



Annual Report 2022



Water Resources Board
Ministry of Water Supply

CONTENTS

	Page No.
Introduction	04
Vision	05
Mission	05
Objectives	06
Functions	07
Corporate Information	08
Corporate Governance	09
Key Players	
Audit & Management Committee	
Senior Executive Officers	
Cadre Information	12
Major Activities	14
Operational Activities Performed during the Year	15
Financial Statements	52
Statement of Financial Performance	
Statement of Financial Position	
Statement of Changes in Net Assets / Equity	
Cash Flow Statement	
Treasury Grant Disclosure	
Accounting Policies	
Notes to the Financial Statement	
Auditor General's Report	71
Comments on the AG's Report	83
Physical Progress Summery – 2022	95

INTRODUCTION

The water resources board was established in 1966 under the Act No. 29 of 1964, as an advisory body to the Minister on all matters concerning the control and utilization of the Water Resources in Sri Lanka.

In 1978, Groundwater Division of the Irrigation Department was transferred to the Water Resources Board and functions of the Board were expanded and commenced the implementation activities.

The Water Resources Board Act was amended and passed by the parliament in 1999 to enable the Water Resources Board to pay more emphasis on matters pertaining to Groundwater Resources in Sri Lanka

As per the Gazette notification No. 2010/23 of 16th March 2017, the use of natural water springs or ground water for certain activities or projects should be done under the supervision & direction of the Water Resources Board.

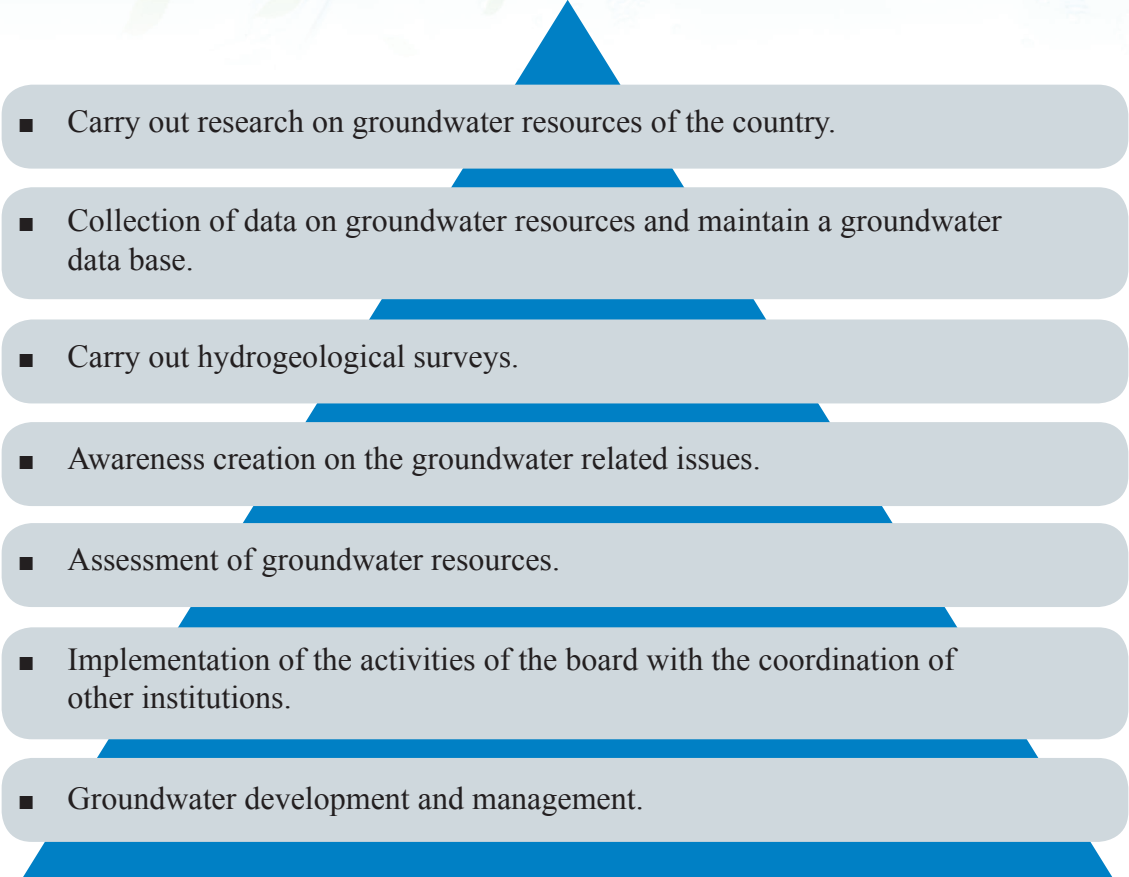
VISION

Adequate access to clean safe water for all

MISSION

To advise the government and the people on assessing, conserving, harnessing developing and frugally utilizing particularly the finite groundwater resources in the country working in close collaboration with the rural society, relevant central and local government Department/ Divisions/ Authorities/ Institutions, national and international organizations, and scientific communities here and abroad.

OBJECTIVES

- 
- Carry out research on groundwater resources of the country.
 - Collection of data on groundwater resources and maintain a groundwater data base.
 - Carry out hydrogeological surveys.
 - Awareness creation on the groundwater related issues.
 - Assessment of groundwater resources.
 - Implementation of the activities of the board with the coordination of other institutions.
 - Groundwater development and management.

FUNCTIONS

1. The control, regulation and development (including the conservation and utilization), of the water resources of the country.
2. The prevention of the pollution of rivers, streams and other water resources.
3. The formulation of national policies relating to the control and use of the water resources of the country with the following objective's view
 - The multi-purpose development and use of water resources
 - The short-term and long-term provision of water resources for domestic supplies and industrial supplies.
 - The control of salinity
 - Any other like objective
4. The preparation of comprehensive and integrated, control and development of the groundwater resources of the country.
5. The Co-ordination of the activities of government departments, local authorities and public corporations, in regard to surveys of basic data and other investigation, relating to hydrogeology.
6. The analysis of reports based on investigation, statistical surveys plans and proposals relating to the groundwater resources of the country made by government departments, local authorities and public corporations.
7. The co-ordination of projects undertaken by government departments, local authorities and public corporations, relating to the conservation, utilization and development of the subterranean water resources of the country and the assessment of the country, and the assessment of the possibilities, benefits and economic feasibility of such projects.

Corporate Information

Name of the Organization

Water Resources Board

Legal Form

Government owned Statutory Board

Year of Establishment

1966 by Act of Parliament, No.29 of 1964.

1999, the Act was amended Water Resources Board (Amendment) Act No.42 of 1999.

Head Office

2021-07-20 To 2022.07.19

288/12L, Royal Gardens, Sri Jayawardenapura Mawatha, Rajagiriya

2022-07-20 To present

488/A, Nawala Road, Koswatta, Rajagiriya

Tel: +94 11 2694835, +94 11 2697050

Fax: +94 11 2669517 (Admin)

Email: helpdesk@wrb.gov.lk

Web: www.wrb.gov.lk

Line Ministry

Ministry of Water Supply

Tax Identification No.

409018017

Bankers

Bank of Ceylon

National Savings Bank

Income Tax Consultants

ARS Associates

(Chartered Accountants)

Auditors

External

Auditor General -
National Audit Department

Internal

Chief Internal Auditor -
Ministry of Water Supply
Internal Auditor –
Water Resources Board

Board of Directors

Dr. J.D. Samarasinghe	- Chairman
Mr.C. Rathnamalala Bandara	- Director
Mr. H.R.M. Kiriella	- Director
Mr. A.K.D.S..P Mahanama	- Director
Mrs. R.K.L. Jagoda	- Treasury
(Up to 2022.03.03)	Representative
Ms. L.A.Y.De Silva	- Treasury
(Since 2022.03.04)	Representative

Senior Executive Officers

Eng. H.C.J Thilakaratne
General Manager (Acting)-Addl. Sec.
Ministry of Water Supply
(Up to 2022.11.30)
Ms.K.G.D.Priyanka
General Manager (Acting) –[Director
(Development)- Ministry of Water Supply]
(Since 2022.12.01)
Mr. M.A. Pushpakumara
D.G.M. (HR & Finance)
Mr. A.B.M. Chandrasiri
Assistant General Manager (Finance)
Mr.R.M.S.Rathnayaka
Acting D.G.M (Research & Development)
Mr. K.M.U.C.B. Kulathunga
Assistant General Manager (Operation)
Mr. D.G.S. Wickrama
Assistant General Manager (Project)
Mr. R.R.G.R. Rajapakshe
Assistant General Manager (Research &
Development)

Corporate Governance

Key Players

Dr. J.D. Samarasinghe	- Chairman
Mr. C. Rathnamalala Bandara	- Director
Mr. H.R.M. Kiriella	- Director
Mr. A.K.D.S..P Mahanama	- Director
Mrs. R.K.L. Jagoda (Up to 2022.03.03)	- Treasury Representative
Ms. L.A.Y.De Silva (Since 2022.03.04)	- Treasury Representative

Board Meetings

Six (06) Board meetings were held in the year under review.

Audit and Management Committee

i. Mrs. R.K.L. Jagoda	- Chairman	- Treasury Representative(Up to 2022.03.03)
ii. Ms. L.A.Y.De Silva	- Chairman	- Treasury Representative(Since 2022.03.04)
iii. Mr. C. Rathnamalala Bandara	- Director	
iv. Mr. H.R.M. Kiriella	- Director	
v. Mr. E.A.D.P. Prasanna	- Observer	- Government Audit
vi. Mrs. S.W. Gunawardhana	- Observer	- Ministry of water supply- CIA

Audit and Management Committee Meetings

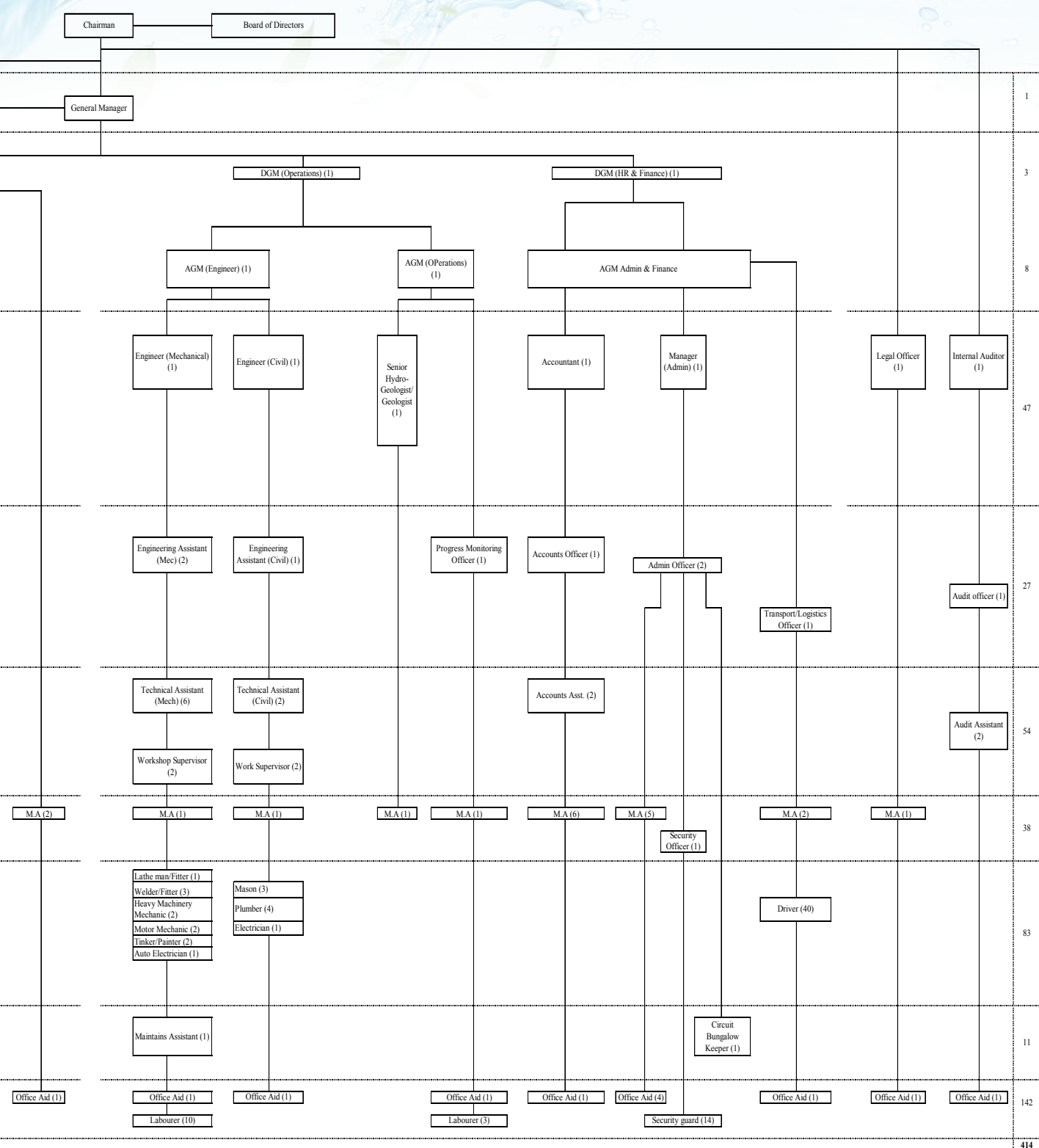
Three (03) audit and management committee meetings were held during the year 2022.

Senior Executive Officers – Year 2022

i. Eng. H.C.J Thilakaratne (Up to 2022.11.30)	- General Manager (Acting) -Addl. Sec. Ministry of Water Supply
ii. Mrs.K.G.D.Priyanka (Since 2022.12.01)	- General Manager (Acting) – [Director (Development)] Ministry of Water Supply
iii. Mr. M.A. Pushpakumara	- D.G.M. (HR & Finance)
iv. Mr. A.B.M. Chandrasiri	- Assistant General Manager (Finance)
v. Mr.R.M.S.Rathnayaka	- Acting D.G.M (Research & Development)
vi. Mr. K.M.U.C.B. Kulathunga	- Assistant General Manager (Operation)
vii. Mr. R.R.G.R. Rajapaksha	- Assistant General Manager (R & D)
viii. Mr. D.G.S. Wickrama	- Assistant General Manager (Project)



OF WATER RESOURCES BOARD



Cadre Information as at 31st December 2022

Salary Scale	Approved Cadre Permanent	Existing Cadre Permanent
HM	12	06
MM	47	34
JM	27	10
MA	92	54
PL	236	154
Total	414	258



Cadre Information as at 31st December 2022

Designation	Salary Scale	Approved cadre	Existing cadre	Vacancies to be filled
General Manager	HM	1	0	1
Dy. General Manager	HM	3	1	2
Asst. General Manager	HM	8	5	3
Provincial Manager	MM	5	0	5
Hydro Geologist/Snr Hydro Geologist	MM	24	24	0
Engineer (Mechanical)	MM	1	0	1
Engineer (Civil)	MM	2	1	1
Chemist	MM	7	6	1
Manager (Drilling)	MM	3	1	2
Internal Auditor	MM	1	1	0
Accountant	MM	1	0	1
Manager (Administration)	MM	1	1	0
Manager (Procurement)	MM	1	0	1
Legal Officer	MM	1	0	1
Senior Water Analyst	JM 1-1	1	0	1
PA to Chairman	JM 1-1	1	1	0
PA to General Manager	JM 1-1	1	1	0
Administrative officer	JM 1-1	2	2	0
Accounts officer	JM 1-1	1	1	0
Transport/Logistic Officer	JM 1-1	1	0	1
Environmental Officer	JM 1-1	1	1	0
Audit Officer	JM 1-1	1	1	0
Librarian	JM 1-1	1	0	1
IT Officer	JM 1-1	1	1	0
Engineering Asst (Civil)	JM 1-1	4	0	4
Engineering Asst (Mechanical)	JM 1-1	2	0	2
Stores Superintendent	JM 1-1	1	0	1
Procurement Officer	JM 1-1	1	1	0
Drilling Superintendent	JM 1-1	6	1	5
Progress Monitoring Officer	JM 1-1	1	0	1
Investigation Officer	JM 1-1	1	0	1
Technical Asst (Civil)	MA 2-2	7	1	6
Technical Asst (Mechanical)	MA 2-2	6	5	1
Asst. Drilling Superintendent	MA 2-2	14	10	4
Investigation Asst.	MA 2-2	4	0	4
Water Analyst	MA 2-2	10	10	0
Work Supervisor	MA 2-2	2	1	1
Workshop Supervisor	MA 2-2	2	0	2
System Operator	MA 2-2	1	1	0
Accounts Asst.	MA 2-2	2	1	1
Store Keeper	MA 2-2	3	3	0
IT Technician	MA 2-2	1	1	0
Management Asst.	MA 2-1	2	2	0
Management Asst.	MA 1-2	37	19	18
Security Officer/Asst.	MA 1-2	1	0	1
Drilling Mechanic cum Driver	PL 3	7	0	7
Mason	PL 3	3	2	1
Plumber	PL 3	4	0	4
Driver	PL 3	50	33	17
Welder / Fitter	PL 3	3	2	1
Motor Mechanic	PL 3	2	1	1
Latheman/Fitter	PL 3	1	1	0
Electrician	PL 3	1	0	1
Auto Electrician	PL 3	1	0	1
Tinker / Painter	PL 3	2	0	2
Heavy Machinery Mechanic	PL 3	2	0	2
Drilling Machine Operator cum Driver	PL 3	7	2	5
Drilling Helper	PL 2	7	0	7
Maintenance Helper	PL 2	3	2	1
CB Keeper	PL 2	1	0	1
Laboure	PL 1	105	86	19
Office Aide	PL 1	23	15	08
Security Guard	PL 1	14	10	04
Total		414	258	156

Major Activities

Construction of Tube Wells



Conducting pumping tests



Conducting geophysical investigations



Analyzing of water samples



**OPERATIONAL ACTIVITIES
PERFORMED DURING
THE YEAR 2022**

The background of the slide is a light blue gradient. At the top, there is a dynamic splash of water with several green leaves caught in it. At the bottom, there is a stylized, flowing wave of water with numerous clear bubbles of varying sizes. The text is centered in the middle of the slide.

Scope & Role of Water Resources Board

The Water Resources Board was established by the Act No. 29 of 1964 in 1965. The main scope of the WRB was to advise the Minister as per clause 12.1 in Act No. 29. From 1979, adjoining the Groundwater Division of the Department of Irrigation, Water Resources Board facilitates to carry out the mandatory activities under clause 12.1 of the Act whilst attending the groundwater explorations and development works as well. Accordingly, WRB has given priority for implementation of groundwater explorations, tube well constructions, hand pump installations in Mahaweli Development Areas and other dry zone areas implemented by Government funded rural water supply schemes such as integrated rural development projects in Monaragala, Hambantota, Puttalam, Kurunegala and Northern & Eastern provinces during this period.

With the increased demand for the groundwater for multiple purposes, the further responsibility was vested on Water Resources Board through the amendment of Act 29, 1964 in 1999 enabling expansion of its scope on groundwater development activities. At this juncture, further to tube well constructions & Hand Pump installations, WRB conducted research projects, studies, groundwater exploration Programmes and identification of productive aquifers contributing to national economic development and well-being of the community enhancing living standards of the people.

During the first decade of the millennium, there were marked increase of tube well construction within the country for numerous purposes by the private parties as well as stake holder agencies to tap limited water resources without following any scientific guidelines. This trend resulted in increased salinization by sea water intrusion, groundwater depletion by over abstractions, quality deterioration by contamination through anthropogenic processes at different areas of the country which had been identified by the groundwater studies carried out by WRB in these sensitive groundwater terrains at that time.

Groundwater quality and quantity deterioration encountered and experienced in the highly sensitive areas and the resultant public complaints had brought in pressure seeking a solution through a management plan by WRB to mitigate the possible impacts. In view of developments, WRB managed to convince the cabinet for publishing of an extraordinary Gazette No. 2010/23 in 2017 which has given WRB, the responsibility to regulate, control and manage the groundwater resources.

At present, WRB focuses basically towards the research, studies, monitoring and exploration of productive aquifers for use in strategically and economically important development projects in future plans. Further upon request WRB carry out necessary recommendations and impacts assessment on groundwater resources due to all sort of mining activities, tunnel constructions and any of nationally important development projects during the EIA, IEE, SEA levels. Such information and recommendations on assessment studies provide foundation for sustained management of groundwater resources of the country through systematic planning and implementation which included control and regulation components as well.

In addition, the future plans of WRB are directed towards the regulation and management practices on Groundwater resources of the country. Specially the ongoing Pilot project covering the three river basins (Malwathu Oya, Daduru Oya & Kumbukkan Oya) will facilitate a systematic long-term groundwater monitoring network which is the fundamental platform providing the information for all aspect of future regulation and management plans. This will be expanded to all river basins of the country in the long-term plan. Meanwhile, Groundwater management study in eight Pilot river basins as a component of a pipeline Project which is presently at the initial phase for its commencement of operation. The amendment of the act also in operation which facilitates to strengthen the regulation and management of groundwater resources of the country.

WRB is the mandated Institution of the country responsible in all matters related to the groundwater

resources. Considering this, the Board has given priority to the areas of research, monitoring, regulation and developing sustained groundwater management plans at river basin levels. Presently the Board has focusing mainly on regulatory and management aspect of groundwater resources adhering to the National Water Resources Policy of the country.

Activities planned for year 2022

During the year 2022, the following projects & activities are scheduled to carry out as per the workplan. Basically, the projects and operations of activities are categorized into three areas.

- 1.) Treasury Grant Projects – Groundwater Resources Monitoring and managed aquifer recharge projects including skill & institutional infrastructure Development activities.
- 2.) Generated Activities – Activities of the groundwater users in the country as commercial activities (tube well constructions, cleaning, aquifer tests, water quality analysis) and regulations of the groundwater resources through necessary guidelines for the specific activities.
- 3.) Foreign Funded Projects - Establishment of Groundwater Monitoring Network (pilot project) covering Malwathu Oya, Maduru Oya and Kumbukkan Oya river basins was completed where from pilot project, it is expected to expand into the all-river basins by WRB under long term planning.

The physical progress & financial achievement during the year 2022 is shown below under aforesaid three main categories.

1.) Treasury Grant Projects (2022) - Rs. 8.8 Mn

#	Sub Projects/ Sub Activities	TEC (Rs. Mn)	Expected Benefits/ Results
1	Long-term Groundwater Monitoring Project (LTGM): Colombo-Negombo, Ampara, Mannar, Vavuniya, Kilinochchi, Jaffna, Anuradhapura, Polonnaruwa, Matale, Puttalam.	3.0	Assessment of water quality and GW level variations in highly sensitive GW aquifers of the country for long term management and planning
2	Study on Direct and Indirect Impact of Climate Changes on Groundwater Resources (SICC)	0.7	Assessment and evaluation of changes on GW resources due to climatic changes in Coastal areas of the country
3	Hydrogeological Assessment & identify of favorable zones for aquifer recharge with in Ma Oya Basin (Ma-oya)	1.1	Hydrogeological assessment and aquifer mapping for managing the GW resources within the Ma-Oya river basin
4	Combine Inspections on Groundwater Relating Environmental Issues (INSP)	0.2	Addressing for remediation and conflict resolution on issues of GW use
5	Development of Groundwater Atlas for Sri Lanka (GW-ATLAS)	0.1	Development of Groundwater Atlas for Sri Lanka
6	Improvement of Scientific & Other Capital Works (ISOC)	1.0	Enhance the operational efficiency by strengthening the institution
7	Emergency use for disaster events related to water sector (drought, floods, catastrophic event of contamination on GWR) (E-USE)	0.3	
8	Staff Training (ST)	0.4	Skill and capacity development of Human Resources
9	Rehabilitation and improvement of WRB infrastructure (REIMP)	2.0	Infrastructure development of the institution
	Total	8.8	

1. Treasury Funded Groundwater Studies

1.1. Long term groundwater monitoring project in groundwater sensitive terrains (LTM)

Long term groundwater monitoring project is a combined programme where the continuous groundwater level & quality monitoring is carried out at 12 areas in which WRB initially have performed groundwater studies & completed initial assessment.

