April 2021, IGSL successfully presented the 07th CPD course "Global Navigation Satellite Systems for Precise Positioning for Geological investigations" at the Oak Ray Regency, Kandy with a practical session at the University of Peradeniya. This CPD Programme was conducted by Mr. S. D. P. J. Dampegama and Dr. Jagath Gunathilaka. The workshop was well attended with 68 participants covering the all disciplines of professionals in geology.



06th CPD Programme

04th CPD Programme

06th CPD Programme

04th CPD Programme

07th CPD Programme

04th CPD Programme

07th CPD Programme

07th CPD Programme

07th CPD Programme

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Growth of the Membership of IGSL

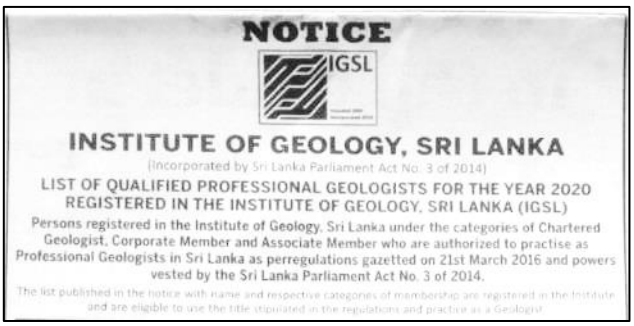
Year	Total Number of Membership				
	Chartered Geologists	Corporate Members	Associate Members	Licentiate Members	Total
2009	-	62	-	-	62
2010	-	62	-	-	62
2011	-	62	-	-	62
2012	-	62	-	-	62
2013	-	62	-	-	62
2014	-	69	17	-	86
2015	-	69	18	-	87
2016	22	69	30	-	99
2017	24	86	50	04	140
2018	25	95	62	11	168
2019	26	98	63	12	173
2020	28	103	77	22	202
2021	28	107	95	28	230

*Geol. Nanda Balasooriya, **General Secretary***
04th Council of the IGSL, Sri Lanka

(*Cont. from Page 01*)

Announcement

…….. been vital for national development of Sri Lanka in many sectors. Moreover, the service of the geological profession has become imperative in resource management, disaster management, and environmental protective measures. To render their services, the members of the IGSL are employed both in government and private sector institutions in Sri Lanka as professional geologists. Therefore, the IGSL has published the list of persons registered in the Institute under the categories of Chartered Geologist, Corporate Member and Associate Member who are authorized to practice as Professional Geologists in Sri Lanka as per regulations gazetted on 21st March 2016 and powers vested by the Sri Lanka Parliament Act No. 3 of 2014.


NOTICE

IGSL

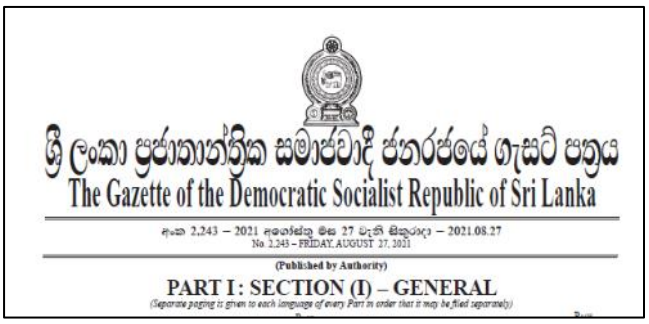
INSTITUTE OF GEOLOGY, SRI LANKA

(Incorporated by Sri Lanka Parliament Act No. 3 of 2014)

LIST OF QUALIFIED PROFESSIONAL GEOLOGISTS FOR THE YEAR 2020
REGISTERED IN THE INSTITUTE OF GEOLOGY, SRI LANKA (IGSL)

Persons registered in the Institute of Geology, Sri Lanka under the categories of Chartered Geologist, Corporate Member and Associate Member who are authorized to practise as Professional Geologists in Sri Lanka as perregulations gazetted on 21st March 2016 and powers vested by the Sri Lanka Parliament Act No. 3 of 2014.