At the beginning of this groundwater studies, test boreholes were constructed considering different groundwater issues that have identified in each project areas to establish term monitoring network system of the respective areas. The details of constructed test boreholes are given in following table.

Table 01: Treasury grant projects - 2022

No.	Project Name	Area	Dedicated monitoring wells -constructed
1.	Detailed hydrogeological study on coastal sandy aquifer extended from Colombo to Negombo	Coastal sand belt from Colombo to Negombo	78
2.	Identification Suitable Areas for Groundwater Recharge in Puttalam District	Puttalam, Kalpitiya area	14
3.	Detailed hydrogeological study in Kelani River Basin	Kelani basin upper area	10
4.	Identification of hazardous minerals in Anuradhapura district	Anuradhapura District	32
5.	Hydrogeological studies in Vavuniya and Kilinochchi areas	Vavuniya, Kilinochchi	35
6.	Hydrogeological study in limestone aquifer system in Mannar district	Mannar	55
7	Detailed hydrogeological study in Kirindi Oya River Basin	Kirindi Oya basin	25
8	Kelani River Basin	Kelani basin	25
9	Jaffna Well monitoring programme	Jaffna Peninsula	43
10	Jaffna groundwater resources assessment under DSWRP	Jaffna Peninsula	35
11	Polonnaruwa groundwater monitoring study	Polonnaruwa district	75
12	Mathale groundwater monitoring study	Mathale district	35

In addition to the above dedicated monitoring wells, the existing wells depending the fulfilling the objectives were also included into the long term monitoring network systems of the respective areas. Water sampling, Water quality analysis, water level monitoring and update of monitoring information to identify the long-term variation of quality and quantity of the respective regions for managing of groundwater resources are the main activities and objective of the project.

Under these activities, target of the year 2022 and progress is as follows.

Table 02: Progress of LTGM - 2022

	Activity	Target of the year 2022	Progress
1	Water sampling	2095	98%
2	Water quality analysis	2095	48%

Under this project, following research activities were performed in the year 2022 in each areas.

1.1.1 Coastal sand belt from Colombo to Negombo

The overall objective of the project is to identify, develop, manage, allocate and conserve the shallow sandy aquifer as to achieve the maximum benefits without harming the environment.

Water samples were collected biannually (Pre monsoon and post monsoon) and water samples were analyzed to detect physical and chemical parameters. Other than that, water levels were measured to understand about the water level fluctuations of the area.

Based on the results of the water quality analysis, following maps were prepared.

Ex: Electrical conductivity distribution

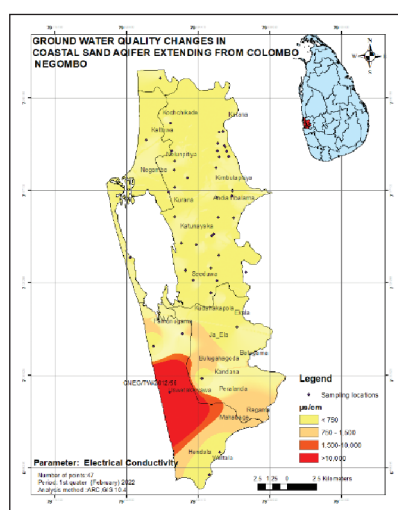


Figure 01: EC distribution of the area in pre monsoon - 2022

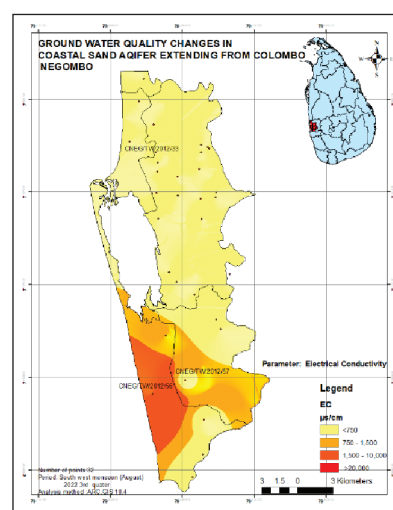


Figure 02: EC distribution of the area in post monsoon - 2022

According to the results of long term monitoring in this area, the water quality and the water level has not been significantly changed within 10 years time period. Only one location shows high EC content and it is identified as a sea water intrusion. However, it is recommended to continue the monitoring program due to the high population, high density of factories, high groundwater extractions in this area as well as the high sensitivity of the aquifer.

1.1.2 Puttalam District

The study was commenced under treasury grant in year 2011 and completed in 2015. After completion of the project, the monitoring network was selected for long term monitoring under LTGM project.

Objectives of the project are to identify the aquifer parameters and the extension of the aquifer, to identify the suitable areas for groundwater recharge and increase the groundwater potential capacities, to understand about the impact on groundwater due to over extraction, sea water intrusions and human activities such as over usage of agrochemical and pesticides and to establish suitable and sustainable groundwater resources management policies for the area.

Water samples were collected and water levels were measured biannually. Water level fluctuations were observed in long term basis and following graph shows the water level changes of the area.

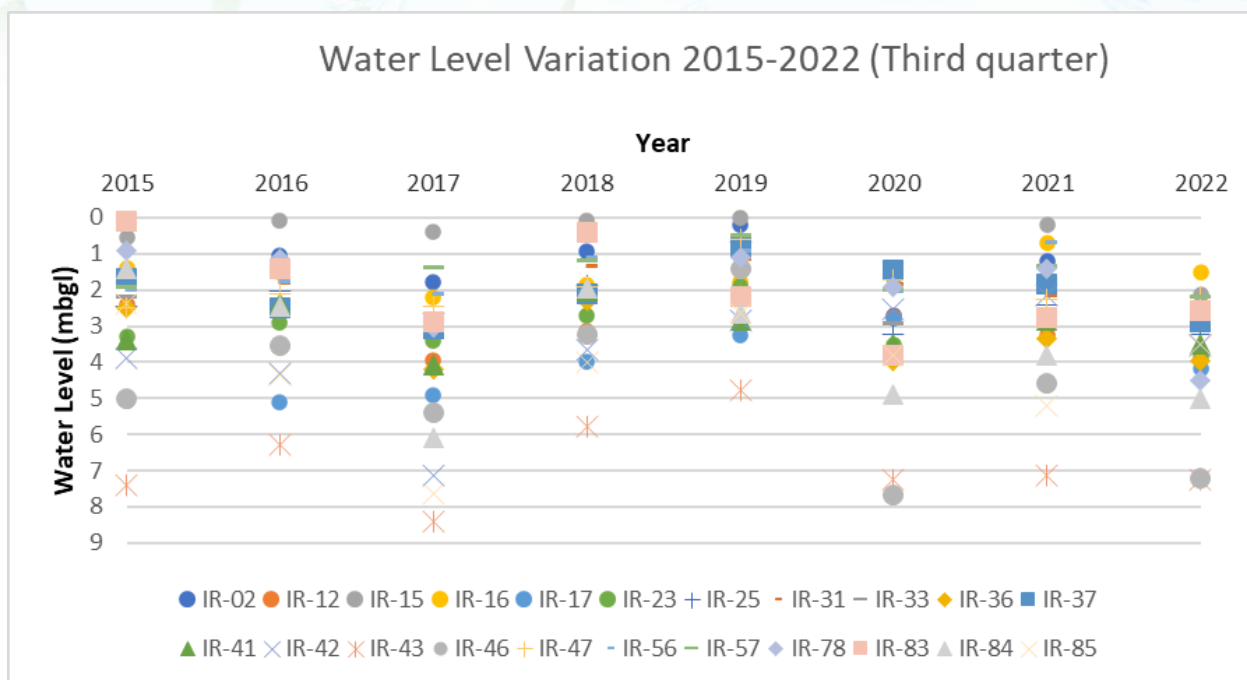


Figure 03: Water level fluctuation of the area from 2015-2022

According to the above figure, the water level has been fluctuated up to about 3 to 4 meter in some wells. It may be due to various factors such as rainfall, high extractions, etc. Therefore it is recommended to monitor water levels of these wells continuously to understand about the groundwater behaviors of the area.

1.1.3. Kelani Basin-Upper area

This Project was commenced in 2015 to study qualitative and quantitative variations of the shallow and deep ground water in upper Kelani basin. It includes five different sub-basins named Kehelgamu Oya, Maskeliya Oya, Wee Oya, Gurugoda Oya and Sethawaka Ganga. There are 25 monitoring locations consisting 10 test wells, 12 dug wells and 3 natural springs and streams selected within this upper Kelani basin for this study. Under this project, it is concern on upper catchment of Kelani Ganga River Basin and it has discussed on quantitative and qualitative variations of groundwater of the upper catchment of the basin.

Phase I project area is the upstream area of Kelani river basin where it begins from Avissawella. Several cities which have been located within the project area are Thalduwe, Getahetta, Dehi-owita, Ruwanwella, Bulathkohupitiya, Yatiyanthota, Kithulgala, Ginigathena, Deraniyagala, Norwood and Maskeliya.

Analysis results of water sample shows that almost all monitoring wells were within the drinking water standards. However it is recommended to continue water quality and water levels in long term basis in order to the sustainable management of groundwater in the upper part of the basin.

1.1.4. Anuradhapura District

The study was commenced under treasury grant in year 2011 to identify the water quality distribution in surface water and groundwater (shallow and deep aquifers) and to make specific recommendations for further studies on water quality distribution of the area. With the idea of controlling the Chronic Kidney Disease (CKDu) and other water borne diseases that are widespread in Anuradhapura district, water clinics were organized by the Water Resources Research & Training Center in order to make the rural people aware on the water quality and related issues. Groundwater monitoring network of this project was connected to the long-term groundwater monitoring project since 2015 after finishing the initial study.



Figure 04: Water level monitoring and insitu water quality monitoring in Anuradhapura district

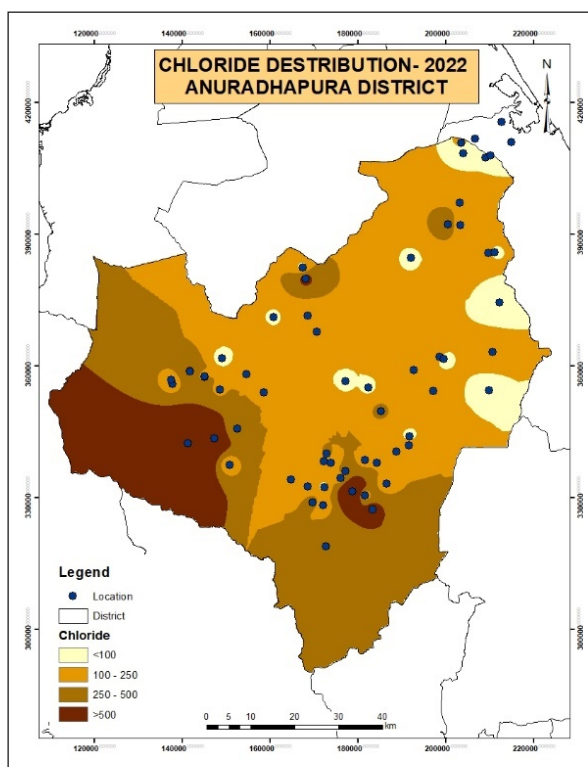


Figure 05: Chloride distribution of Anuradhapura in February - 2022

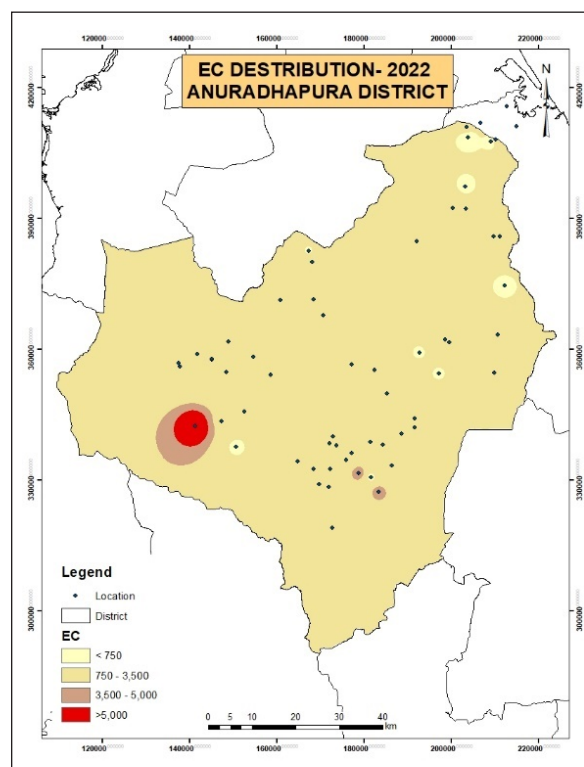


Figure 06: EC distribution of Anuradhapura in February - 2022

According to the water quality analysis results of the area the southern and western part of the area shows high chloride concentration in post monsoon period (February – 2022).

Electrical conductivity of the area has been exceeded the maximum favorable limit in 3 locations. This water quality change may be due to inherited properties of the locations. To understand about the water quality variation in this area it is recommended to continue the monitoring of water quality in long term basis.

1.1.5 Kilinochchi District

In the beginning of the project, following objectives were concerned to fulfill and after achieving all tasks and according to the results of the study, the monitoring network was selected to monitor in long term basis under LTGM project.

- To identify Groundwater potential areas
- To identify Aquifer Parameters
- To identify the groundwater sources for small scale irrigated agriculture and drinking purpose

This project was started on year 2013 and prominent scopes were completed during 2013-2014 time period. Then after scope of the project was narrowed to monitoring of groundwater in established groundwater monitoring network. In this setup, during years 2019,2020,2021 and 2022 it was focused to monitor groundwater quality and quantity variation of the district.

Findings

TDS, EC, Cl, Total Hardness, Ca, Mg, Iron, are not in permissible range in most of the area in the Kilinochchi district. Only Iyakachchi-Palai region have ground water within the permissible range throughout the year 2022 in Kilinochchi district.

Recommendations

From the results of the interpreted data, there are some issues currently reported related to quality of the water. Generally, the deep aquifer of the district is not meet the SLS portable drinking water standards under 614: 2013 in order to the analyzed parameters of groundwater.

Improper agricultural practices will be generating significant threat to groundwater resources in future if not take attention to prevent groundwater pollution by agrochemicals.

General water level of the area varies between 2 to 16.5 meters below the ground level and it is totally governing by the rainfall pattern of the area. Most quality and shallow groundwater can be found in Iyakachchi-Palai region and it is consisting with thick sandy formation. It is therefore, it is necessary to prevent this aquifer harming from anthropogenic activities. Especially high groundwater extraction and improper agricultural activities. With the urbanization, shallow aquifer is rapidly affected by human activities. Hence that, when proposed resettlement or new project to this area, it should be consider the above factor very carefully.

Considering the variation of groundwater levels and chemical concentrations of aquifer system of the district, it is recommended to continue the current monitoring program and it is proposed to add more shallow wells to monitoring network to identify shallow aquifer behaviors in north-eastern part of the district.

Ca, Mg, Cl- , total hardness are not in the permissible range in the 1st quarter of the year in the most of the areas in Kilinochchi district. Therefore, while using groundwater to drinking purposes it should be purified.

When tube well construction of the district, it should be more attention of depth of the wells to avoid sea

water intrusion with the touching sea water- fresh water interface of the area.

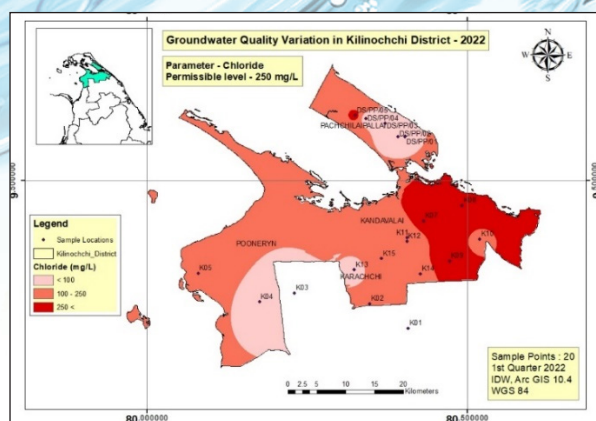


Figure 07: Chloride distribution of Kilinochchi District

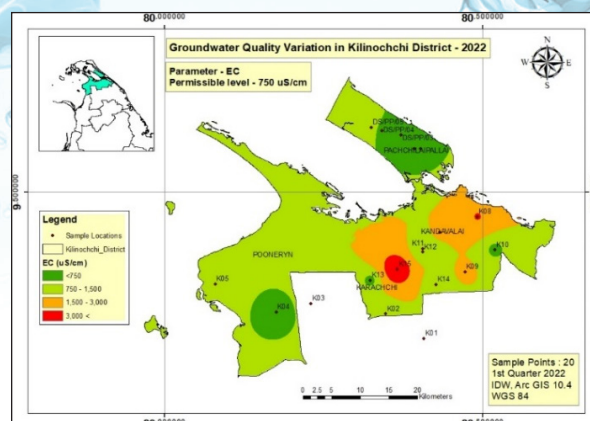


Figure 08: EC distribution of Kilinochchi District

1.1.6 Vavuniya District

The main objective of the project is to identify groundwater potential areas and to see the possibility of developing groundwater sources for future drinking water and small scale irrigated agricultural projects. A specific objective of the study is to identify the aquifer parameters; it is extensions and demarcates the groundwater potential areas within the Vavuniya district. It is expected to identify the groundwater sources for small scale irrigated agriculture and for drinking purposes of the people in the district with the intention of up grading the living standards of the people.

This project was started on year 2013 and prominent scopes were completed during 2013-2014 time periods. Then after scope of the project was narrowed to monitoring of groundwater in established groundwater monitoring network. In this setup, during years 2019, 2020, 2021 and 2022 it was focused to monitor groundwater quality and quantity variation of the district.

Findings

In 1st quarter, except Magnesium, other parameters are within the permissible range in the middle part of the Vavuniya district. When reaching third quarter, the groundwater quality deuterate in the central part of the district.

TDS, EC, Cl, Total Hardness, Ca, Mg, Iron, are not in permissible range in most of the area in the Vavuniya district except middle part.

Recommendations

From the results of the interpreted data, there are some issues currently reported related to quality of the water. Generally, the deep aquifer of the district is not meet the SLS portable drinking water standards under 614: 2013 in order to the analyzed parameters of groundwater.

Improper agricultural practices will be generating significant threat to groundwater resources in future if not take attention to prevent groundwater pollution by agrochemicals.

General water level of the area varies between 0.4 to 15 mbgl and it is totally governing by the rainfall pattern of the area. Most quality and shallow groundwater can be found in central region of the district. It is therefore, it should be taking a look to prevent this aquifer from anthropogenic activities. Especially

high groundwater extraction and improper agricultural activities. With the urbanization, shallow aquifer is rapidly affected by human activities. Hence that, when proposed resettlement or new project to this area, it should be consider the above factor very carefully.

Considering the variation of groundwater levels and chemical concentrations of aquifer system of the district, it is recommended to continue the current monitoring program and it is proposed to add more shallow wells to monitoring network to identify shallow aquifer behaviors in Central part of the district.

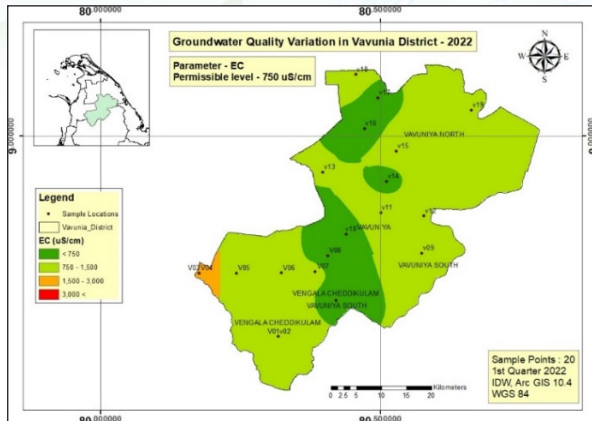


Figure 09: EC distribution of Vavuniya District

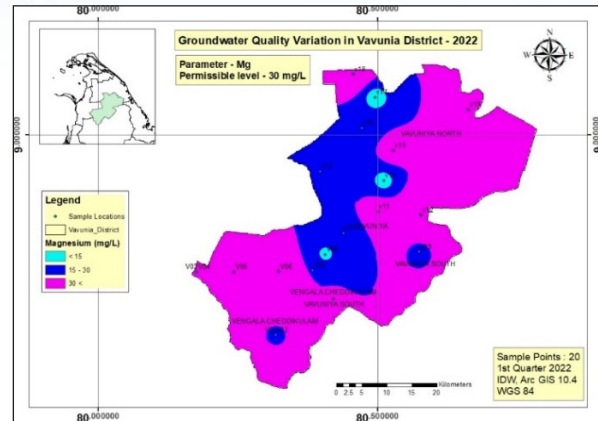


Figure 10: Mg distribution of Vavuniya District

1.1.7 Mannar District

The study was commenced under treasury grant in year 2011 to identify the water quality distribution of surface water and groundwater (shallow and deep aquifers) in Mannar district.

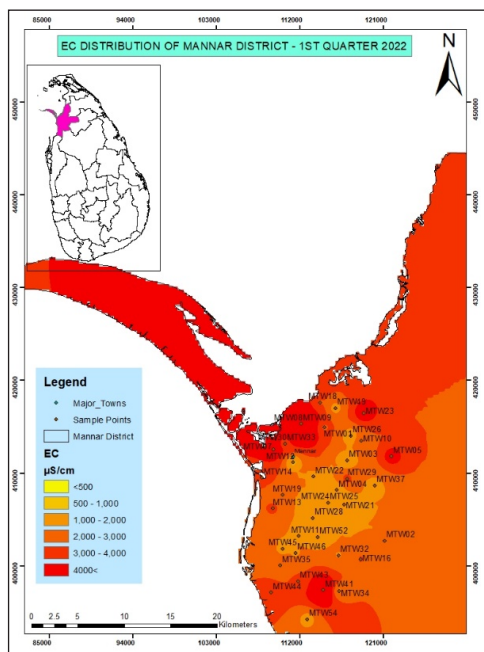


Figure 11: EC distribution of the area

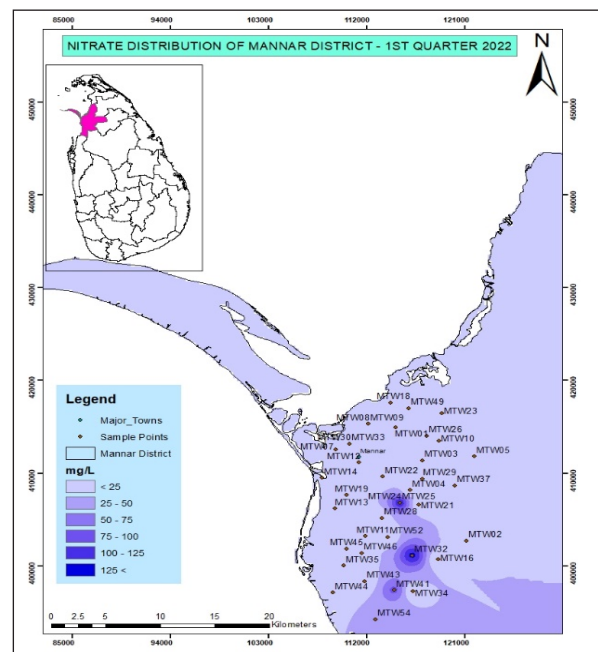


Figure 12: Nitrate distribution of the area

20% of total number of samples in the area shows high Electrical conductivity values. Since this area is closer to the sea, the sea water intrusion may be the course for this.