The list published in the notice with name and respective categories of membership are registered in the Institute and are eligible to use the title stipulated in the regulations and practice as a Geologist


ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය

The Gazette of the Democratic Socialist Republic of Sri Lanka

අංක 2,243 – 2021 අගෝස්තු මස 27 වැනි සිකුරාදා – 2021.08.27
No. 2,243 – FRIDAY, AUGUST 27, 2021

(Published by Authority)

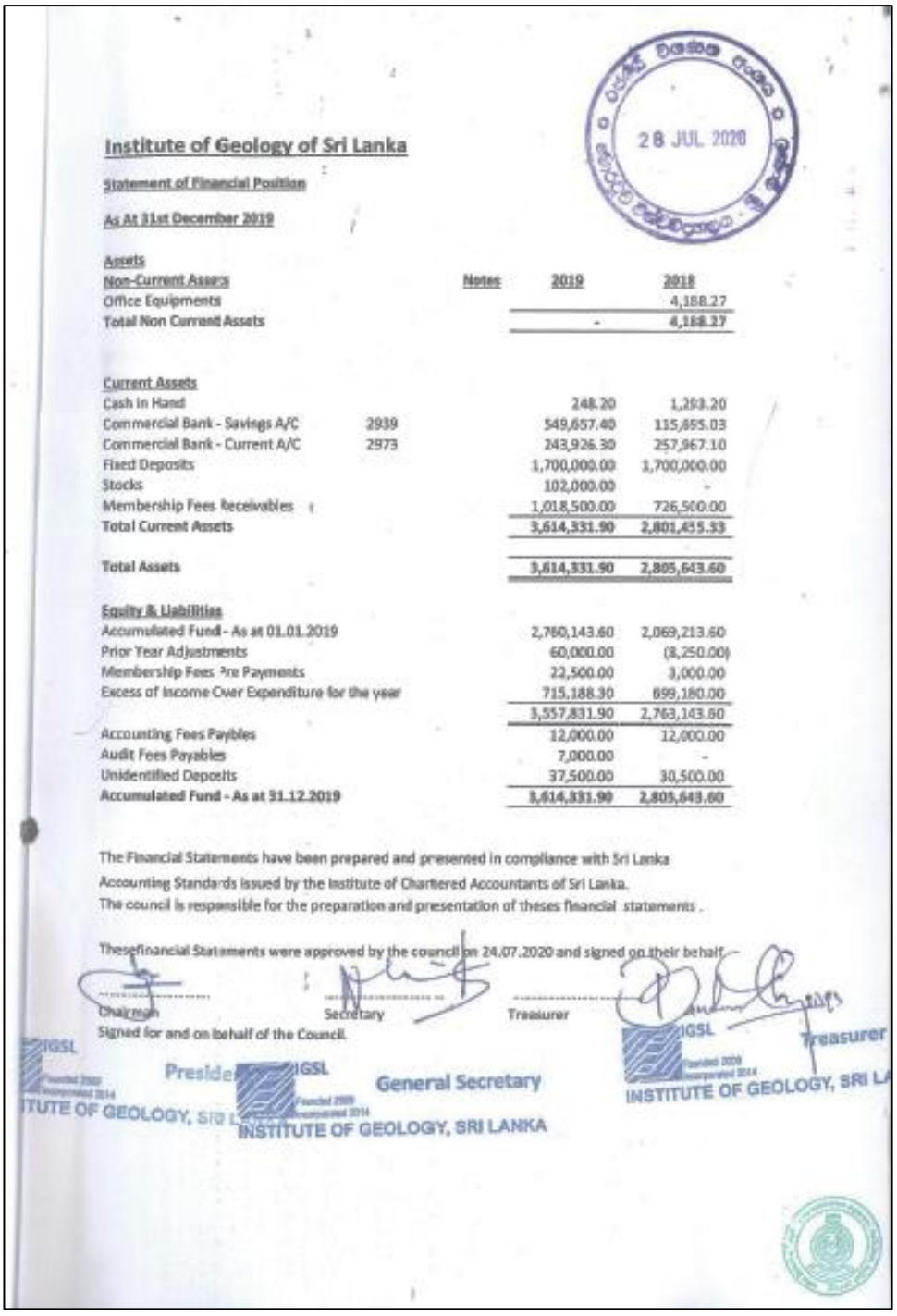
PART I : SECTION (I) – GENERAL

(Separate paging is given to each language of every Part in order that it may be filed separately)