The concentration of the Nitrate is high in 3 locations. This may be due to a point source pollution of specific locations. Therefore it is recommended to monitor these locations in long term basis to ensure the sustainable development and usage of this aquifer.

1.1.8 Kirindi oya

Detailed hydrogeological studies of the groundwater development in Krindioya basin area (Thissamaharama, Thanamalvila, Lunugamvehera and Wellawaya AGA division) have been commenced in 2015. The main aim of the Ground water Development and Assessment in KrindiOya study is to establish groundwater monitoring network with dedicated monitoring test boreholes in order to collect temporal data on groundwater quality changes and water table fluctuations. The community of the KirindiOya river basin is mainly depend on hand pump tube wells and miner water supply schemes run with production tube wells to meet their domestic and drinking water requirements. Most of the large scale agriculture activities use groundwater for their water requirements. The absence of a proper plan for monitoring of these wells, the expected benefit would not be reached to the rural communities in those areas due to scarcity of water by over extraction for agriculture purposes. Therefore, it is necessary to introduce proper groundwater monitoring programme in above areas.

1.1.9 Jaffna peninsular

This project was commenced in 2011 under Dam safety and water resources planning project and completed the target activities in 2015. After that the groundwater monitoring network combined to the LTGM project in order to measure water levels and water quality in long term basis.

- Water Level fluctuation in Jaffna District is mainly governed by rainfall, and the groundwater level in the wet season increases gradually while the water level in the dry season depletes gradually. The water-bearing capacity of the topmost zone is excellent, and during the rainy period, it is filled with rain water and gradually flushed away or evaporated just after the rain stops.
- It is needed to implement a proper system to retain rainwater as groundwater with minimizing runoff and evaporation.
- Most of the coastal zones of the district are contaminated by EC, SO₄, Mg and Calcium and continue throughout the year.
- It is necessary to control the excess groundwater extraction and prevent groundwater contamination.
- Nitrate distribution of the district does not show exceeding SLS levels for Portable Drinking Water. Nitrate should be continuously monitored to evaluate changes over time, and excess fertilizer usage should be controlled.
- The groundwater quality of the peninsular varies slightly with climatic changes and more with anthropogenic activities. Therefore, groundwater monitoring practices in the district should be continuously carried out to evaluate and estimate groundwater quality and
- quantity variation with natural and anthropogenic activities.
- The middle of the peninsula consists of a moderate-level quality groundwater aquifer, while Vadamarachchi East and Pachchilaipallai DS divisions are good quality water.
- Slight quality changes can occur due to heavy rain, so every contaminable material may dissolve in the rainwater and percolate into groundwater.
- Rainwater dilutes EC, TDS, Alkalinity, and other parameters in the groundwater that can cause these minor improvements within the central part of the peninsula during the post-monsoon period.

According to all these observations and conclusions it is recommended to monitor water quality and water levels of this area in long term basis.

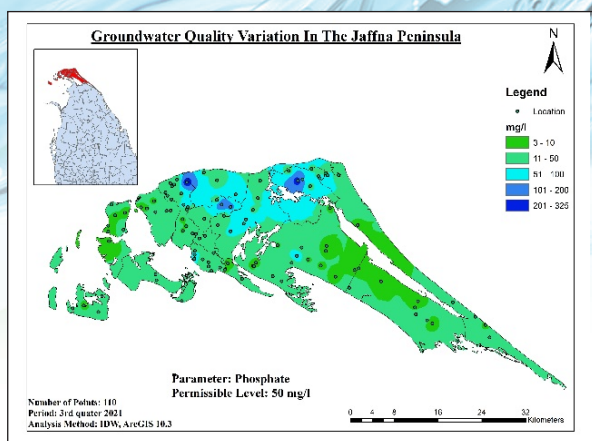


Figure 09: Nitrate distribution of the area – Pre monsoon

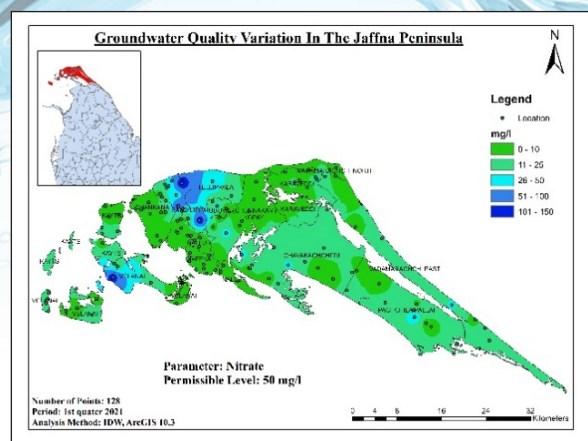


Figure 14: Nitrate distribution of the area – Post monsoon

1.1.10 Polonnaruwa District

Groundwater usage is rapidly increasing in dry zone areas of Sri Lanka. Many people in dry zone areas depend on groundwater to meet their water needs for domestic and agricultural purposes. Under this study, the hydrogeological condition was assessed and the groundwater quality and levels were initially monitored to identify the baseline status of the Polonnaruwa district. Seventy-five (75) wells were selected for groundwater level monitoring and to assess their geochemical characteristics and suitability of water for drinking. Of those, 54 locations were existing dug wells and 21 locations were constructed tube wells that were constructed by the water resources board. Water sample collection was conducted in the 1st and 3rd Quarters of the year 2022.

All samples were analyzed for physical and chemical parameters such as pH, Total

Hardness, Total Alkalinity, Calcium (Ca^{2+}), Sodium (Na^{+}), Potassium (K^{+}), EC, TDS,

Salinity, Magnesium (Mg^{2+}), Total Iron, Chloride (Cl^{-}), Sulphate (SO_4^{2-}), Fluoride (F^{-}), Nitrate (NO_3^{-}) and Phosphate in WRB laboratory, Anuradhapura.

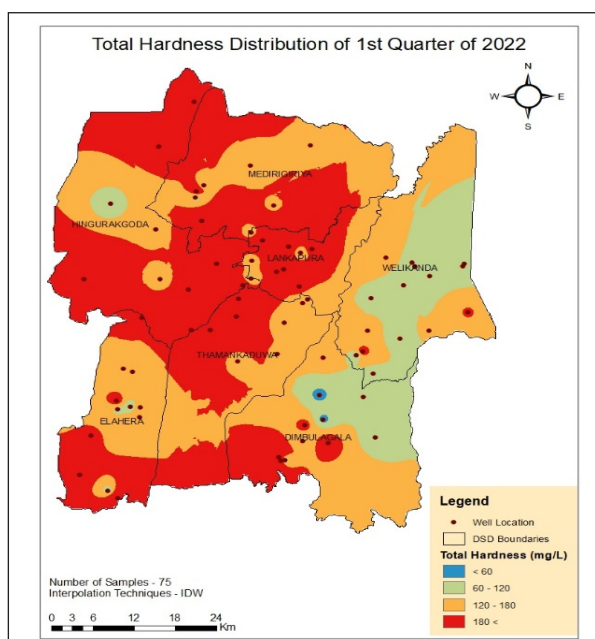


Figure 15: Total Hardness distribution map of 1st quarter of 2022.

According to the available water level monitoring data of the last four years from 2019 to 2022, the water levels of the monitoring wells have varied with the rainfall of the area. The water table fluctuation matches the “dry-raining season” cycle.

When the quality of groundwater in the study area is concerned, parameters such as Sulfate, Nitrate and Total iron were within the desirable limit in all water samples of the study area in comparison with the drinking water standards (Sri Lanka Standards for potable water–SLS614: 2013)

High values of some parameters (EC, TDS, Total Hardness, fluoride, sodium, Chloride, Magnesium and Alkalinity) in the Lankapura region are notable compared to the other regions of the study area. According to the study elevated levels of total hardness are reported as a major issue in the groundwater of the Polonnaruwa District. The majority of the areas in the Polonnaruwa District were reported as very hard water according to the WHO drinking water standard 1993 (Figure 1).

The study suggests that the groundwater of the study area is not mainly influenced by surface anthropogenic activities. The best possible reason for elevated levels of some parameters would be the geological influence. There may be significant influences by geogenic processes on the groundwater quality of the area.

1.1.11 Matale District

The Water Resources Board (WRB) was initiated a long-term groundwater monitoring project at Matale District in year 2012 under the Dam Safety and Water Resources Planning Project which explored any management plan and guidelines to be implemented for sustained use of the available groundwater resources. 252 Agro wells were observed in this area to mentor shallow aquifer characteristics. To study the deep aquifer characteristics 82 tube wells were observed which were located close to the previously studied agro wells to identify any relationship.

Later, most suitable places were selected for the long term monitoring (LTGM) based on results of this study. Therefore, the wells located in heavy pumping places and heavily cultivated places were used as monitoring points. For this purpose, 35 wells were currently selected as the long-term monitoring points and started monitoring groundwater quality and water levels at dry and wet periods of the year and 4 transitional periods.

In Matale area ground water is predominantly used on domestic, agricultural and industrial purposes. Meanwhile with the increased agricultural practices, economic development and increased population have resulted increased demand on fresh water resources within the area.

Following chemical distribution maps have been prepared for 1st quarter of year 2021 and 2022.

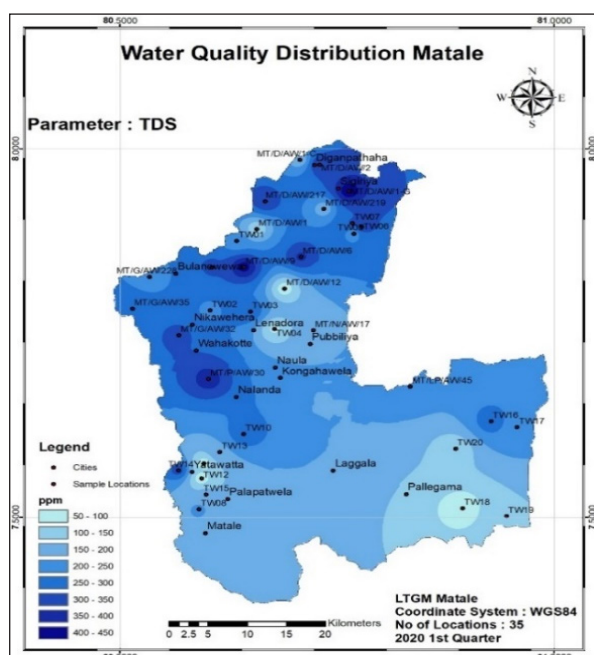


Figure 16: Variation of TDS for 1st quarter 2021

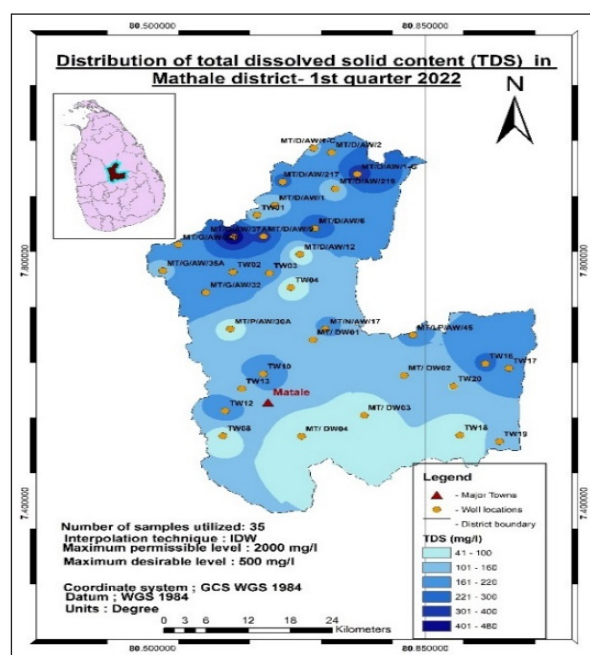


Figure 17: Variation of TDS for 1st quarter 2022

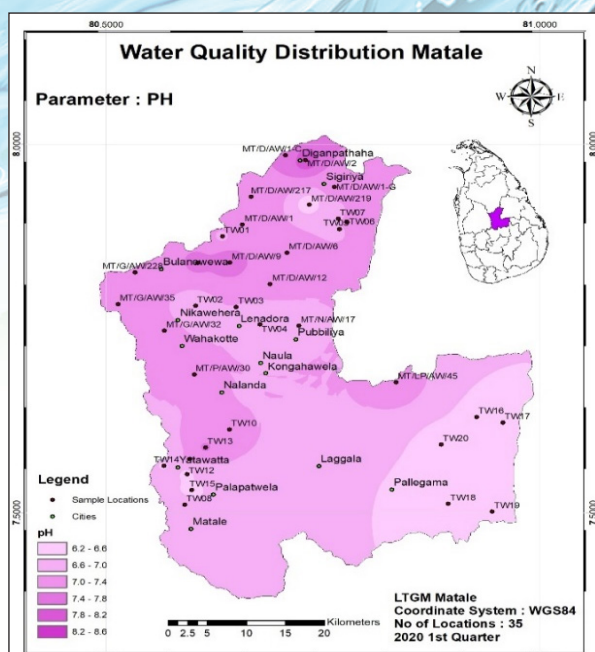


Figure 18: Variation of pH for 1st quarter 2021

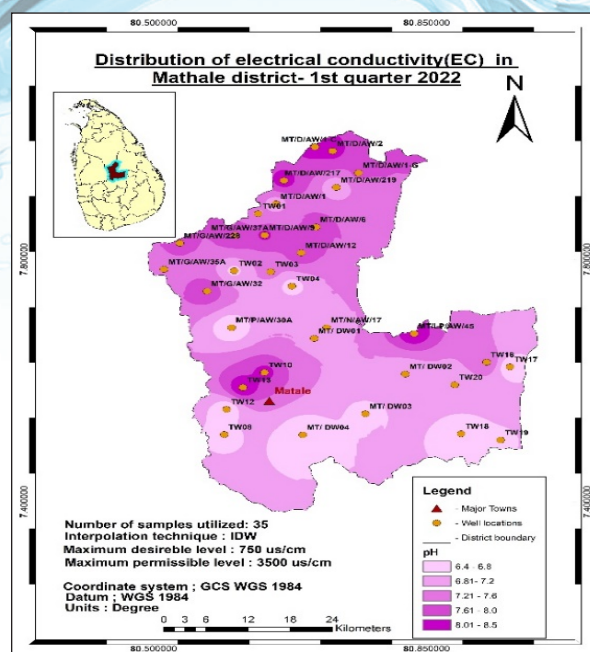


Figure 18: Variation of pH for 1st quarter 2022

According to the water quality analysis of the area, almost all parameters are within the SLS standards for drinking water. However due to high usage of fertilizes and high extraction of water in this area, groundwater quality can be decrease. Therefore, the continuation of water quality monitoring is recommended.

1.2 The Study on the Direct and Indirect Impacts on the Climate Changes on the Coastal Aquifer System of Sri Lanka

The study is carried out at the western & eastern coastal belt to identify the water quality changes due to sea water intrusion by the global climatic changes phenomena. To achieve the project objectives of this project following activities have been carried out during 2022.

Water level measuring, Water sampling and Water sample analysis

Based on the result of the study conducted from year 2014 to 2021, further well monitoring conducted using the constructed shallow test bore wells and existing shallow tube wells to identify the salinity intrusion on fresh water aquifer and to identify the other environmental impact on the coastal aquifers.

The selected existing monitoring points and newly selected monitoring points have been shown in Figure 03. During the year, the continuous water quality and groundwater level monitoring is scheduled. The additional monitoring wells are proposed to establish in both of the coastal belt amounting 10 nos. with aquifer tests on the wells before the monitoring resumes on these wells to identify the aquifer properties. Monitoring & Monitoring tube well construction is completed in 2022.

At the end 2022, quarterly monitoring event has completed. The samples have collected and laboratory analysis were done for 25 and 35 locations of the western coastal belt and eastern coastal belt respectively. For establishing of 10 new monitoring wells to fulfill the monitoring gaps, the geophysical & hydrogeological investigations have completed at 4 locations in western coastal belt and 6 locations in eastern coastal belt.



Figure 20: Established groundwater monitoring network (Colombo to Weligama coastal belt).



Figure 21: Established groundwater monitoring network (Trincomalee coastal belt).

According to the analysis results, It is recommended to continue water level and water quality of the area in order to determine the impact due to climate changes, specially Provide the findings for implementation of salinity barriers by the stake holder Agencies & Managing of the groundwater resources of the country

Table 03: Progress summary of SICC project - 2022

	Activity	Target	Progress
1	Geophysical investigations & Test Well constructions	10	100%
2	Biannual water level monitoring & insitu analysis water samples (160) & Heavy metal Analysis (60 Nos)	220	84%
3	Chemical analysis of water samples (160) & Heavy metal Analysis (60 Nos)	220	31%
4	Data interpretation & Preparation of the final Reports		65%

1.3 Hydrogeological Assessment & Identify of favorable Aquifer recharge with in Ma Oya River Basin (Ma-Oya)

The middle part of the Ma Oya basin face to the groundwater scarcity in dry periods. Since the upper part of the basin receives a sufficient rainfall all over the year, it would be better to plan an artificial recharge system for the middle part of the basin. For this purpose, a detailed hydrogeological assessment is important. Based on the objective of identification of favorable zones for aquifer recharge, a detailed hydrogeological assessment of Ma Oya basin was implemented. For the hydrogeological surveys, spring monitoring and identification of recharge areas is a major activity in this project.

Springs are playing a major role in the groundwater sector as a small and significant unit which helps for formation of groundwater basins. There are large number of springs in the country associating the recharge areas. Since these springs are not listed and not protected by any authorized institutes, some development projects are planning without considering springs and other hydrogeological conditions in the area. In this

circumstance, hydrogeological conditions of the basins are very important. Since still it's not developed hydrogeological maps for Sri Lanka its high time to prepare hydro geological maps and locate, develop and protect springs and other hydro geologically sensitive areas of all basins in the country. There are topographical and land use maps to cover whole Island and thus it's easy to identify topography and land use patterns in different regions in the country. Also there are geological maps covering whole country, so it's easy to understand the geological conditions of the specific areas. But there are no hydrogeological maps to cover basins in the country. Therefore, it's very difficult to understand about the hydrogeological setup of the areas. Since there are no any databases with details of springs in the country, it's difficult to identify whether there are sensitive areas for groundwater recharge are overlapping the development project areas. Other than that, to identify the subsurface hydrogeological conditions of the basin detailed hydrogeological surveys should be done. Based on collected information, the favorable zones for aquifer recharge within Ma Oya Basin will be identified.

Specific Objectives

- Study the spring discharge rates of springs, social value of the springs, identifying the development needs and defining the protection criteria of springs.
- Preparation of hydrogeological map by specifying the aquifer types of the area and demarcate the quantity can be taken from specific aquifers in the area by using available pumping test data in Water Resources Board
- Identifying the areas of water scarcity at dry period and preparation of plan for artificial recharge

Activities done during the year -2022

- To identify the subsurface hydrogeological conditions of the basin detailed hydrogeological surveys were carried out in hydro geologically suitable areas of the basin.
- Carried out 2D geophysical surveys to identify the geological and hydrogeological features of deep rock layers.
- Based on collected information, a favorable location for aquifer recharge was identified and designed a recharge structure to establish in that location.
- Based on hydrogeological investigations, one location selected for deep drilling to understand about the geological and hydrogeological features of deep rock layers.



Figure 22: Initiating the drilling of deep recharge well at Bemmulla Sri Wardhana Pirivena and the proposed recharge structure diagram.

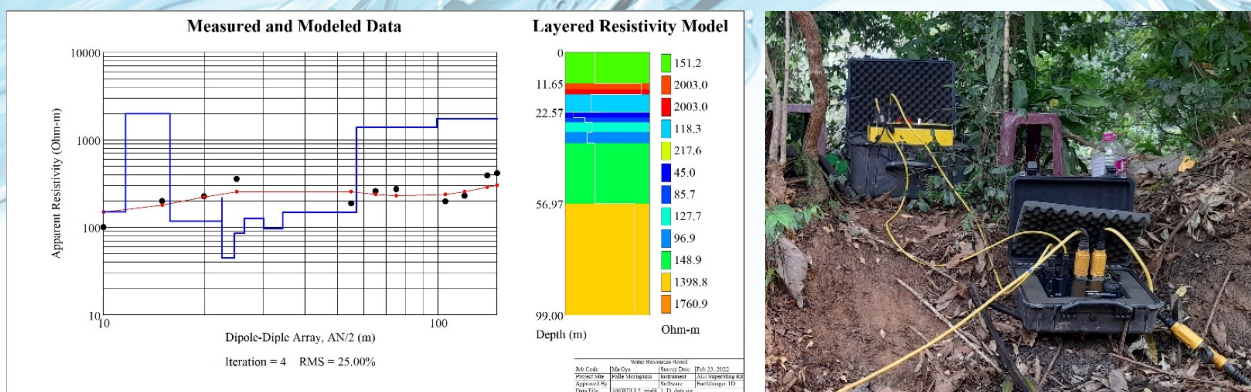


Figure 23: 2D resistivity survey graphs – Alawwa Pallemorugama area

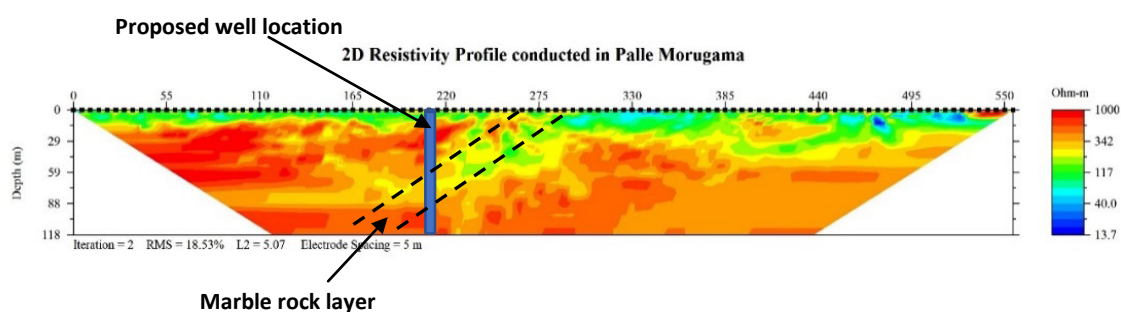


Figure 24: 2D Resistivity survey analysis image



Figure 25: Initiating the drilling of deep borehole in Alawwa Pallemorugama area

Table 04: Progress summary of Ma-oya project -2022

	Activity	Target	Progress
1	Baseline groundwater level & WQ assessment by insitu testing	100	100%
2	Geophysical Investigations	50	100%
3	Construction of deep boreholes and aquifer recharge - pilot studies	BH-03 Nos; MAR-1	50%

1.4 Combined Inspections on Groundwater relates issues

In addition to the above main groundwater studies, the combined inspections on the issues related to groundwater resources are carried out with the coordination of stake holder agencies. The most of the related activities are quarry mining influences on groundwater resources, illegal tube well construction and tapping of groundwater at commercial scale without the necessary testing & guidelines obtained from Water Resources Board and water sharing & water right issues within the community.