It was realized that some state and private sector organizations in Sri Lanka are yet to recognize the professional role of geologists in their institutions. As a result, due recognition of the profession and a regulatory framework for their professional standards have not been established in line with other similar and parallel professions. Therefore, the IGSL has decided to make such institutions aware of this situation for the benefit of our members employed by them. The heads of the relevant institutions will be made aware about this situation by sending them the gazette notification of the Government of Sri Lanka.

Geol. Nanda Balasooriya, General Secretary
04th Council of the IGSL, Sri Lanka

Financial Statement until 31st December 2019



Institute of Geology of Sri Lanka

28 JUL 2020

Statement of Financial Position

As At 31st December 2019

		Notes	2019	2018
Assets				
Non-Current Assets				
Office Equipments			-	4,188.27
Total Non Current Assets			-	4,188.27
Current Assets				
Cash in Hand			248.20	1,203.20
Commercial Bank - Savings A/C	2939		549,657.40	115,695.03
Commercial Bank - Current A/C	2973		243,926.30	257,967.10
Fixed Deposits			1,700,000.00	1,700,000.00
Stocks			102,000.00	-
Membership Fees Receivables			1,018,500.00	726,500.00
Total Current Assets			3,614,331.90	2,801,455.33
Total Assets			3,614,331.90	2,805,643.60
Equity & Liabilities				
Accumulated Fund - As at 01.01.2019			2,760,143.60	2,069,213.60
Prior Year Adjustments			60,000.00	(8,250.00)
Membership Fees Pre Payments			22,500.00	3,000.00
Excess of Income Over Expenditure for the year			715,188.30	699,180.00
			3,557,831.90	2,763,143.60
Accounting Fees Payables			12,000.00	12,000.00
Audit Fees Payables			7,000.00	-
Unidentified Deposits			37,500.00	30,500.00
Accumulated Fund - As at 31.12.2019			3,614,331.90	2,805,643.60

The Financial Statements have been prepared and presented in compliance with Sri Lanka Accounting Standards issued by the Institute of Chartered Accountants of Sri Lanka.
The council is responsible for the preparation and presentation of theses financial statements .

Thesefinancial Statements were approved by the council on 24.07.2020 and signed on their behalf.

Chairman Secretary Treasurer

Signed for and on behalf of the Council.

IGSL Founded 2009 Incorporated 2014 INSTITUTE OF GEOLOGY, SRI LANKA

General Secretary

IGSL Founded 2009 Incorporated 2014 INSTITUTE OF GEOLOGY, SRI LANKA

Treasurer

Geol. A.M.K.B. Abeysinghe, Treasurer
03rd Council of the IGSL, Sri Lanka

INSTITUTE OF GEOLOGY, SRI LANKA (IGSL) NEWSLETTER

IGSL members are encouraged to interact and share information through our IGSL Facebook group.

https://www.facebook.com/groups/IGSL2014

IGSL website is a meeting place in cyber space for the members. Please send us your news and information to publish in the website.

https://www.igsl.lk

The views expressed in this Newsletter are not necessarily those of the IGSL. The Co-editors invite contributions not only from members of the Institute but also from other Geologists on matters relevant to geology of Sri Lanka. Contributions in the form of short articles, letters, communications, drawings and photographs are welcome.

The Co-editors invite members to give their comments (if any) on this issue of the NEWSLETTER.

The IGSL is not responsible for statements and opinion expressed by contributors of this Newsletter.

IGSL
Founded 2009
Incorporated 2014

IGSL NEWSLETTER 2021 December Volume 2

PRINTED MATTER

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Geol. Tilak Hewawasam, Co-editor – IGSL

C/O, Department of Geography, University of Peradeniya

Sri Lanka.