During this year, altogether water Resources Board have attended for 72 number of such incidences up to now. in Colombo, Gampaha, Kurunegala, Puttalam, Anuradhapura, Moneragala, Kegalle and Kalutara Districts with the participation of officers from CEA, GSMB, NBRO and other relevant authorities.



Figure 26: Join Inspection of a Gem mining location



Figure 27: Join inspection at Madabawita soil excavation site

Table 05: Progress summary of INSP project - 2022

	Activity	Target	Progress
1	Meeting & Combined inspection of Groundwater Resources	100	80%
2	Implementation of Groundwater Regulations (Awareness programs on community & stakeholder Agencies)	15	12%

1.5 Development of groundwater Atlas for Sri Lanka

In recent decades, groundwater resources have become economically and socially significant national resources. Nevertheless, a systematic and exhaustive atlas of groundwater resources has not yet been prepared, although there have been a few attempts in the past. The Water Resources Board is currently in the process of producing a groundwater atlas for Sri Lanka with the aid of all available information pertaining to the groundwater sector, which would be useful for the long-term management of these limited resources. The project was implemented in 2022 as a treasury-funded initiative under the Groundwater Studies and Infrastructure Development of the Ministry of Water Supply. The Atlas is intended to assist policymakers, water managers, and their respective technical staffs in making tough groundwater related decisions. It will also be informative for the general public and groundwater specialists.

The Groundwater Atlas will be published in a language that non hydrologists and professionals can understand. Simple language is used to explain technical terms. The principles that govern the presence, flow, and quality of groundwater in various climatic, topographic, and geologic environments are illustrated in detail. As a result, the Atlas is valuable as a teaching tool for courses in hydrogeology at the college level, as well as an overview of groundwater conditions for consultants looking for information on a specific aquifer/ Area. It also provides an introduction to regional and national groundwater resources for legislators,

personnel from municipal, state, and governmental agencies, and anyone else interested in groundwater occurrence, movement, and quality.

The lack of reliable groundwater data and information is a serious obstacle to developing groundwater resources in Sri Lanka, as well as an extra barrier to doing research. This project's major goal was to provide detailed and relevant information about Sri Lankan groundwater resources to a variety of stakeholders, including:

- Hydrogeologists and other practitioners looking for knowledge and data on groundwater conditions in specific regions or country.
- Policy and decision makers that require an overview of a groundwater conditions and concerns.

The Groundwater Atlas of Sri Lanka aims to compile, in a single publication in a consistent manner, the most important groundwater data collected over many years by the Water Resources Board.

The study is being progressed in a stepwise manner with the activities of a preliminary desk study to collect and collate all available information on groundwater resources, Data compilation, screening and processing of available information, Analysis of data and preparation of spatial water quality and quantity maps preparation of a vulnerability map on groundwater resources and field verification of the processed maps. Due to the fact that the finances have to be cut off, field verifications have not been carried out in the present economic state of the country.

In order to produce spatial maps, 7746 different sampling locations were considered. The maps are being prepared for the entire country as well as a series of spatial distribution within a few years past sensitive areas such as the Jaffna peninsula, the eastern and western coastline strips of the country, and the dry zone considering the pre and post monsoonal period in the area. A few instances are provided below.

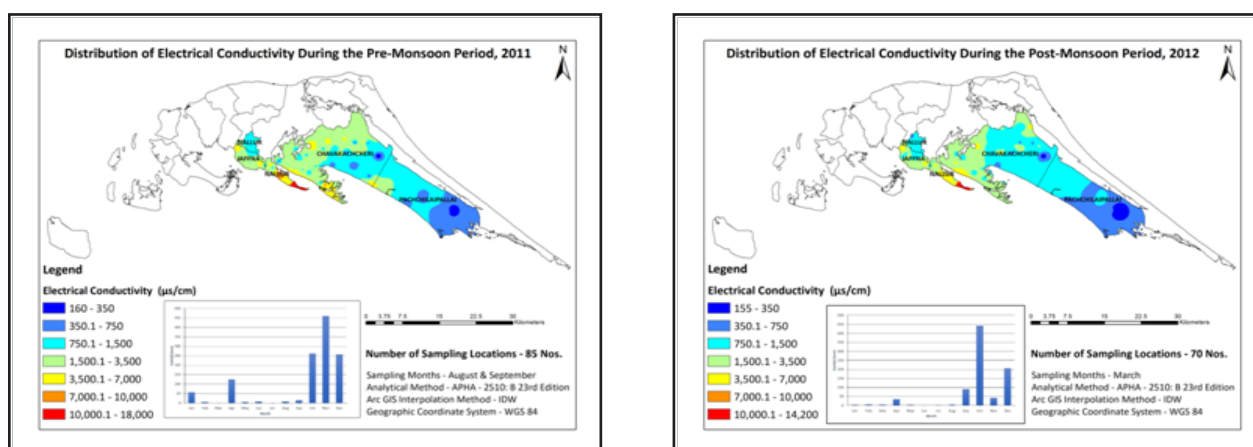


Figure 28: Ongoing study of seasonal variation series in water quality parameter in Jaffna Peninsula

Because of the limited number of points that were available during those years, the accompanying maps only depict a part of the peninsula. However, as the time series moves to the present, spatial maps will eventually be able to reflect the entire peninsula.

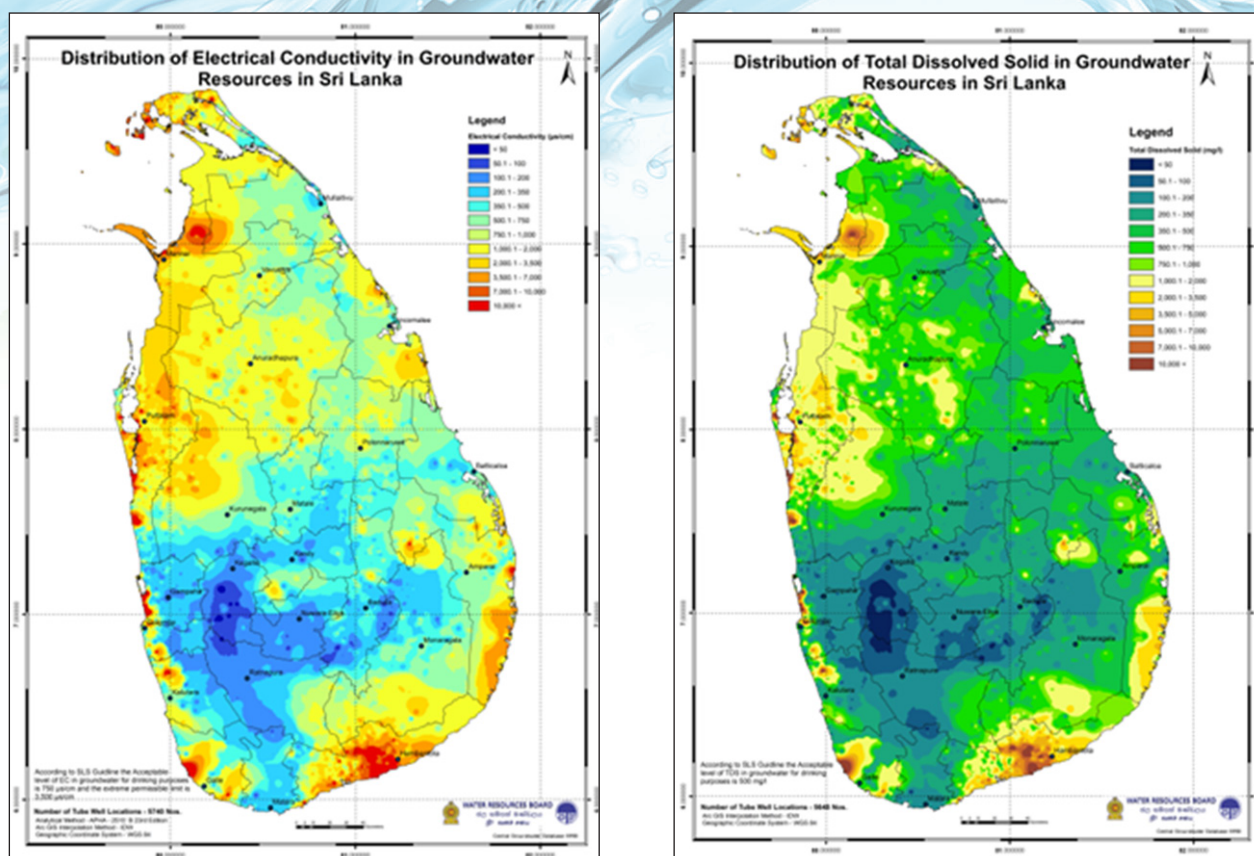


Figure 29: Some spatial maps of water quality parameters of groundwater resources in Sri Lanka.

The prepared maps will be discussed to give an overview of the most important aspects of the geology, hydrogeology, groundwater flow system, general water quality, and use of the water abstraction.

For future sustainable water supply, and economic expansion groundwater resources must be successfully and sustainably developed. This requires a solid grasp of hydrogeology and groundwater. Even Nevertheless, it is frequently challenging to locate and acquire reliable current information about Sri Lankan groundwater, even when it does exist. By making groundwater information more understandable and accessible, the Sri Lanka Groundwater Atlas contributes to the solution of this issue.

In order to obtain a groundwater atlas that is both accurate and dependable, it is necessary to take into consideration further expansion along the following pathways.

- Improving the precision of the maps by compiling groundwater data from various state and local water management authorities.
- By organizing for field verification, the anomalous places that the spatial maps of groundwater quality indicators revealed should be confirmed.
- Before finalizing the Atlas report, obtain essential directions from an editorial board of groundwater experts, such as academic professionals.
- Publication of a handbook of groundwater atlas.

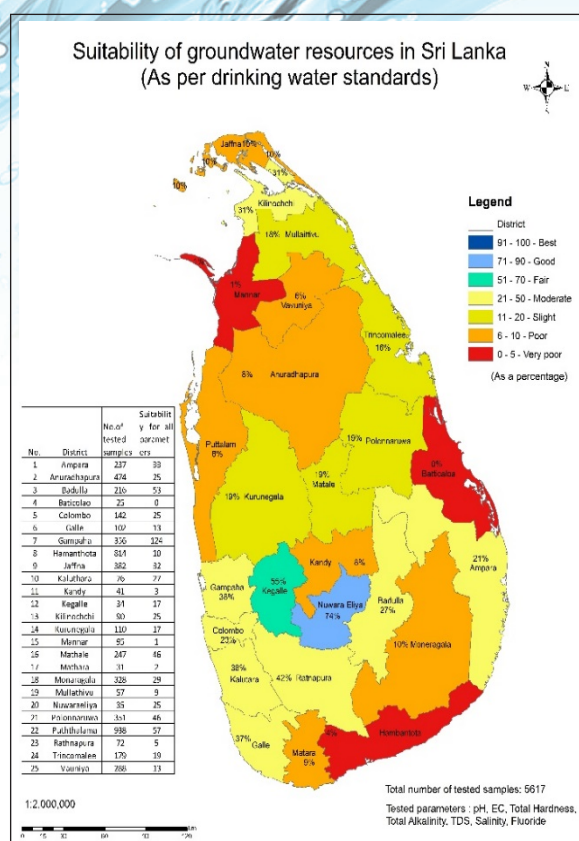


Figure 30: Suitability of groundwater resources of each district in Sri Lanka

Table 06 : Progress Summary of GW ATLAS project - 2022

	Activity	Progress
1	Preliminary Desk study for collect & collate all available information on GWR	100%
2	Data compilation, screening & processing from available information	100%
3	Analysis of data & Preparation of Spatial Maps (water quality & quantity)	100%
4	Preparation of vulnerability & productivity map on GWR of the country	70%
5	Preparation of the final (Map) report	60%

1.6 Infrastructure Development, improved capacity in scientific equipment and enhance of skill development within the Institution.

The renovation of Research & Training Center at Anuradhapura was completed while the expansion of officer quarters at Anuradhapura was started but the construction activities have stopped by now due to financing constraint resulted by the economic crisis of the country.

Several scientific equipment such as Submersible pumps for the aquifer testing, Water level recorders which was in the requirement for the research activities of the year and proceeded for the procurement. However, the equipment were not procured due to the economic crisis resulting fund unavailability. Two nos of pH meters were only managed to procured during the year.

In the skill development training of the employees, there were some training to attend, however the most of the local training programs have been cancelled this year due to Covid condition and online training

opportunities are seeking to avert the lack of training opportunities.

1.7 Emergency use for disaster events related to water sector (drought, floods, catastrophic event of contamination on GWR) (E-USE)

Groundwater explorations, construction of production boreholes and conducting pumping tests were the activities carried out according to requirements of the community with in the affected areas identified under this project in the year 2022.



Figure 31: Conducting pumping tests in Matara area



Figure 32: Hand pumps installed in Matara and Bemmulla areas

Table 07 : Progress Summary of EM USE project - 2022

	Activity	Target	Progress
1	Priliminary investigations and Groundwater exploration assesement Activities as per the requirement arises	10	40%
2	Construction of production boreholes for provision as an alternative sources for drinking requirement of the community with in the affected areas identified	10	60%

2. Generated Fund Activities

2.1 Commercial activities

The following commercial activities were performed on the requests made by Government and other organizations including public requirements.

1. Groundwater investigations - (to explore groundwater to construct tube wells, to give recommendations to ensure the groundwater protection in rock quarrying, soil and sand excavations areas and for other development activities in the country)



Figure 33: Groundwater investigations for soil excavation area



Figure 34: Groundwater investigations for rock quarrying area

2. Tube well construction
3. Pumping tests – To ensure the groundwater protection and to determine the safe yield of production wells



4. Tube well cleaning
5. Water sample analysis

The progress of year 2022 is given bellow.

Table 08 : Progress summary – 2022

No	Item	Target	Progress	Progress
1	Hydrogeological Surveys	425	451	106%
2	Tube Well Constructions	100	55	55%
3	Pumping Tests	175	159	91%
4	Tube Well cleaning	10	04	44%
5	Chemical Analysis of Water Samples	900	1044	116%

2.2 Groundwater Regulations

The summary progress of the Groundwater regulation activities commenced by the Water Resources Board in the year 2022 given as follows.

This year mainly focused to collect information of the Groundwater Resources utilizes for the commercial, agriculture and domestic purposes in Divisional Secretariat levels. To success the above activities, the circular was issues by the secretary, state Ministry of Home Affairs to all Divisional Secretariat regarding the collecting information as requested by the secretary to the Ministry of Water Supply. After receiving information from the DSD levels to the Water Resources Board, the relevant data were evaluated and relevant maps have been prepared according to the available information. Mainly the well inventory would be prepared for the commercial utilization groundwater wells. The progress of the data receiving up to now is given as follows.

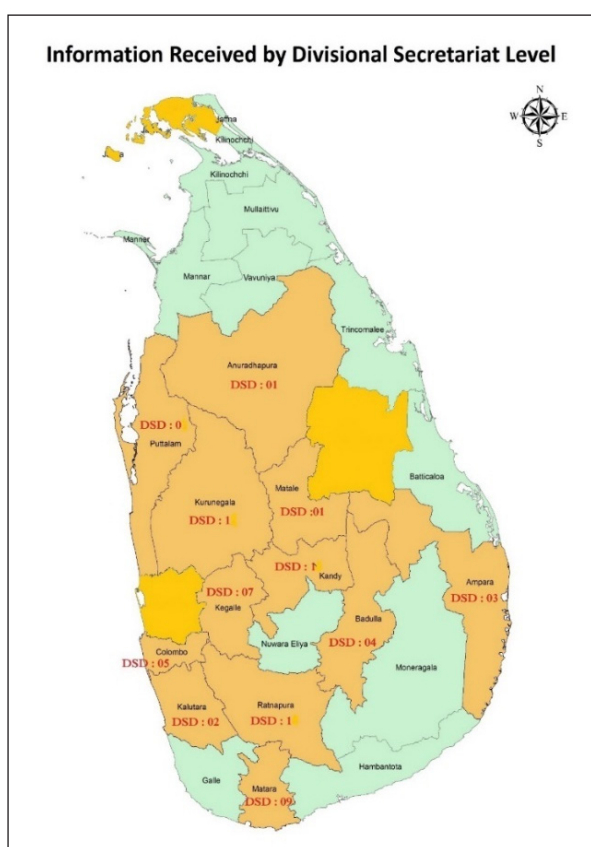


Figure 36: Groundwater sources information received Divisional secretariates.

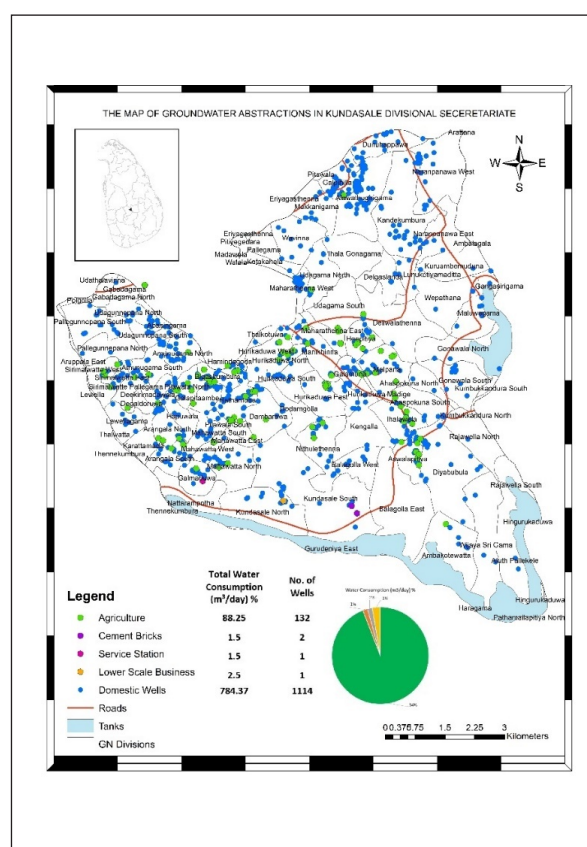


Figure 37: Groundwater consumption in commercial activities at Kundasale DS Division.

Table 09: Summary of information received from each District

District	Nos of Divisional Secretariat data received	Information of the resources
Kandy	19	16,337
Matale	2	1,658
Kurunegala	14	53,696
Puttalam	11	30,779
Badulla	4	1,010
Kegalle	7	42,616
Rathnapura	17	29,718
Colombo/ Gampaha/ Kalutara	8	281
Anuradhapura/ Polonnaruwa	3	5898
Matara	9	5,799
Ampara	3	633
Jaffna	15	109,030
Total		296,406

In addition, to improve the quality and the standard of tube well construction process, 15 number of registered external drilling officers were trained by experienced drilling officers of Water Resources Board

*Figure 38: Training program for external drilling officers*

Other than that, following activities were commenced.

Table 10: Progress summary - 2022

SN	Activity	Nos.
1	Registration of Private Drilling Companies	52
2	Issuing of Registration Certificates for Drilling Machines.	72
3	Registration of External Hydrogeologist	10
4	Issuing Approvals for Hydrogeological Reports (Hydrogeological reports submitted to Water Resources Board prepared by registered external hydrogeologists to get the approval before constructing wells)	583
5	Installation of <i>Flow Meters</i> on production basis tube wells and dug wells to measure the daily consumption of groundwater in groundwater utilizing companies.	4
6	Collected information of Groundwater Utilizing Companies (These companies extract groundwater production basis from tube wells and dug wells for their commercial activities).	600
7	Joint Inspections regarding groundwater issues complains by community and awareness programmes.	20
8	Training program for drillers	15

2.3 Research oriented Commercial activities

2.3.1 Groundwater Quality Assessment within the sub catchment of Diyawanna Oya. (Under the management plan for restoration of water quality at parliament lake catchment)

The groundwater quality assessment study is carried out under the project of the management plan for restoration of water quality at parliament lake catchment. Diyawanna oya is a major water body situated in Kotte Sri Jayawardhanapura, legislative city of Sri Lanka. It is quite popular as the Sri Lankan Parliament Building was built on an artificial island at the center of the lake.

During the last decade Diyawanna oya experience many environmental issues related to deterioration of its water quality due to large population density, industrialization and rapid urbanization etc. in 2021, it was observed that the algal bloom in Diyawanna Oya lake along the Densil Kobbekaduwa Mawatha. The immediate action was taken by Sri Lanka Government to rectify the issue with forming the Task Force committee naming the Task Force for controlling of pollution and improving the quality of water ways associated with Diyawanna oya.

This ground water monitoring study is encompassed under the main program of Task Force, “Management plan for restoration of water quality at parliament lake catchment” and the main objective is to assess the present status and its spatio temporal variation to detect any contaminations issues with identification of possible sources where the contaminants are originated. To achieve the main objective, the following sub activities are scheduled as follows,

- Assess the initial & baseline in-situ water chemistry of the groundwater sources through reconnaissance survey.
- Spatio temporal groundwater quality monitoring & identify its variation
- Determine the groundwater flow behavior within the sub catchment
- Identify the contaminant pathways within the sub catchment
- Findings & remediation strategies

Findings and Maps:

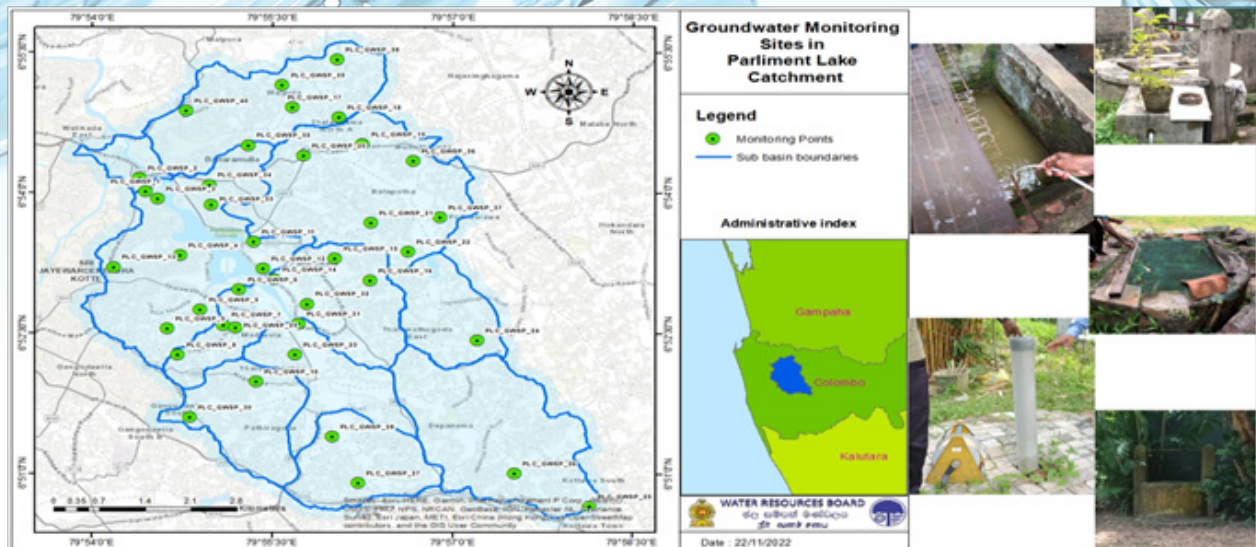


Figure 39: Study area: Diyawanna Oya Lake catchment, sampling points and some sampling sites

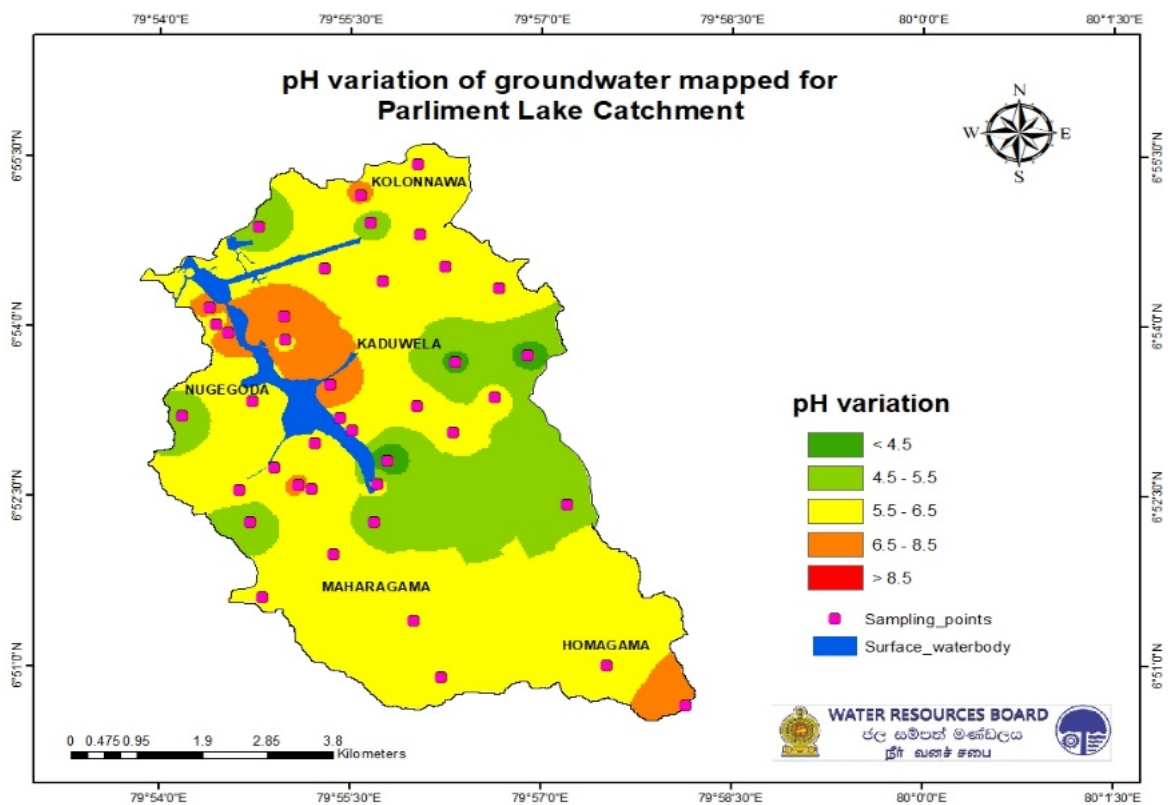


Figure 40: pH variation of Diyawanna oya Catchment

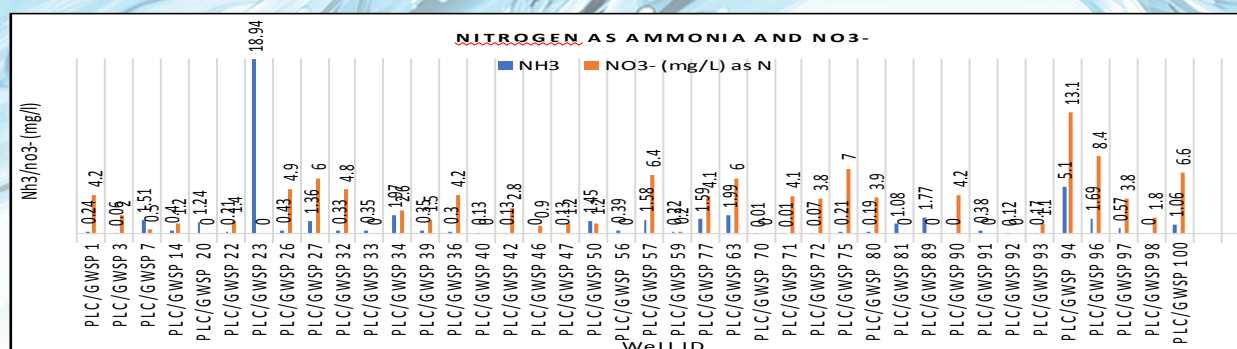


Figure 41: Water quality analysis – Dissolved Ammonia and Nitrate

Table 11: Progress summary – 2022

No.	Activity	Target	Progress
1	Collection of data and designing of groundwater monitoring Network (40 monitoring points)	40	100%
2	Monitoring groundwater level (Quarterly Basis covering Q3 & Q4 of the year 2022)	40	50%
3	Leveling of the selected Monitoring Points (40 Nos)	40	28%
4	Analysis of Water samples for physical, chemical, heavy metals & microbiological parameters of 80 samples collected (40 monitoring points for Q3& Q4)	80	50%
5	Data Analysis & Preparation of the final report (03 copies)		40%

17 Nos. of water quality parameters were analyzed including Physio chemical parameters, biological parameters (Hygienic indicators) and Heavy metals. Finally, we found that PH and Dissolved NH₃ are the main problematic parameters in the study.

The PH measures done in all the samples and the PH ranging 3- 6.8 during the study period. 77.5% of the sample shows acidic nature in water and below the safe PH level for drinking purpose.

Dissolved NH₃ is the most worrying parameter because the detected values are far above the standard level of Drinking water quality standard of Sri Lanka (0.06 mg/L) though it is unstable in normal oxygenation process. However, further studies required to interpretive the patterns of the water quality variations within the study area.

2.3.2 Detailed hydrogeological and geochemical assessment on the peripheral area of the Lakvijaya power plant, Norochholei.

The Lakvijaya power station also known as the Norochholei power station is the largest power station in Sri Lanka. The power station is in Norochholei, Puttalam, on the southern end of the Kalpitiya Peninsula. According to the Ceylon Electricity Board, the US\$455 million first phase generates nearly 1.7 TWh of electricity annually; a significant amount when compared to Sri Lanka's total production of 11.5 TWh in 2011. The plant is connected to the grid via 115 km (71 mi) 220-kilovolt transmission line to Veyangoda. Power station exhausts are emitted through a 150 m (492 ft) tall chimney, one of the country's tallest man-made structures. In the plant, basically the electricity is produced using a steam turbine which is capable of producing 300MW. Coal is used as the fuel to produce steam that will then be used to rotate the turbine in the speed of 3000 rpm.

Lakvijaya power plant is using groundwater for landscaping activities of its premises land which is approximately 100 acres in extent. The required water is extracted by means of existing shallow well field at the premises of this power plant which was initially constructed for the requirement of water for the constructions of power plant. Altogether, 74 nos. of shallow tube wells are have constructed which are off merely 6m in depth with diameter of 225 mm. The static groundwater level is around the depth range 2.50-3.50 meters below the ground level. Despite the well field of 74 Nos, the extraction of groundwater for the landscaping purpose was utilized intermittently on different sets of wells without a systematic practice. However, with the request from Lakvijaya Power plant, the test pumping was carried out and determine the safe yield including a pumping plan for the selected well field during the first phase of this study by Water Resources Board.



Figure 42: Google map view of the study area in and around the Norochchelei Power plant with monitoring locations



Figure 43: Water sampling

Finally it was recommended to further monitoring of groundwater abstraction through establishment of flow meter system on the well field.

The awareness & provide of necessary guidelines on the use of groundwater resources of the area to the community about these changes in groundwater of their territory specially to the framing community is beneficial in the long run to sustained this productive and highly vulnerable aquifer to sea water intrusion and other all possible contmaniations by anthropogenic activities.

3. Foreign Funded Project:

The Project covers Malwathu Oya, Maduru Oya and Kumbukkan Oya basins where establishing of 125 monitoring locations and 14 rainfall stations. Further in the extension phase of the scope, the Jaffna Peninsula & Puttalam area (Wanathavillu & Madurankuliya groundwater Basins) also included. In these expanded areas, 65 monitoring locations and 6 rain gauge stations are scheduled to establish.

The main objective is to implement as an initiative step towards the establishment of National Groundwater Monitoring Network for Sri Lanka in order to collect more comprehensive and accurate real time data on (a) Groundwater Level (b) Water Quality.

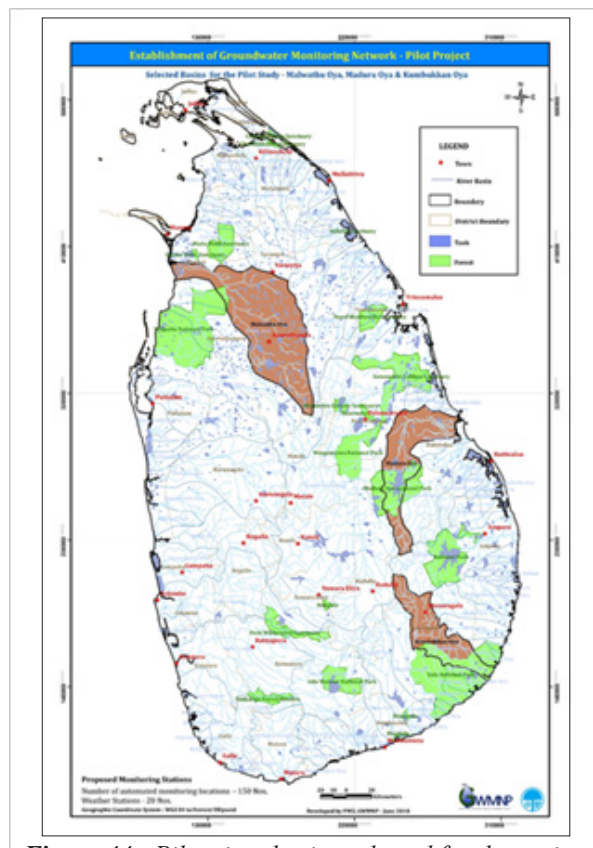


Figure 44 : Pilot river basins selected for the project

Table 12: Activity Progress of Main Pilot Basin in 2022

Activity	Malwathu Oya		Maduru Oya		Kumbukkan Oya	
	TGT	CML	TGT	CML	TGT	CML
Desk Study	Completed					
Identify monitoring zones	90	90	25	25	25	25
Geophysical Investigations	85	98	20	24	20	22
Land permission	85	88	20	20	20	20
Monitoring well construction	85	85	20	20	20	20
Data logger Installation	85	85	20	20	20	20
Web portal Development	Completed (100%)					
Operational Data Centre	In progress					

The selection of the monitoring locations is based on the hydrogeological condition, vulnerable areas where quality and groundwater depletion due to anthropogenic activities at present. Water level, Electrical conductivity, Nitrate and temperature are the basic parameters monitored with these automated systems. In addition, the heavy metal concentrations in groundwater are periodically assessed to understand the changes of contamination with time in the three basins.

Table 13: Activity Progress of Additional Pilot Basin in 2022

Activity	Puttalam		Jaffna Peninsula	
	TGT	CML	TGT	CML
Desk Study	Completed			
Identify monitoring zones	25	30	40	43
Geophysical Investigations	Completed			
Land permission	25	25	40	40
Monitoring well construction	25	25	08	08
Data logger Installation		Completed		

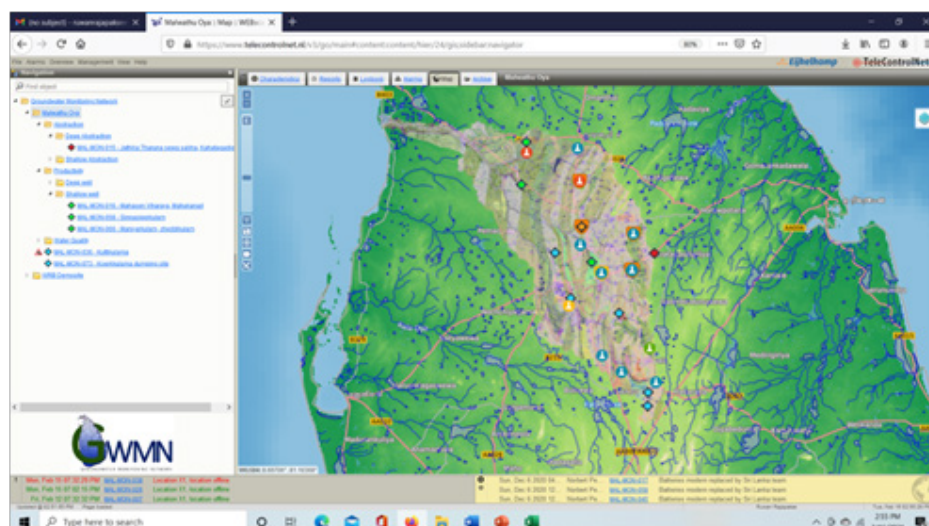




Figure 45 : View of the Web Portal Developed & one of the established real time groundwater Monitoring well at near NWSDB Mihinthale water supply scheme.

The project is operated by the technical experts from Netherlands while Water Resources Board is in supervision the standard & procedure of the project as per the agreed contract. The project basic Physical and financial summary for the year 2022 is shown below.

Allocation 2022	350 Mn	
Financial Progress	238 Mn (Target)	238Mn (Achieved)
Physical Progress	100% (Target)	100% (Achieved)

Drilling Division

Main Duties

Main duties of the drilling division are as follows.

- Construction of Deep Tube Wells
- Cleaning and Flushing of Tube Wells
- Installation of Hand Pumps
- Rehabilitation and Maintenance of Tube Wells
- Construction of Boreholes for Hydrogeological Research / Studies

The main activity of the drilling division is to construct deep or various types of tube wells to fulfill water demands of Sri Lankan society. All drilling works are conducted by drilling division in accordance with the job orders provided by the Hydrogeology and Operation division. Drilling division has enough technical knowledge as well as equipment/machineries to adopt two drilling methods such as Air drilling and Mud drilling. Consequently, deep tube wells are able to construct at any problematic geological terrain in Sri Lanka.

At present, drilling division has the several number of employees who are managed by Assistant General Manager (Projects) and Drilling Manager. This division has 11 numbers of drilling officers who have comprehensive knowledge of drilling techniques.

Sonic Drilling

Sonic drilling is a relatively new technique, where a high-frequency vibration is combined with rotation to advance the drill stem. The core barrel is retrieved and the sample vibrated into a plastic sleeve or core trays. This technique is relatively continuous and undisturbed geological samples are obtained without the use of drilling fluids or other potential contaminations. This technique is best suited to drilling unconsolidated formations, but its depth capability is somewhat limited by current technology.

Four no of assistant drilling superintendents were already have taking the training of drilling technics from Ground Water Monitoring Network project. After handing over of ongoing Groundwater Monitoring Network project, Sonic drilling techniques will be started from W.R.B.. The project works were completed and the handing over works is ongoing. It will be finished end of January 2023.

According to the drilling activities, following works have been completed during the year 2022.

PROGRESS SUMMARY OF DRILLING DIVISION – 2022**TUBE WELL DRILING & WELL CLEANING**

MONTH	WASSIP	MINISTER REQUEST & EOU FUND	MA- OYA	COMMERCIAL	WELL CLEANING	REHABILI- TATION	HAND PUMP INSTALED WITH BASIN	TOTAL
JANUARY	1	-	-	14	1	-	-	16
FEBRUARY	-	-	-	6	1	-	-	7
MARCH	1	1	2	10	2	-	-	16
APRIL	-	-	-	3	-	-	-	3
MAY	-	-	-	-	3	-	-	3
JUNE	1	-	-	2	-	-	-	3
JULY	-	-	-	-	-	-	-	0
AUGUST	1	-	-	-	-	-	-	1
SEPTEMBER	-	-	-	10	2	1	-	13
OCTOBER	-	-	-	11	-	-	-	11
NOVEMBER	-	-	-	7	2	-	8	17
DECEMBER	1	-	-	8	-	1	1	11
TOTAL	5	1	2	71	11	2	9	101

TUBE WELLS	- 79
WELL CLEANING	- 11
REHABILITATION	- 02
HAND PUMP INSTALED WITH BASIN	- 08

Annual Progress of the 2022 Laboratories In WRB

Description of the water samples analysis and improvements of the Laboratory in Colombo & other three Laboratories during the year 2022 is forwarded for your information.

LABORATORY ANALYSIS

	Type of analysis	Number of water sample	Income (Rs.)
1	Chemical analysis (Full & Partial) : Commercial	403 (Colombo, Puttalam, Anuradhapura, Jaffna)	
2	Microbiological analysis : Commercial	46 (Colombo, Puttalam, Anuradhapura, Jaffna)	
3	Chemical & Microbiology : Treasury grant projects	1479 (Colombo, Puttalam, Anuradhapura, Jaffna)	
4	Heavy metal Commercial	269 (Colombo, Puttalam, Anuradhapura, Jaffna)	
5	Total income with VAT	All Laboratories excluding Treasury grant projects	3,229,871.00

DESCRIPTION OF THE ANALYSIS

1. CHEMICAL /MICROBIOLOGICAL ANALYSIS

Four hundred three (403) number of commercial water samples were tested for full & partial chemical analysis in four Laboratories of WRB. Forty six (46) numbers of water samples for microbiologically & two hundred sixty nine (269) samples for heavy metal were tested during the year 2022.

Total commercial income of the Laboratories of WRB is 3.2 Million excluding Treasury grant & other projects.

One thousand four hundred seventy nine (1479) numbers of water samples from treasury grant projects were tested during the year 2022.



Fig 1 : Microbiology Laboratory

2. HEAVY METAL ANALYSIS (As, Cd, Cr, Pb, Mn, Na, K, Zn etc,...)

Water samples were received to the Laboratory from the various projects conducted by Water Resources Board and commercial parties.



Fig 2: Instrument (Atomic Absorption Spectrophotometer) using for Heavy metal analysis in water samples.

2. IMPROVEMENTS:

Two parameters (TSS & COD) of wastewater testing are started in Rathmalana proposed Laboratory premises

Head Office

The head office consists of the administration division, finance division, supply division, groundwater division, laboratory, drilling division, operation division, audit division, transport division and 4 provincial offices namely Puttalam, Anuradhapura, Monaragala and Jaffna.

Groundwater Division

The main functions of the Water Resources Board are performed by the Ground Water Division.

Operations Division

All operational activities of the Water Resources Board are carried out by the Operations Division.

Supply Division

The supplies division provides goods, services and works to achieve the goals of the Water Resources Board.

Finance

The total income for the year concerned was Rs. 98.7 million. Rs. 191.6 million and Rs. 7.4 million were respectively received from the General Treasury as the recurrent and capital grant for the year 2022. The reported deficit in the year was Rs. 27.5 million.

Administration

The total number of staff of the Water Resources Board in the year 2022 was 258 nos. 06 employees were recruited for permanent service. In this year, 07 nos. employees were resigned and 03 employees were retired.

Human Resources Development

An action was taken to direct the employees to the training courses, in order to improve the productivity of the board. 2 nos. employees including executive officers were directed to short training.

Fleet of Transport

In the year concerned, the fleet of transport of the board was comprised with 73 nos. vehicles and out of which 63 nos. vehicles were in running condition. Those were mainly, cabs, cars, jeeps, lorries, and cranes.

Regional Offices

There are four (4) regional offices in Water Resources Board. (Anuradhapura, Puttalam, Jaffna and Monaragala) Mainly those regional offices responsible for geophysical prospecting with hydrogeological investigation/research for assessment and identification of groundwater resources potential in specific areas. Coordinating with Government and private institution for construction of deep tube wells and providing reports related to water conservation activities and ground water. Laboratories are maintained in Anuradhapura, Puttalam and Jaffna offices and chemical and

microbiological analysis of water samples are carried out and bare metal analysis is carried out only from the Anuradhapura provincial office.

Circuit Bungalow – Anuradhapura

The purpose of maintaining the circuit bungalow was to provide accommodation for the officers of the Water Resources Board and the Minister of the Water Supply in their official tours and spending their leisure time. Addition to that, an action was taken to provide accommodation for other government officers and general public.

Acknowledgement

The board is in pleasure to thank and place on record of appreciation to the Minister of Water Supply and State Minister of the Water Supply, Secretary, officers and staff of the same Ministry, all the officers and consultants of the other government departments, board and corporations, foreign and private institutions. The active involvement and the loyal service rendered by the employees of the Water Resources Board are highly acknowledged.

Dr. J.D. Samarasinghe
Chairman
Water Resources Board



A dynamic splash of water with several green leaves caught in the middle. Water droplets are frozen in mid-air above the splash, and the background is a bright blue sky with soft white clouds.

Financial Statements



A stylized, artistic representation of flowing water. Large, clear bubbles are integrated into the blue waves, which move from the bottom left towards the right. The overall color palette is various shades of blue, creating a clean and refreshing aesthetic.

WATER RESOURCES BOARD**Statement of Financial Performance****For the year ended 31 st December 2022**

	NOTE NO	2022 Rs'000	Restated 2021 Rs'000	2021 Rs'000	Budget 2022 Rs'000
Revenue from Operating Activities	01	88,060	60,493	53,597	74,825
Treasury Grants- Recurrent		191,600	171,800	171,800	195,400
Treasury Grants- Capital(Operational)	02	6,904	6,594	6,594	8,300
Other Income	03	10,592	7,592	7,562	10,900
Total Revenue		297,156	246,479	239,553	289,425
Administrative Costs	4.1	(218,801)	(192,276)	(192,276)	(202,700)
Supplies & Requisites	4.2	(42,019)	(20,506)	(20,506)	(27,200)
Contractual Services & Maintenance expenses	4.3	(44,147)	(27,189)	(27,185)	(36,245)
Other Operational Expenses	4.4	(4,100)	(6,658)	(6,658)	(4,280)
Other Project Expenses	4.5	-	(1,374)	(1,374)	-
Treasury Grants - Capital (Research Studies)	4.6	(6,904)	(6,594)	(6,594)	(8,300)
Depreciation		(8,691)	(8,870)	(8,870)	(9,000)
Total Expenses		(324,662)	(263,467)	(263,463)	(287,725)
Surplus / (Deficit) from Operations		(27,506)	(16,988)	(23,910)	1,700
Tax		-	-	-	(500)
Surplus / (Deficit) for the period		(27,506)	(16,988)	(23,910)	1,200

WATER RESOURCES BOARD
Statement of Financial Position

As at December 31, 2021	NOTE NO.	2022 Rs'000	Restated 2021 Rs'000	2021 Rs'000
ASSETS				
Current assets				
Cash and cash equivalents	05	74,350	93,988	93,988
Trade and other receivables	06	36,224	40,044	39,859
Inventories	07	131,946	132,209	132,209
Prepayments	08	225	4,496	4,496
		<u>242,745</u>	<u>270,737</u>	<u>270,552</u>
Property, Plant & Equipment	09	1,824,502	369,225	369,225
		<u>1,824,502</u>	<u>369,225</u>	<u>369,225</u>
TOTAL ASSETS		<u>2,067,247</u>	<u>639,962</u>	<u>639,777</u>
LIABILITIES				
Current liabilities				
Other Provisions & Payables	10	11,605	21,167	21,027
Deferred Income (Advances for Services)	11	16,847	22,935	29,812
		<u>28,452</u>	<u>44,102</u>	<u>50,839</u>
Non - current liabilities				
Retirement Benefit Obligations	12	60,783	61,205	59,089
Deferred Income (For Government Grants)	13	1,796,809	334,244	334,244
		<u>1,857,592</u>	<u>395,449</u>	<u>393,333</u>
TOTAL LIABILITIES		<u>1,886,044</u>	<u>439,551</u>	<u>444,172</u>
NET ASSETS		<u>181,203</u>	<u>200,411</u>	<u>195,605</u>
NET ASSETS / EQUITY				
CAPITAL & RESERVES				
Contributed Capital	14	489,891	489,891	489,891
Accumulated Profit/(Deficit)	14	(328,188)	(308,980)	(313,786)
Revaluation Reserve	14	19,500	19,500	19,500
TOTAL NET ASSETS / EQUITY		<u>181,203</u>	<u>200,411</u>	<u>195,605</u>

The Accounting Policies and the Notes from pages 06 To 20 form an integral part of these Financial Statements.

We certify that the above Financial Statements are true and correct as per the records available of the Board.

C. Abeysooriya
 Assistant General Manager (Finance) - Acting

K.G.D. Priyanka
 General Manager (Acting)

The Directors are responsible for the preparation & presentation of the Financial Statements. Approved and Signed on behalf

Dr. J.D. Samarasinghe
 Chairman

L.A.Y. Darshanie De Silva
 Treasury Representative

H.M.R. Kiriella
 Board Director

03rd March 2023

WATER RESOURCES BOARD

**Statement of Changes in Net Assets/ Equity
For the Year Ended December 31, 2022**

NOTE : 14

	Contributed Capital Rs'000	Revaluation Reserve Rs'000	Accumulated Profit/Deficit Rs'000	Total Rs'000
YEAR - 2021				
Balance as at 31st December 2020 B/F	489,891	19,500	(300,819)	208,572
Adjustments made for prior period events	-	-	-	-
Restated Balance	489,891	19,500	(300,819)	208,572
Surplus / (Deficit) for the period	-	-	(23,910)	(23,910)
Actuarial Gain/(Loss) on retirement benefit obligation	-	-	10,943	10,943
Balance as at 31st December 2021	489,891	19,500	(313,786)	195,605

YEAR - 2021 (RESTATED)

Balance as at 31st December 2020 B/F	489,891	19,500	(300,819)	208,572
Adjustments made for prior period events	-	-	(2,116)	(2,116)
Restated Balance	489,891	19,500	(302,935)	206,456
Surplus / (Deficit) for the period	-	-	(16,988)	(16,988)
Actuarial Gain/(Loss) on retirement benefit obligation	-	-	10,943	10,943
Balance as at 31st December 2021	489,891	19,500	(308,980)	200,411

YEAR - 2022

Balance as at 31st December 2021 B/F	489,891	19,500	(308,980)	200,411
Adjustments made for prior period events	-	-	-	-
Restated Balance	489,891	19,500	(308,980)	200,411
Surplus / (Deficit) for the period	-	-	(27,506)	(27,506)
Actuarial Gain/(Loss) on retirement benefit obligation	-	-	8,298	8,298
Balance as at 31st December 2022	489,891	19,500	(328,188)	181,203

CASH FLOW STATEMENT FOR YEAR ENDED 31 DECEMBER 2022

	2022	Restated	2021
	Rs'000	2021	2021
		Rs'000	Rs'000
Cash Flows from operating activities			
Surplus / [Deficit] for the year before Treasury Grants (Recurrent)	(219,106)	(195,710)	(195,710)
Add: Treasury Grants received (Recurrent)	191,600	171,800	171,800
Surplus / [Deficit] before Tax for the year	(27,506)	(23,910)	(23,910)
Work In Pro.(Buildings) adjustments			-
Less: Prior Year adjustments	-	(864)	(864)
	(27,506)	(24,774)	(24,774)
Non Cash Movements			
Depreciation	8,691	8,870	8,870
Increase in Provisions to Gratuity	11,201	9,942	9,942
[Decrease] / Increase in payables	(17,433)	4,673	4,673
[Decrease] in Other Current Assets	4,534	(3,852)	(3,852)
Gain / [Losses] on sale of Property plant & Equipment's	(638)	(20)	(20)
[Decrease] / Increase in receivables	3,819	(5,190)	(5,190)
	(17,332)	(10,351)	(10,351)
Interest received for gratuity & bank Savings	(7,046)	(3,178)	(3,178)
Tax Paid	-	-	-
Net cash flows from operating activities	(24,378)	(13,529)	(13,529)
Cash Flows from Investing activities			
Proceeds from sale of Property Plant & Equipments	637	-	-
Purchase of Property Plant & Equipment's	(1,896)	(2,489)	(2,489)
Interest received for gratuity & Bank Savings	7,046	3,178	3,178
Payment of gratuity	(1,541)	(11,428)	(11,428)
Net cash flows from Investing activities	4,246	(10,739)	(10,739)
Cash Flows from financing activities			
Government Grants [Capital for Property Plant & Equipments]	494	1,579	1,579
Net cash flows from financing activities	494	1,579	1,579
Net Increase/[decrease] in cash & cash Equivalents	(19,638)	(22,689)	(22,689)
Cash & Cash Equivalents at beginning of Period	93,988	116,677	116,677
Cash & Cash Equivalents at end of Period	74,350	93,988	93,988

● **NOTES TO THE CASH FLOW STATEMENT**

01 Cash and cash equivalents consist of balances with banks. Cash and Cash equivalents included in the Cash Flow Statement comprise the following Statement of Financial Position amounts.

	2022	Restated	2021
	Rs'000	202	2021
		Rs'000	Rs'000
Current Account Balances with Banks	56,299	82,575	82,575
Savings with National Savings Bank	18,051	11,413	11,413
	74,350	93,988	93,988

02 Cash Flows from Treasury Grant (Capital) for the operational activities are included in the Cash Flows from operating activities.

TREASURY GRANT RELEASES RECONCILIATION - YEAR 2022

Disclosed Statement

	Releases (Rs. 000)	As per Treasury Printout (Rs. 000)	Provision for the year (Rs. 000)
01 RECURRENT GRANT			
Vote: 166-01-02-4-1503			
Financial Performance	183,100	183,100	184,000
Vote: 166-01-02-4-1509			
Financial Performance	8,500	8,500	11,400
	<u>191,600</u>	<u>191,600</u>	<u>195,400</u>
02 CAPITAL GRANT			
Vote: 166-01-02-4-2201			
Financial Performance - Operational	6,904	7,400	20,000
Statement of Financial Position			
(for purchase of assets)	496	-	-
	<u>7,400</u>	<u>7,400</u>	<u>20,000</u>

NOTES TO THE FINANCIAL STATEMENTS & ACCOUNTING POLICIES

1. Corporate Information

General

The Water Resources Board is a statutory Board established in 1966 under the provisions of Act No. 29 of 1964. In year 2022 it is under Ministry of Water Supply.

Principal Activities and Nature of Operations

During the year, the principal activities of the Board Comprised of carryout Hydrogeological Surveys, Construction of Tube Wells, Chemical Analysis of Water Samples, Preparation of Groundwater Maps and supervision & direction of the use of natural water springs or ground water for certain activities or projects as per the gazette notification no. 2010/23 of 16th March 2017.

Directors Responsibility Statement

The Board of Directors take the responsibility for the preparation and presentation of these Financial Statements as per the provisions of Sri Lanka Public Sector Accounting Standards.

Address of the Registered Office and the Principal Place of the Activities of the Board

01st of January 2022 to 31st July 2022 at No.288/12L, Royal Gardens, Sri Jayewardenepura Mawatha, Rajagiriya.

01st August 2022 to present at No.488/A Nawala Road, Rajagiriya.

2. Significant Accounting Policies

2.1. Statement of Compliance

The financial statements of the Water Resources Board are prepared in accordance with the Sri Lanka Public Sector Accounting Standards (SLPSAS) laid down by the Public Sector Accounting Standards Committee of the

Institute of Chartered Accountants of Sri Lanka (CA Sri Lanka) with the Participation of the Ministry of Finance & Planning. (Ref: Circular: PED/03/2013 dated 02.10.2013)

2.2. Basis of Preparation

The Financial Statements are prepared on the Historical Cost Basis.

2.3. Functional and Presentation Currency

These Financial Statements are presented in Sri Lankan Rupees, which is the Board's Functional Currency and all Financial Information has been rounded to the nearest thousands unless otherwise specifically indicated.

3. Assets and Basis of their Valuation

3.1 Property, Plant & Equipment

Property Plant and Equipment are initially recorded at cost less accumulated depreciation. The cost of Property, Plant & Equipment is the Cost of purchase/revaluation or construction together with any incidental expenses thereon.

Revalued assets are carried at revalued amount less any subsequent depreciation thereon.

Buildings in Lease hold land

The buildings which are constructed using own funds or granted to the WRB land which has leased for 30 years are accounted under Property, Plant and Equipment.

3.2 Revaluation Model

The board applies the revaluation model for the entire class of freehold land for measurement of initial recognition. All the other class of assets are being revalued when there is a substantial difference between the fair value and the carrying amount or where these come down to the zero

NOTES TO THE FINANCIAL STATEMENTS & ACCOUNTING POLICIES

level of net book balance.

When assets are being disposed, the revaluation reserves relevant for the particular assets would be transferred to retained earnings.

3.3 Depreciation

Depreciation of an asset begins when it is available for use and ceases at the earlier of the dates on which the asset is derecognized.

Depreciation is calculated so as to write off the Cost / Revaluation of Property, Plant and Equipment on a Straight - Line Basis over the expected useful lives of the Assets concerned. The principle annual rates used for this purpose are,

Buildings	5%
Motor Vehicles	25%
Machinery	20%
Laboratory Equipment	20%
Scientific Equipment	20%
Computers & Accessories	20%
Furniture, Fittings & Office Equip.	10%

3.4 Government Grants

Assets received by way of grants from treasury, line ministry and other related government projects are recognized under Income Approach. Differed income (related to Government Grants) will be set off against depreciation account in the Statement of Financial Performance on a systematic basis over the life of the assets.

3.5 Inventories

Inventories consist of vehicle spares, stores materials, machinery spares, fuel and other consumables, etc. The cost of inventories are based on the first-in-First-out (FIFO) principle.

3.6 Receivables

3.6.1 Receivables are stated at the amounts they are estimated to realize.

3.6.2 Bad and Doubtful Debts.

The estimated losses to these debts are based on continuous review of all invoices and claims identified as bad and doubtful.

4. Accounts Payables and Accrued Expenses

Trade and other payables are stated at cost.

4.1 Deferred Income

Advances received for services to be rendered are shown as deferred income under current liabilities in the statement of Financial Position until recognize the income.

4.2 Provisions

Provisions are recognized when the entity has a present obligation (legal or constructive) as a result of a past event, and it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the obligation. The expense relating to any provision is presented in the Statement of Financial Performance of any reimbursement.

5. Revenue Recognition

Revenue is recognized to the extent that it is probable that the economic benefits will flow to the Water Resources Board and the revenue can be reliably measured, regardless of when the payment is being made.

Major sources of income

Hydrogeological surveys, construction of Tube wells, pumping tests, Water sample analysis and fitness certificate income are major sources

NOTES TO THE FINANCIAL STATEMENTS & ACCOUNTING POLICIES

of income. Revenues from these sources are recognized upon the realization.

Other income

Other income consists of circuit bungalow reservations, fines & surcharges, sundry income and they are recognized on an accrual basis.

Interest Income

Interest income mainly derived from interest on Distress loans, interest on Deposits at National Savings Bank maintained for the purpose of gratuity payments and the interest on Fund Management Account at Bank of Ceylon.

6. Employee Benefits

6.1 Defined Benefit Plan

The Water Resources Board is liable to pay retirement benefit under Gratuity Act No.12 of 1983. The liability recognized in the Financial Statements in respect of defined benefit plan is the present value of the defined benefit obligation as at the reporting date in respect of employees. The defined benefit obligation is calculated by a qualified Actuary namely, Actuarial & Management Consultants (Pvt) Ltd as at the reporting date using the Projected Unit Credit (PUC) method as recommended by Sri Lanka Public Sector Accounting Standards (SLPSAS 19), Employee Benefits.

Such Actuarial valuations will be carried out every year. The liability to an employee arises from their date joined.

The Water Resources Board measured the present value of promised retirement benefits of gratuity using the actuarial valuation method. SLPSAS 19 Employee Benefits was effective from 01.01.2018.

Plan Asset

The liability is not externally funded. The Water Resources Board maintain a separate Savings Account in National Savings bank for the purpose of funding the defined benefit obligation of the Board.

6.2 Defined Contribution Plans – EPF & ETF

Employees are eligible for Employees' Provident Fund Contributions and Employees' Trust Fund Contributions in line with respective Statutes and Regulations. The Board contributes 12% and 3% of personal emoluments of employees to EPF and ETF respectively.

7. Taxation

Tax expense comprises Current and any adjustment to tax payable in respect of previous years.

8. Research Studies Expenses.

Operational expenses which have been identified directly to Research Studies under Treasury Grants capital vote have been Charged to the Statement of Financial Performance.

9. Director remuneration value of Rs.1,526,335/- included in Note No.4.1 Salaries & wages expense account.

10. Cash Flow Statement

The Cash Flow Statement is prepared using the indirect method as stipulated in SLPSAS 02 Cash Flow Statement,

Whereby gross cash receipts and gross cash payments of operating activities, financing activities and investing activities have been recognized. Cash and cash equivalents comprise mainly balances with banks.

NOTES TO THE FINANCIAL STATEMENTS & ACCOUNTING POLICIES

11. Events after the reporting period

All the material events after the reporting period have been considered and appropriate adjustment and disclosures have been made into the financial statement, where necessary.

12. Foreign Funded Projects.

Establishment of Ground water Monitoring Network - Pilot Project for Malwathu Oya, Maduru Oya & Kumbukkan Oya River Basins

The Project covers Malwathu Oya, Maduru Oya and Kumbukkan Oya basins where establishing of monitoring points increased to 190 locations with addition of new pilot areas of Puttalam and Jaffna Peninsula. Ground water level, Electrical conductivity and temperature are the basic parameters monitored with these automated systems. In addition, the heavy metal concentrations in groundwater are periodically assessed.

Initiative step towards the establishment of National Groundwater Monitoring Network for Sri Lanka in order to collect real time data on (a) Groundwater Level (b) Water Quality. A centralized Data management centre is to be located in Colombo. In addition, grass root level community awareness is carried out to change the attitudes on the use and protection of groundwater resources. The total cost of this pilot project is 20.63 Euro Millions which is funded as a soft loan by Rabo Bank, Netherlands. The activities commenced in March 2018 & completed in December 2022. The project was operated as a Turn-key project by the contractor "Royal Eijkelcamp" of Netherlands and executed under the Ministry of Irrigation where the project agreement was signed between the Ministry & the contractor, Eijkelcamp, Netherlands. The payments were recommended by the Project Director based on the progress of the project activities as per the work plan on quarterly basis. The payments as per the project progress has been completed in December 2022. The fixed assets which was utilized during the project operations

(2018-2022) has been transferred to W.R.B. and the consumables items & development activities didn't submitted to Water Resources Board at the end of the year.

Identifying of potential monitoring sites were completed within the three river basins.

At present, the dedicated monitoring well constructions in Malwathu Oya, Maduru Oya and Kumbukkan Oya basins has been completed. In addition, the drilling of wells at Puttalam area is in progress. The existing monitoring wells constructed already by WRB has been utilized to develop as automated dedicated monitoring well (40 Nos.) in Jaffna Peninsula. The installation of 121 automated sensor systems are completed at Malwathu Oya, Maduru Oya and Kumbukkan Oya river basins. Installation of the balance monitoring systems and centralized data centre is scheduled to be completed by December 2022.

NOTES TO THE FINANCIAL STATEMENTS.**REVENUE FROM OPERATING ACTIVITIES**

	2022	Restated 2021	2021	Budget 2022
	Rs.'000	Rs.'000	Rs.'000	Rs.'000
NOTE NO:01				
HYDRO: INVESTIGATIONS / EXPLORATION				
Hydro Geological Survey	16,077	15,398	13,958	17,000
Tube Well Construction	36,308	19,859	15,831	30,000
Pumping Tests	26,146	13,036	12,277	17,500
Tube Well Cleaning	1,091	249	198	500
Water Sample Analysis	4,284	2,171	1,712	3,600
Hand Pumpillation	-	109	-	-
Sub Total	83,906	50,822	43,976	68,600

IMPLMENTATION OF GROUNDWATER REGULATIONS

Registration of Drilling Machines	3,218	5,610	5,560	4,500
Registration of External Hydrogeologists	329	455	455	375
Hydrogeological Reports Income	574	684	684	800
Flow Meters Installation Income	33	54	54	300
Training of External Drillers	-	-	-	250
Sub Total	4,154	6,803	6,753	6,225

GROUNDWATER DEVELOPMENT

Ground Water Study in Jaffna Peninsula	-	1,235	1,235	-
Ground Water Monitoring Project - Malwathu Oya	-	58	58	-
Ground Water Monitoring Project - Yan Oya	-	66	66	-
Ground Water Management of Malwathu Oya Basin (CRIWMP)	-	1,509	1,509	-
Sub Total	-	2,868	2,868	-

GRAND TOTAL

88,060	60,493	53,597	74,825
---------------	---------------	---------------	---------------

NOTE NO: 02**TREASURY GRANT - CAPITAL****(RESEARCH STUDIES - OPERATIONAL)**

Long Term G. W. monitoring in most sensitive G.W. terrains	3,000	3,000	3,000	3,000
Study on the direct & indirect impacts of climatic changes	322	1,093	1,093	700
Inspections relating to G. water depletion & pollutions	254	236	236	200
Improvements of scientific & other capital works	378	1,191	1,191	1,000
Research Study on natural springs - Maoya	839	355	355	1,100
Rehabilitation & Improvements works	1,313	579	579	1,500
Development of Groundwater Atlas for Sri Lanka	62	-	-	100
Emergency use of disaster related to water sector	347	-	-	300
Staff Training	389	140	140	400
GRAND TOTAL	6,904	6,594	6,594	8,300

NOTE NO:03**OTHER INCOME**

Circuit Bungalow Reservation	190	68	68	100
Fines & Surcharges	302	3,322	3,322	400
Disposal Income	73	21	21	2,000
Interests on Loans & Bank Deposits	7,045	3,178	3,178	5,500
Staff Accommodation Income	89	90	90	100
Providing Data	1,764	-	-	1,800
Sundry Income	1,129	913	883	1,000
GRAND TOTAL	10,592	7,592	7,562	10,900

NOTES TO THE FINANCIAL STATEMENTS CONTD.

	2022	Restated		Budget
	Rs.'000	2021	2021	2022
NOTE NO:4.1		Rs.'000	Rs.'000	Rs.'000
ADMINISTRATIVE COSTS				
Salaries & Wages	172,623	148,170	148,170	158,500
Defined Contribution Plan (Cost - EPF & ETF)	20,826	19,970	19,970	21,200
Defined Benefit Plan Cost - Retiring Gratuity	11,201	9,942	9,942	10,000
Overtime & Holiday Pay	6,633	9,468	9,468	7,500
Director's Fees	227	205	205	400
Other Allowances	113	145	145	150
Travelling - Local	5,092	2,709	2,709	3,000
Welfare & Sports facilities	195	231	231	250
Medical Scheme	752	712	712	800
Entertainment	1,035	558	558	800
Vacation Leave Encashment	104	166	166	100
GRAND TOTAL	218,801	192,276	192,276	202,700

NOTE NO: 4.2

SUPPLIES REQUISITES

Fuel & Lubricants	28,688	13,307	13,307	15,000
Drilling Works Consumables	9,817	6,408	6,408	9,000
Laboratory Consumables & Others	3,420	697	697	3,000
Other Consumables	94	94	94	200
GRAND TOTAL	42,019	20,506	20,506	27,200

NOTE NO: 4.3

CONTRACTUAL SERVICES & MAINTENANCE EXPENSES

Postage & Telecommunication	1,906	1,757	1,757	1,900
Electricity	3,076	2,477	2,477	2,800
Building Rent & Leases	17,186	9,369	9,369	16,000
Rates & Taxes	747	634	634	700
Cash in Transit Insurance	12	12	12	10
Audit Fees	458	504	504	500
Printing	1,111	364	364	800
Workshop & Seminars	194	77	77	150
Water Bills	642	332	332	485
Accommodation Expenses	333	238	238	500
Consultancy Charges	968	613	613	900
Sundry Expenses	1,446	1,206	1,206	800
Maintenance of Motor Vehicles	5,705	2,775	2,911	3,500
Maintenance of Machinery	5,227	3,297	3,157	3,500
Maintenance of Office Equipments	4,007	2,095	2,095	2,500
Maintenance of Buildings	1,129	1,439	1,439	1,200
GRAND TOTAL	44,147	27,189	27,185	36,245

NOTES TO THE FINANCIAL STATEMENTS CONTD.

	2022 Rs.'000	Restated 2021 Rs.'000	2021 Rs.'000	Budget 2022 Rs.'000
NOTE NO:4.4				
OTHER OPERATING EXPENSES				
Stationery & Office Requisites	1,009	708	708	1,000
Uniforms	169	368	368	250
Periodicals & Newspapers	14	47	47	10
Publicity & Advertising Expences	549	670	670	675
Bank Charges	151	118	118	130
Medical Test Charges	166	207	207	300
Legal Expenses	239	67	67	150
Stamp Duty	282	75	75	225
Vehicle Service - Ratmalana	45	74	74	50
Hiring Charges	41	5	5	10
Fines & Surcharges	10	43	43	20
Operating Lease Rentals	1,425	4,276	4,276	1,430
Data Collection Expenses	-	-	-	30
GRAND TOTAL	4,100	6,658	6,658	4,280

NOTE NO: 4.5

OTHER PROJECT EXPENSES

Ground Water Study In Jaffna Peninsula	-	1,235	1,235	-
Ground Water Monitoring Project - Malwathu Oya	-	58	58	-
Ground Water Monitoring Project - Yan Oya	-	66	66	-
Ground Water Management of Malwathuoya Basin - (CRIWMP)	-	15	15	-
GRAND TOTAL	-	1,374	1,374	-

NOTE NO: 4.6

TREASURY GRANT - CAPITAL

(RESEARCH STUDIES - OPERATIONAL)

Long Term G. W. monitoring in most sensitive G.W. terrains	3,000	3,000	3,000	3,000
Study On the direct & Indirect Impacts Of Climate Changes	322	1,093	1,093	700
nspections relating to G. water depletion & pollutions	254	236	236	200
Improvements of scientific & other capital works	378	1,191	1,191	1,000
Research Study on natural springs - Maoya	839	355	355	1,100
Rehabilitation & Improvements works expenses	1,313	579	579	1,500
Develpoment of groundwater Atlas for Sri Lanka	62	-	-	100
Emergency use for disaster related to water sector	347	-	-	300
Staff Training	389	140	140	400
GRAND TOTAL	6,904	6,594	6,594	8,300

NOTES TO THE FINANCIAL STATEMENTS CONTD.

NOTE NO:05

CASH & CASH EQUIVALENTS

	2022 Rs.'000	Restated 2021 Rs.'000	2021 Rs.'000
(1) Bank of Ceylon York Street Branch (0002026295)	245	5,028	5,028
(2) Bank of Ceylon Torrington Branch (0002323267)	55,818	76,390	76,390
(3) Bank of Ceylon Torrington Branch (0002323268)	17	615	615
(4) Bank of Ceylon Torrington Branch (0005342839)	219	542	542
Sub Total	56,299	82,575	82,575

EMPLOYEE BENEFIT - PLAN ASSET

(5) National Savings Bank -Bambalapitiya (100230211818)	18,051	11,413	11,413
GRAND TOTAL	74,350	93,988	93,988

NOTE:- FUND MNAGEMENT ACCOUNT

The Board has opened (Board Paper No. 1203) a Fund Management Account (A/C No. 83141035) on 07.09.2018 adjoining to the existing Current Account of 0002323267 of Bank of Ceylon Torrington Branch to earn an Interest for the available funds from the Current Account.

NOTE NO:06

TRADE & OTHER RECEIVABLES

STAFF

	2022 Rs.'000	Restated 2021 Rs.'000	2021 Rs.'000
(01) Distress Loan	23,869	22,410	22,410
(02) Festival Advance	25	30	30
Sub Total	23,894	22,440	22,440

OTHERS

(03) Trade	5,027	10,460	10,462
(04) Advance to Suppliers	185	189	189
(05) Retention Receivable	3,956	3,846	3,846
(06) V.A.T. Receivable (Refund)	1,263	1,263	1,263
(07) Other Receivables	1,899	1,846	1,659
Sub Total	12,330	17,604	17,419

TOTAL RECEIVABLES

36,224	40,044	39,859
---------------	---------------	---------------

2021 Rs.'000	2020 Rs.'000	2020 Rs.'000
-----------------	-----------------	-----------------

NOTE NO: 07**INVENTORIES****MATERIALS & SPARES**

Vehicle Spares	3,182	2,435	2,435
Vehicle Spares (DSWRPP)	1,964	1,992	1,992
Fuel & Lubricants	1,237	1,681	1,681
Ground Water Consumables	28,114	26,538	26,538
Building Materials	783	723	723
Stationery	296	367	367
Machinery Spares (with 2 KR)	56,319	56,211	56,211
Machinery Spares (DSWRPP)	35,942	37,110	37,110
Machinery Spares (MINISTRY)	2,208	2,411	2,411
Laboratory Consumables	1,901	2,741	2,741
GRAND TOTAL	131,946	132,209	132,209

NOTE NO:08**PRE-PAYMENTS**

License & Insurance	183	24	24
Cash In Transits	10	9	9
Maintenance of Office Equipments	32	4,463	4,463
GRAND TOTAL	225	4,496	4,496

NOTE : Over one year Trade Debtors funds received in year 2023.**PROPERTY, PLANT & EQUIPMENT****NOTE: 09**

Cost	Balance as at 01.01.2022 Rs'000	Additions Rs'000	Disposal / Adjustments Rs'000	Balance as at 31.12.2022 Rs'000
Lands	1,897	-	-	1,897
Buildings	50,590	-	-	50,590
Motor Vehicles	130,500	40,947	-	171,447
Machinery	486,211	1,409,728	-	1,895,939
Laboratory Equipments	90,271	189	-	90,460
Furniture Fittings & Office Equipments	28,097	13,306	-	41,403
Computers & Accessories	11,477	5,793	-	17,270
Scientific Equipments	88,000	112,469	(3)	200,466
Buildings (Work in Progress)	1,198	591	-	1,789
GRAND TOTAL	888,241	1,583,023	(3)	2,471,261

Depreciation	Balance as at 01.01.2022 Rs'000	Additions Rs'000	Disposal / Adjustments Rs'000	Balance as at 31.12.2022 Rs'000
Buildings	1,892	2,527	-	4,419
Motor Vehicles	32,603	32,603	-	65,206
Machinery	352,173	56,364	4	408,541
Laboratory Equipments	49,126	14,443	-	63,569
Furniture Fittings & Office Equipments	6,891	2,837	-	9,728
Computers & Accessories	8,483	1,377	-	9,860
Scientific Equipments	67,848	17,590	(2)	85,436
GRAND TOTAL	519,016	127,741	2	646,759
NET BOOK VALUE	369,225			1,824,502

NOTES TO THE PROPERTY PLANT & EQUIPMENT

cont.... NOTE: 09

01 Depreciation Charges to the Financial Performance is made as follows.

Depreciation	Charges for the Year Rs'000	Deferred Income for the Year Rs'000	Disclosed Amount Rs'000
Buildings	2,527	(2,215)	312
Motor Vehicles	32,603	(28,830)	3,773
Machinery	56,364	(56,177)	187
Laboratory Equipments	14,443	(14,348)	95
Furniture Fittings & Office Equipments	2,837	(1,255)	1,582
Computers & Accessories	1,377	(491)	886
Scientific Equipments	17,590	(15,734)	1,856
GRAND TOTAL	127,741	(119,050)	8,691

02 Land of Korakahawewa Training Center (2.166 Hect.) has leased agreement on paying with annual rental basis

03 An extent of 40.0 perches land at Battaramulla has allocated from the Urban Development Authority to the Water Resources Board for the period of 30 years on ground rental basis and commencement of construction of Head office building is in progress.

04 Land of Circuit Banglow at Anuradhapura (0.0759 Hect.) has been transferred for a period of 30 years on lease basis by the Gazette notification no 1982 dated 26.08.2016.

The provision has not been made due to unavailability of Annual assessment notice.

05 Land of Jaffna for construct provincial office (0.0506 Hect:) has leased on paying with annual rental Basis. Current annual rental is Rs. 50,000/= (Rs. 2,500,000/= * 2%)

06 Details of the Land & Buildings which are utilizing of the Board without having legal ownership as at 31.12.2022 are as follows.

LAND	(Appox.)
Work Shop at Rathmalana	1.79378 Hect.
Work Site at Vauniya	0.1050 Hect.

07 During the year Asset purchases /Granted Assets/ Identified values and the net effect from the Revaluation / Fair Value adjustment are shown as additions in the note no. 09 of Property, Plant and Equipment.

NOTES TO THE FINANCIAL STATEMENTS CONTD;

NOTE NO:10

OTHER PROVISIONS & PAYABLES

	2022 Rs.'000	Restated 2021 Rs.'000	2021 Rs.'000
(1) Provision for Audit Fees	464	450	450
(2) Accrued Expenses (Pl. see Page No.21 for details)	5,161	9,339	9,339
(3) Other Payables	5,942	11,378	11,238
(4) Retention Payable	38	-	-
GRAND TOTAL	11,605	21,167	21,027

NOTE NO:11

DEFERRED INCOME

Flow Meter Advance	903	-	-
Service Advance (Pl.see Page No. 26 to 27 for details)	15,920	22,896	29,773
Survey Reports Advance (Pl. See Page No. 28 for details)	24	39	39
GRAND TOTAL	16,847	22,935	29,812

NOTE NO:12

EMPLOYEE BENEFITS

12.1 Defined Contribution Plans

The following contributions have been made to the Employees' Provident Fund and Employees' Trust Fund during the year.

Employees' Provident Fund

Employers' Contribution - 12%	16,661	15,976	15,976
Employees' Contribution - 10%	13,884	13,313	13,313
Employee Trust Fund - 3%	4,165	3,994	3,994

12.2 Defined Benefit Plan

Defined Benefit obligation as at beginning of the Year	59,089	72,644	72,644
Interest cost for the Period	6,795	5,812	5,812
Current Service cost	4,406	4,130	4,130
Past Service cost	2,116	2,116	-
Actuarial (Gain)/Loss	(8,298)	(10,943)	(10,943)
Benefit paid during the year	(1,541)	(11,428)	(11,428)
Benefit Payable	(1,784)	(1,126)	(1,126)
	60,783	61,205	59,089

12.2.1 Expense recognized during the year in Income Statement

Current Service Cost	4,406	4,130	4,130
Interest cost for the Period	6,795	5,812	5,812
	11,201	12,915	9,942

Equity Statement - (Please see page No.03)

Actuarial Gain / (Loss) on Retirement benefit obligation	(8,298)	2,645	10,943
--	----------------	--------------	---------------

12.2.2. An actuarial valuation for gratuity liability was carried out as at 31.12.2022 by Mr.Poopalanathan of Ms. Actuarial & Management Consultants (Pvt) Ltd, a firm of Professional Actuaries.

The following Assumptions and data were used in valuing the defined benefit obligation by the actuarial valuer.

	2022	2021
Discount rate	18.0%	11.5%
Salary Increment rate	15.0%	9.5%
Staff Turnover Rate	3.0%	3.0%

NOTES TO THE FINANCIAL STATEMENTS CONTD.**12.2.3 Defined benefit plan**

Assumptions regarding future are based on A1967/70 mortality table, issued by the Institute of Actuaries, London.

The normal retirement age of an individual is assumed to be 60 years and employees over 60 years are assumed to retire on their respective next birthdays.

According to the Payment of Gratuity Act No: 12 of 1983, the liability for gratuity to an employee arises only on completion of 05 years off continuous service.

12.2.4 Sensitivity Analysis

Variables Changed by 1% while all other assumptions remain unchanged, the following would be the impact on employee benefits.

	2022	
	Increase by +1% Rs. '000'	Decrease by -1% Rs. '000'
Discount rate	57,102	64,961
Salary increment rate	65,197	56,840

NOTE NO:13

Deferred Income (Pl. see Page No.20 for details*)

	2022	Restated	2021
	Rs'000	2021 re'000	2021 re'000
	1,796,809	334,244	334,244

NOTE NO:14

Please see Page No 03 for Statement of changes in Net assets / Equity

NOTE NO:15

OTHER DISCLOSURE
COMMITMENTS AND CONTINGENCIES
Contingent liabilities

Litigation Against the Board

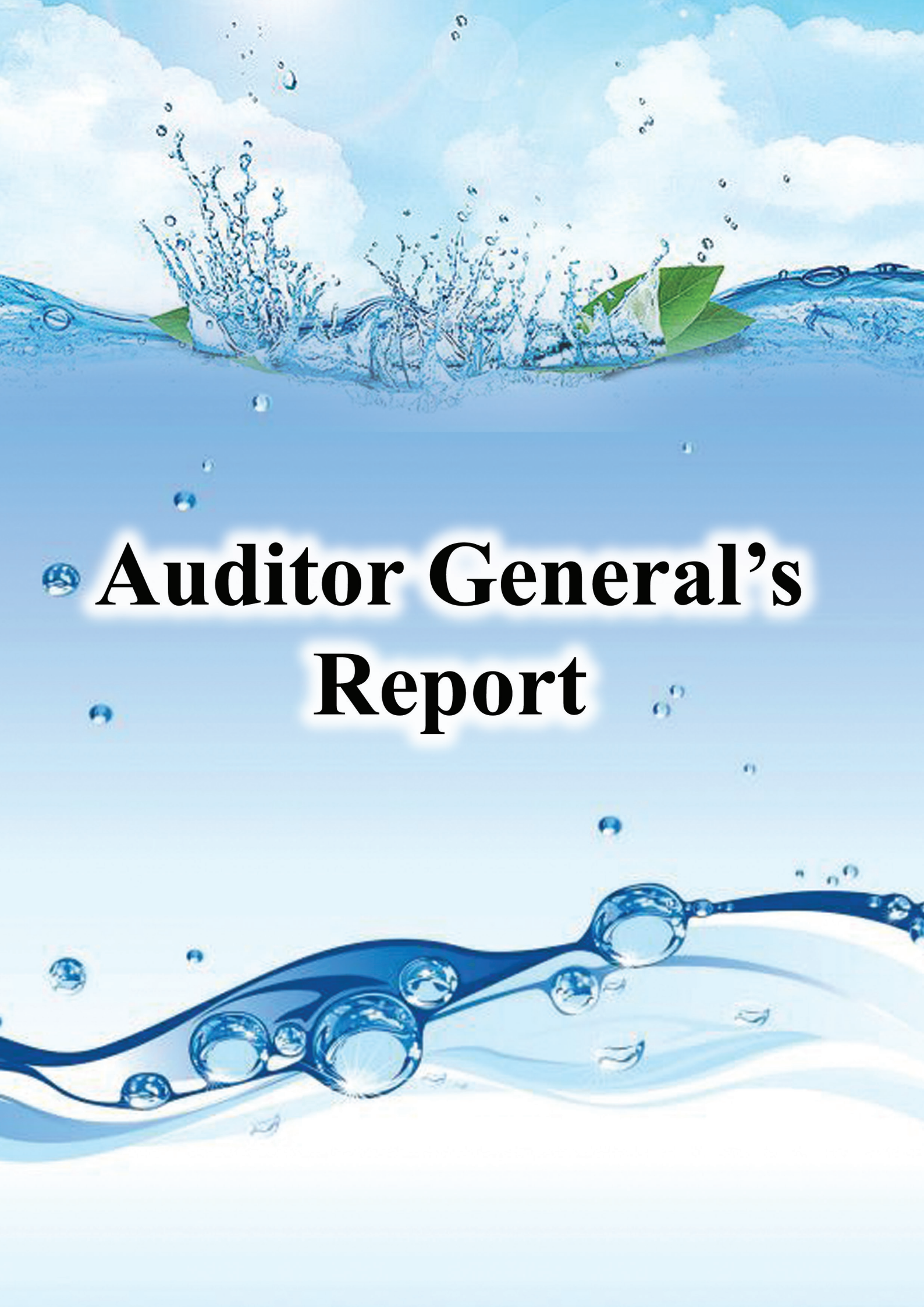
The claim for a lawsuits filed against the board by Secretariat ,Thibrigasyaya for leaving the head office at the address of No:2A,Hector Kobbekaduwa Mawatha,Colombo 07.Although, there can be no assurance, the Directors believe, based on the information currently available that the ultimate resolution of such lawsuits are not likely to have a material effect on the results of operations, financial position or liquidity.

NOTE: 13**Deferred Income**

	Balance as at 01.01.2022	Additions During the Year	Charges for the Year		Balance as at 31.12.2022
			Depreciation	Revaluation Adjustments/ Disposal	
	Rs'000	Rs'000	Rs'000	Rs'000	Rs'000
Lands	-	-	-	-	-
Buildings	44,007	-	(2,215)	-	41,792
Motor Vehicles	86,570	40,947	(28,830)	-	98,687
Machinery	133,532	1,409,662	(56,177)	(4)	1,487,013
Laboratory Equipments	40,929	(1)	(14,348)	-	26,580
Furniture Fittings & Office Equipments	9,796	12,511	(1,255)	-	21,052
Computers & Accessories	1,023	5,537	(491)	-	6,069
Scientific Equipments	18,273	112,468	(15,734)	(1)	115,007
Building Work in Progress	114	495	-	-	609
GRAND TOTAL	334,244	1,581,619	(119,050)	(5)	1,796,809

EFFECT ON THE FAIR VALUE OF PROPERTY PLANT & EQUIPMENTS.

	YEAR 2020	YEAR 2018	YEAR 2017	YEAR 2016	
		Surplus	Deficit	Surplus	Deficit
	Rs'000	Rs'000	Rs'000	Rs'000	Rs'000
Motor Vehicles	15,100	-	-	916	-
Machinery	-	-	-	-	5,317
Laboratory Equipments	-	-	-	-	631
Furniture Fittings & Office Equipments	-	3,228	-	-	-
Computers & Accessories	-	-	-	256	-
Scientific Equipment	-	-	242	-	-
GRAND TOTAL	15,100	3,228	242	1,172	5,948
Effect	Financial Position	Financial Position	Income Statement	Financial Position	Income Statement



Auditor General's Report



ජාතික විගණන කාර්යාලය
தேசிய கணக்காய்வு அலுவலகம்
NATIONAL AUDIT OFFICE



මගේ අංකය
எனது இல. }
My No. }

IWM/A/WRB/FA/2022

ඔබේ අංකය
உமது இல. }
Your No. }

දිනය
திகதி }
Date }

2023 October 06

Chairman
Water Resources Board

Report of the Auditor General on the Financial Statements and Other Legal and Regulatory Requirements of the Water Resources Board for the year ended 31 December 2022 in terms of Section 12 of the National Audit Act, No. 19 of 2018.

1. Financial Statements

1.1 Qualified Opinion

The audit of the financial statements of the Water Resources Board for the year ended 31 December 2022 comprising the statement of financial position as at 31 December 2022 and the statement of comprehensive income, statement of changes in net assets and cash flow statement for the year then ended, and notes to the financial statements, including a summary of significant accounting policies, was carried out under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with provisions of the National Audit Act No. 19 of 2018 and Finance Act No. 38 of 1971. My report to Parliament in pursuance of provisions in Article 154 (6) of the Constitution will be tabled in due course.

In my opinion, except for the effects of the matters described in the basis for Qualified Opinion section of my report, the accompanying financial statements give a true and fair view of the financial position of the Board as at 31 December 2022, and of its financial performance and its cash flows for the year then ended in accordance with Sri Lanka Public Sector Accounting Standards.

1.2 Basis for Qualified Opinion

- (a) The Timbirigasaya Divisional Secretary had informed the board to pay an annual tax of Rs 12,772,000.00 from the year 2013 and obtain an annual tax license for the land located at Hector Kobbakaduwa Mawatha, Colombo 07, which had been run by the Water Resources Board since 1978. A case was filed in the Colombo High Court in 2019. Later, while the Attorney General had given instructions to the Timbirigasaya Divisional Secretary to reach a settlement regarding the enjoyment of the land, the head office had been moved to a private rented building in Nawala, Koswatta area from 2021 July 18, without following the advice of the Attorney General. However, since the relevant case has not been finalized or removed by the Divisional Secretary, it should be disclosed in the financial reports in accordance with Section 100 of Public Sector Accounting Standards 8 of Sri Lanka, but it has not been done so.
- (b) In the year 2016 Rs. 217,242,201, the book value of 537 items related to 3 classes of assets such as machinery, laboratory equipment and computers had become zero due to the end of their effective lives, and in relation to those assets, in accordance with Section 65 of Sri Lanka Public Sector Accounting Standards 7, in the financial statements had not been disclosed. Due to the fact that those assets were not recalculated and taken into account, they were used during the year under review but there was no provision for depreciation.
- (c) The board had constructed tube wells and registered external agencies and their drilling rigs and hydrologists from the year 2018. In this regard, in the year under review, Rs.3,218,000 and income of Rs.329,000 had been accounted for. The following observation is made regarding that.
- (i) As mentioned, the board had registered geohydrologists, but the board had not received any legal provision for that.
- (ii) Contrary to Article 14 of Sri Lanka Public Sector Accounting Standard 10, the income from registration and renewal of registration was recognized on a monetary basis. And according to the standard 39(a) the accounting policy used to recognize this income was not disclosed in the financial reports.
- (iii) Instead of identifying the income related to the year and keeping the accounts on accrual basis, the values of the previous years related to the operating income were re-stated in the following year and adjusted to the loss. Accordingly, the loss of Rs. 12,593,000 and Rs. 23,910,000 in the years 2020 and 2021, respectively, was reduced by 12.9 percent and 28.9 percent to Rs. 10,973,000 and Rs. 6,988,000 in the following years. The Dam Protection and Water Resources Management Project constructed at a cost of Rs.13,261,884 in the year 2018 and was handed over to the Water Resources Board.

- (iv) Regarding the comparative figures for last year's operating income of Rs.6,896,000, which were re-stated in the financial statements of the reviewed year, the information in (a) to (d) of item 54 of Sri Lanka Public Sector Accounting Standards 3 was not disclosed in the financial statements.
- (d) Under Ministry of Irrigation budget item number 198-2-03-23-2507-17, the project to establish an underground water monitoring information network, which has been implemented at a cost of 20,629,921 Euros or Rs. 5,521,329,000 from 2017 to 2022, has ended on 31 December 2022 had done in relation to the project, the non-current assets such as machinery, vehicles, spare parts, tools and raw materials worth Rs. 1,581,619,000 imported into Sri Lanka by the contractor, such as wooden furniture, machinery, motor vehicles, scientific equipment, and computers, by the end of the review year, the project director The value of the non-current assets that should have been recognized as income for the year under review was shown in the statement of financial position as a deferred income in accordance with Section 49 of Public Sector Accounting Standards 11 of Sri Lanka regarding the accounting of non-current transactions.
- (e) From the cost of Rs.3,939,710,000 incurred in addition to the assets that were handed over to the board under the project of establishing an underground water monitoring information network shown under (d) above, which was implemented at a cost of Rs.5,521,329,000 under the Ministry of Irrigation from 2017 to 2022. The proposed 190 wells with high-tech equipment, along with relevant maintenance equipment, were handed over to the board and the value of these 190 wells should have been properly identified and disclosed in the financial statements, but this was not done.
- (f) Assets amounting to Rs.334,244,000 received under the treasury and other grants in previous years were shown as deferred income on 31 December 2021 and the relevant values should have been recognized as income of previous years but were not further shown as deferred income.
- (g) In the year under review, the depreciation related to the assets to be recognized as income amounting to Rs.119,050,000 was credited to the fixed assets depreciation account instead of being credited to the depreciation account.
- (h) According to Section 34 of Sri Lanka Public Sector Accounting Standards¹⁴, business and other allowances paid to related parties should be disclosed in the financial statements, but the financial statements did not disclose that the key management staff of the board did not disclose that information or the transactions made with related parties.

I conducted my audit in accordance with Sri Lanka Auditing Standards (SLAuSs). My responsibilities, under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of my report. I believe that the audit evidence

I have obtained is sufficient and appropriate to provide a basis for my qualified opinion.

1.3 The report contained the other information's in the Council of annual report on 2022

The management should responsible for the other information that has been describe as other information included in the Annual report but not included in the financial statement as well as my audit report which I received one day before for this annual report of Council on year 2022.

I am not covering the other information when I expressing the opinion of the financial statement and I am not responsible or not expressing any opinion about the other information.

In connection with the audit of these financial statements, it is my responsibility to disclose any other information as described above and thereby consider whether other information is sufficient to the best of my knowledge obtained with the financial statements or during the audit or in any other way.

1.4 Responsibilities of Management and Those in charge with Governance for the Financial Statements

Management is responsible for the preparation of financial statements that give a true and fair view in accordance with Sri Lanka Public Sector Accounting Standards, and for such internal control as management determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Board'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 management either intends to liquidate the Board or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Board's financial reporting process.

As per Section 16(1) of the National Audit Act No. 19 of 2018, the Board is required to maintain proper books and records of all its income, expenditure, assets and liabilities, to enable annual and periodic financial statements to be prepared of the Board.

1.5 Auditor's Responsibilities for the Audit of the Financial Statements

My objective is to obtain reasonable assurance about whether the 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 my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sri Lanka Auditing Standards 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 financial statements.

As part of an audit in accordance with Sri Lanka Auditing Standards, I exercise professional judgment and maintain professional skepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the 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 my 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 Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.
- Conclude on the appropriateness of the management's 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 Board's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Board to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

2. Report on Other Legal and Regulatory Requirements

2.1 National Audit Act, No. 19 of 2018 includes specific provisions for following requirements.

2.1.1 Except for the effect of the matters described in the Basis for Qualified Opinion paragraph, I have obtained all the information and explanation that required for the audit and as far as appears from my examination, proper accounting records have been kept by the Board as per the requirement of section 12 (a) of the National Audit Act, No. 19 of 2018.

2.1.2 The financial statements presented is consistent with the preceding year as per the requirement of section 6 (1) (d) (iii) of the National Audit Act, No. 19 of 2018.

2.1.3 The financial statements presented includes all the recommendations made by me in the previous year as per the requirement of section 6 (1) (d) (iv) of the National Audit Act, No. 19 of 2018.

2.2 Based on the procedures performed and evidence obtained were limited to matters that are material, nothing has come to my attention;

2.2.1 To state that any member of the governing body of the Board has any direct or indirect interest in any contract entered into by the Board which are out of the normal cause of business as per the requirement of section 12 (d) of the National Audit Act, No. 19 of 2018

2.2.2 To state that the Board has not complied with any applicable written law, general and special directions issued by the governing body of the Board as per the requirement of section 12 (f) of the National Audit Act, No. 19 of 2018

Reference to law/ Direction -----	Description -----
(a) In terms of Section 16 of the Water Resources Board Act No. 29 of 1964, orders published by the	

Minister through Extraordinary Gazette No. 2010/23 dated 2017 March 16.	
i. No.02	Although all the institutions engaged in the construction of tubewells should be registered with the board, at the end of the year under review, only 72 institutions were registered with the board and the board did not have an adequate program to identify which institutions are not registered. Also, according to the above orders, the registered institutions should provide a report containing the data of all new construction pipelines to the board every 03 months, but out of 72 registered institutions, only 03 institutions had provided the said report.
ii. No.03	If an organization or person engaged in the water bottling industry and beverage production uses a natural water source or ground water for its manufacturing activities, every 06 months a water sample from the same water source is tested by a recognized laboratory of the government and submitted to the approval board for the relevant analysis report. Although it should be done, only one of the 40 institutions registered with the Board had provided the above reports by the end of the year under review.
i. No. 06	Water Resources Board Act No. 29 of 1964 as amended by Act No. 42 of 1999 against organizations or individuals who do not act in accordance with orders 1 to 5, including the rules to be followed by public or non-governmental organizations using natural water springs or deep or

	shallow groundwater 20 had not been lawfully acted upon.
(b) Sections 10 and 11 of the Employees' Provident Fund (Amendment) Act No. 26 of 1981 Employee contribution to the fund should be 12 percent and employee contribution should be 8 percent and the higher ratio can be agreed upon. Even though the board's employee contribution was 12 percent, 10 percent was charged and paid from the employees, but the commissioner was not informed about it.	
(c) Guidelines of the Code of Guidelines for Integrated Management of State Enterprises introduced by State Business Circular No. 01/2021 dated 16 November 2021. (i) 2.2.1	Key performance indicators for the board have not been determined or a concrete plan has been prepared or arrangements have been made to lead the board accordingly.
(ii) 2.2.1 (b)	To read and present the board papers to the board members to read and study before the board of directors meeting, to maintain a reliable management information system necessary to make decisions and to confirm accountability, to follow up the decisions of other sub-committees including the audit committee in a timely manner and to take necessary actions of the related parties. The board of directors had not worked to establish a strong control framework to fulfill the requirements of disclosing maximum financial and

	non-financial information through the company's website in a user-friendly manner.
(iii) 2.2.3	The Board of Directors did not pay enough attention to the adequacy and effective operation of the risk management and internal control systems of the company.
(iv) 2.4	The board of directors had not made an annual statement to the secretary of the board regarding the relations with the board and the relevant disclosures had not been made regarding each director in the annual report of the board.

2.2.3 To state that the Board has not performed according to its powers, functions and duties as per the requirement of section 12 (g) of the National Audit Act, No. 19 of 2018.

2.2.4 To state that the resources of the Board had not been procured and utilized economically, efficiently and effectively within the time frames and in compliance with the applicable laws as per the requirement of section 12 (h) of the National Audit Act, No. 19 of 2018.

3 Other Observations

(a) Pilot project to establish a ground water monitoring network.

To establish a system to manage the quantitative and qualitative conditions of ground water in Sri Lanka, to implement the pilot project of establishing ground water monitoring network for Sri Lanka in 04 districts selected as Anuradhapura, Polonnaruwa, Monaragala and Puttalam where kidney disease is widespread. The approval was given by the decision of the Council of Ministers No. AMA/15/1087/644/005 dated 29 July 2015. To implement one project at a cost of 20,629,921 Euros, the Secretary of the Ministry of Waterways entered into an agreement with the Royal Eikelkamp Institute of the Netherlands on 03 October 2017, and the work of the project was completed on 31 December 2022. The Government of Sri Lanka had obtained 85 percent of the cost of this project, 20,629,921.18 Euros or Rs. 5,521,329,000, i.e., 17,535,433 Euros from the Rabo Bank of the Netherlands to be repaid in 20 equal installments in 10 years at a subsidized interest rate of 1.45 percent per annum. The remaining 15 percent amount

of EUR 3,094,488.18 was obtained by the Government of Sri Lanka from Hatton National Bank of Sri Lanka, to be paid in 15 years from the second half of 2025 after a grace period of 3 years. Although the project has been completed, the following points are being observed in relation to it.

- i. The work related to Rs. 76.2 million, or 433,288 euros of the loan amount received from the Dutch Rebo Bank was not completed by the Dutch contractor and according to clause 5.2 of the loan agreement, if the entire loan amount is not used, the remaining amount can be deducted proportionally from the loan repayment installments. However, the Board did not inform the Treasury about the unfulfilled tasks.
 - ii. Under the project, Rs. 259.1 million or 1,473,462 Euros were allocated for the construction of a data center building on the land belonging to the Battaramulla Urban Development Authority and it was decided to use the uncertain allocation of Rs.329.8 million or 1,875,447 Euros for the data center. Rs.544.2 million or 3,094,488 Euros, which is 15 percent of the total value, had been paid in advance to the Dutch contractor, but the data center was not built due to the lack of land ownership. Due to non-construction of this data center building, the initial objectives and expected benefits of the project could not be achieved properly.
 - iii. According to the contractor agreement, the contractor had to provide the necessary spare parts to maintain the hydrometer data system for 05 years and for that, Rs. 106.5 million or 605,894 Euros had been paid to the contractor. Under this, the contractor had provided 160 spare parts, and among them, 41 items of maintenance equipment stored in the warehouse at Ratmalana were not formally accepted and accounted for.
- (b) A land of 40 perches located on Densil Kobbekaduwa Mawatha, Battaramulla, belonging to the Urban Development Authority, was decided to be given to the Water Resources Board for a period of 30 years by the decision of the Council of Ministers No. AMA/16/2500/724/099 dated December 06, 2016. For the land proposed to build the new head office building of the board, the chief appraiser of the government will pay Rs. A tax amount of 2,700,000 was determined. Without signing a lease agreement with the Urban Development Authority, the board had paid Rs.23,344,253 as rent to the authority from 2016 to March 2023. Although the main office building on this land was to be constructed in 2018, provision had been allocated under the pilot project to establish an underground water monitoring information network, but it had not been utilized due to the absence of a formal lease agreement.
- (c) A support staff of 68 people including a drilling manager and 11 drilling officers were assigned to the drilling division of the board and the staff incurred a cost of Rs. 41,478,196 in the year under review in terms of salary, overtime, travel expenses

and other costs. Among the 16 drilling rigs owned by the division, only 8 were in working condition and the division had built 437 tube wells in the year 2016, but by the year under review, it had continuously decreased to 79 tube wells. The operational inefficiency of the department has resulted in the continued deterioration of the reputation in the society regarding the quality and efficiency of the tube wells constructed by the board, but no analysis has been done and necessary corrective measures have not been taken.

- (d) At the end of the year under review, there was a balance of Rs.15,919,957 in the tube well construction service advance account, in which there was an advance balance of Rs.1,637,828 which had not been completed for the relevant works older than one year. The board had repaid Rs.2,310,356 received due to non-provision of related services, in which Rs.883,055 had to be repaid due to the failure of construction of 04 tube wells.
- (e) In the year 2021, the North Central Province Industrial Development Department had given Rs. 467,500 to the board to build 02 tube wells in Kurulunikawawa and Manerua meat processing center under development projects. Tube wells were not constructed in that year and in the year 2023, the amount paid in excess of Rs. 280,219 had to be spent. In this regard, based on the customer's complaint, according to the order made by the Customer Service Authority that the tube wells should be constructed under the old estimate, the tube wells were completed without charging additional fees. Here, as per the service agreement, due to non-construction of tube wells on the scheduled date, the additional cost incurred is Rs. 280,219 has been decided in the Board of Directors Resolution No. 1430 dated 25 December 2022 that the amount of 280,219 should be collected from the responsible parties, but no steps have been taken to collect the relevant money and take disciplinary action against the responsible Assistant Drilling Supervisor.
- (f) To prepare a draft related to the amendment of the Water Resources Board Act, a private lawyer and a law firm were hired and paid Rs.620,000 as of the date of audit, 31 July 2023, and even after 04 years have passed since it was recognized that the Act should be amended, the work has not been completed.
- (g) On 2019 September 18, to install fuel sensor equipment and GPS systems in the relevant machines and vehicles as a measure to prevent fraud in the water capacity tests and excessive fuel usage during normal vehicle driving. A contract was signed with a private company. There, 07 drilling rigs, 02 pump systems, 01 crew cabs, 12 cabs and 08 compressor systems were expected to be installed, but after more than 3½ years, on 21 March 2023, these systems were completed only for 12 cabs and 03 drilling machines.

W.P.C. Wickramaratne
Auditor General

Report of the Auditor General on the Financial Statements and Other Legal and Regulatory Requirements of the Water Resources Board for the year ended 31 December 2022 in terms of Section 12 of the National Audit Act, No. 19 of 2018.

1.2 Basis for audited opinion

		Management Comments
	a) The Thimbirigasaya Divisional Secretary had informed the board to pay an annual tax of Rs 12,772,000.00 from the year 2013 and obtain an annual tax license for the land located at Hector Kobbakaduwa Mawatha, Colombo 07, which had been run by the Water Resources Board since 1978. A case was filed in the Colombo High Court in 2019. Later, while the Attorney General had given instructions to the Thimbirigasaya Divisional Secretary to reach a settlement regarding the enjoyment of the land, the head office had been moved to a private rented building in Nawala, Koswatta area from 2021 July 18, without following the advice of the Attorney General. However, since the relevant case has not been finalized or removed by the Divisional Secretary, it should be disclosed in the financial reports in accordance with Section 100 of Public Sector Accounting Standards 8 of Sri Lanka, but it has not been done so.	1978, the Thimbirigasaya Divisional Secretariat informed that on a short-term lease basis, Rs. 12,772,000.00 can be given for tax amount. The Water Resources Board has not agreed to that and no lease agreement has been entered into. Due to short-term non-payment of taxes, a case was filed in the Colombo Magistrate's Court for eviction from the land and eviction orders were given by the court. Meanwhile, this land is being transferred from the Land Commissioner General to the Urban Development Authority under the mega police scheme. Accordingly, the Urban Development Authority Per. A land of 40 was given in Battaramulla. However, on the notification of the Prime Minister's Secretary, the land was acquired for the Prime Minister's quarters and the Water Resources Board was notified to move the head office to another building as the Water Resources Board vacated the land and provided allocations from the treasury for the monthly building rent. Received. I am showing a copy of the relevant letter as Annexure 01. In addition to giving notice to vacate the land in accordance with the law, this land has been handed over to the Ministry of Urban Development and instead a land of 40 Battaramulla perches has been given and the Thimbirigasaya Divisional Secretariat will not pursue this case further as there is no debt, so no financial provision is required for it. Furthermore, note No. 15 of the final accounting report submitted by the board has made relevant clarifications related to Standard No. 08 on this matter.
	b) In the year 2016 Rs. 217,242,201, the book value of 537 items related to 3 classes of assets such as machinery, laboratory equipment and computers	Corrective action will be taken in the final accounts for 31.12.2023 .

		had become zero due to the end of their effective lives, and in relation to those assets, in accordance with Section 65 of Sri Lanka Public Sector Accounting Standards 7, in the financial statements had not been disclosed. Because those assets were not recalculated and taken into account, they were used during the year under review but there was no provision for depreciation.	
	c)	The board had constructed tube wells and registered external agencies and their drilling rigs and hydrologists from the year 2018. In this regard, in the year under review, Rs.3,218,000 and income of Rs.329,000 had been accounted for. The following observation is made regarding that.	Corrective action will be taken in the final accounts for 31.12.2023.
	i)	As mentioned, the board had registered geohydrologists, but the board had not received any legal provision for that.	Special gazette No. 2010/23 dated 16 March 2017, "Construction of tube wells should be done according to the instructions taken by the Water Resources Board", before carrying out the work, a suitable place for constructing a tube well should be determined by geophysical tests. must be found. Based on that test, a geological report should be obtained and the report should be submitted for construction as per the instructions of the Water Resources Board as above. At the time of issuing this gazette notice, in addition to the Water Resources Board, these surveys were carried out by the Water Supply and Drainage Board and external geologists. According to the above gazette notification, the Water Resources Board Act was suitably amended and submitted for necessary approval in order to solve the problems that arose due to the lack of necessary legal provisions in the implementation of the orders.

			And until the amendment of the Water Resources Board Act , in order to carry out the necessary activities according to the relevant gazette notification, the groundwater survey reports were obtained from the Water Resources Board and the necessary instructions and necessary approvals were made. In addition to the geologists of the Water Supply and Drainage Board, a selection of external geologists was made while giving relevant recommendations for the groundwater survey reports and referring the reports to the Water Resources Board. There, qualified external geoscientists were selected and registered only to refer the groundwater survey reports to the Water Resources Board. Therefore, in order to further formalize this matter, necessary arrangements have been made to act according to the instructions of the Board of Directors.
	(ii)	Contrary to Article 14 of Sri Lanka Public Sector Accounting Standard 10, the income from registration and renewal of registration was recognized on a monetary basis. And according to the standard 39(a) the accounting policy used to recognize this income was not disclosed in the financial reports.	Accept and will correct in the year 2023 .
	(iii)	Instead of identifying the income related to the year and keeping the accounts on accrual basis, the values of the previous years related to the operating income were re-stated in the following year and adjusted to the loss. Accordingly, the loss of Rs. 12,593,000 and Rs. 23,910,000 in the years 2020 and 2021, respectively, was reduced by 12.9 percent and 28.9 percent to Rs. 10,973,000 and Rs. 6,988,000 in the following years. The Dam Protection and Water Resources Management Project constructed at a cost of Rs.13,261,884 in the year 2018 and was handed over to the Water Resources Board.	No explanation needed.

	(iv)	Regarding the comparative figures for last year's operating income of Rs.6,896,000, which were re-stated in the financial statements of the reviewed year, the information in (a) to (d) of item 54 of Sri Lanka Public Sector Accounting Standards 3 was not disclosed in the financial statements.	Maintenance costs This adjustment has been made as the payment for the year 2021 has been made in the year 2022. However, I would like to mention that these matters can be avoided when preparing accounts accrual basis from the year 2023.
	(d)	Under Ministry of Irrigation budget item number 198-2-03-23-2507-17, the project to establish an underground water monitoring information network, which has been implemented at a cost of 20,629,921 Euros or Rs. 5,521,329,000 from 2017 to 2022, has ended on 31 December 2022 had done in relation to the project, the non-current assets such as machinery, vehicles, spare parts, tools and raw materials worth Rs. 1,581,619,000 imported into Sri Lanka by the contractor, such as wooden furniture, machinery, motor vehicles, scientific equipment, and computers, by the end of the review year, the project director The value of the non-current assets that should have been recognized as income for the year under review was shown in the statement of financial position as a deferred income in accordance with Section 49 of Public Sector Accounting Standards 11 of Sri Lanka regarding the accounting of non-current transactions.	In relation to the project, the Rs.3,940,201,785 worth of assets have not been handed over to the board by 31.12.2022, so I would like to mention that the asset value has not been included in the final accounts of the board. It has been revealed under number 11 of the resolutions.
	(e)	From the cost of Rs.3,939,710,000 incurred in addition to the assets that were handed over to the board under the project of establishing an underground water monitoring information network shown under (d) above, which was implemented at a cost of Rs.5,521,329,000 under the Ministry of Irrigation from 2017 to 2022. The proposed 190 wells with high-tech equipment, along with relevant maintenance equipment, were handed over to the board and the value of these 190 wells should have been properly identified and disclosed in the financial statements, but this was not done.	150 tubewells have been constructed under the project and subject to the approval of the project evaluation committee appointed by the Cabinet under the project's improbable allocations, 40 Nimana tubewells held by the Water Resources Board have been constructed for the need of groundwater resource management in the Jaffna Peninsula. Equipment installed. Accordingly, along with the summarized details of the 190 locations of the Nimana system, the necessary documents along with the equipment and values established for it have been prepared for accounting in the Water Resources Board as assets and the relevant documents are currently planned to be handed over to the Accounts Department.

	(f)	Assets amounting to Rs.334,244,000 received under the treasury and other grants in previous years were shown as deferred income on 31 December 2021 and the relevant values should have been recognized as income of previous years but were not further shown as deferred income.	Accept and it will correct in the year 2023.
	(g)	In the year under review, the depreciation related to the assets to be recognized as income amounting to Rs.119,050,000 was credited to the fixed assets depreciation account instead of being credited to the depreciation account.	Accept and it will correct in the year 2023.
	(h)	According to Section 34 of Sri Lanka Public Sector Accounting Standards ¹⁴ , business and other allowances paid to related parties should be disclosed in the financial statements, but the financial statements did not disclose that the key management staff of the board did not disclose that information or the transactions made with related parties.	Allowances paid on behalf of related parties are shown as Board Fees under Note No. 04-1 of the Financial Statements presented and additionally disclosed under Accounting Principles No. 09.
2.2.2		Reference to Rules / Directive	Management's comments.
	(a)	In terms of Section 16 of the Water Resources Board Act No. 29 of 1964, orders published by the Minister through Extraordinary Gazette No. 2010/23 dated 2017 March 16.	
	(i)	Although all the institutions engaged in the construction of tubewells should be registered with the board, at the end of the year under review, only 72 institutions were registered with the board and the board did not have an adequate program to identify which institutions are not registered. Also, according to the above orders, the registered institutions should provide a report containing the data of all new construction pipelines to the board every 03 months, but out of 72 registered institutions, only 03 institutions had provided the said report.	In November 2021, all the drilling companies registered in the Water Resources Board were notified in writing to register for the year 2022. But for the year 2022, 72 external drilling companies and drilling rigs were registered. All the drilling companies were again informed and informed to update the registration. The details of the tube wells constructed by the external drilling companies registered with the Water Resources Board have been submitted by only 03 drilling companies in the year 2022. All drilling agencies were informed in writing to send relevant drilling reports. Necessary arrangements are being

			made to get the drilling reports to the Water Resources Board for the tube wells to be constructed in the future. Necessary measures will be taken to take legal action against the drilling companies that do not do so.
	(ii)	No.03 If an organization or person engaged in the water bottling industry and beverage production uses a natural water source or ground water for its manufacturing activities, every 06 months a water sample from the same water source is tested by a recognized laboratory of the government and submitted to the approval board for the relevant analysis report. Although it should be done, only one of the 40 institutions registered with the Board had provided the above reports by the end of the year under review.	31 Nos organizations have sent reports on the quality of the groundwater source once every 6 months to the Water Resources Board, and in the year 2022, only one organization has provided the relevant reports. Therefore, all the registered institutions have been informed in writing to provide the relevant information and arrangements are being made to take necessary legal measures for the institutions that have not submitted the reports.
	(iii)	No.06 Water Resources Board Act No. 29 of 1964 as amended by Act No. 42 of 1999 against organizations or individuals who do not act in accordance with orders 1 to 5, including the rules to be followed by public or non-governmental organizations using natural water springs or deep or shallow groundwater 20 had not been lawfully acted upon.	Necessary steps are being taken to take legal action against identified entities that have not provided reports on water quality of groundwater sources used for commercial purposes to the Water Resources Board.
	(b)	Sections 10 and 11 of the Employees' Provident Fund (Amendment) Act No. 26 of 1981 Employee contribution to the fund should be 12 percent and employee contribution should be 8 percent and the higher ratio can be agreed upon. Even though the board's employee contribution was 12 percent, 10 percent was charged and paid from the employees, but the commissioner was not informed about it.	From July 1981 till now, the Water Resources Board has made arrangements to credit the employees' contribution as 10% and the Water Resources Board's contribution as 12% as credit to the Employee Provident Fund. So far, there has been no protest from the employees.

	(c)	Guidelines of the Code of Guidelines for Integrated Management of State Enterprises introduced by State Business Circular No. 01/2021 dated 16 November 2021.	
	(i) 2.2.1	Key performance indicators for the board have not been determined or a concrete plan has been prepared or arrangements have been made to lead the board accordingly.	Noted
	(i) 2.2.2 (b)	To read and present the board papers to the board members to read and study before the board of directors meeting, to maintain a reliable management information system necessary to make decisions and to confirm accountability, to follow up the decisions of other sub-committees including the audit committee in a timely manner and to take necessary actions of the related parties. The board of directors had not worked to establish a strong control framework to fulfill the requirements of disclosing maximum financial and non-financial information through the company's website in a user-friendly manner.	Although it is necessary to appoint officers with specialized knowledge and experience for this purpose, although the Secretary was also requested to create positions, it was not approved and currently a management assistant has been appointed.
	(iii) 2.2.3	The Board of Directors did not pay enough attention to the adequacy and effective operation of the risk management and internal control systems of the company.	noted
	(iv) 2.4	The board of directors had not made an annual statement to the secretary of the board regarding the relations with the board and the relevant disclosures had not been made regarding each director in the annual report of the board.	I noted to be included in the annual report of the year 2022.
2.2.3		To state that the Board has not performed according to its powers, functions and duties as per the requirement of section 12 (g) of the National Audit Act, No. 19 of 2018.	noted

3		Other Observations	Management's comments.
	(a)	Pilot project to establish a ground water monitoring network. To establish a system to manage the quantitative and qualitative conditions of ground water in Sri Lanka, to implement the pilot project of establishing ground water monitoring network for Sri Lanka in 04 districts selected as Anuradhapura, Polonnaruwa, Monaragala and Puttalam where kidney disease is widespread. The approval was given by the decision of the Council of Ministers No. AMA/15/1087/644/005 dated 29 July 2015. To implement one project at a cost of 20,629,921 Euros, the Secretary of the Ministry of Waterways entered into an agreement with the Royal Eikelkamp Institute of the Netherlands on 03 October 2017, and the work of the project was completed on 31 December 2022. The Government of Sri Lanka had obtained 85 percent of the cost of this project, 20,629,921.18 Euros or Rs. 5,521,329,000, i.e., 17,535,433 Euros from the Rabo Bank of the Netherlands to be repaid in 20 equal installments in 10 years at a subsidized interest rate of 1.45 percent per annum. The remaining 15 percent amount of EUR 3,094,488.18 was obtained by the Government of Sri Lanka from Hatton National Bank of Sri Lanka, to be paid in 15 years from the second half of 2025 after a grace period of 3 years. Although the project has been completed, the following points are being observed in relation to it.	disclosed by Annexure 2.
	(i)	The work related to Rs. 76.2 million, or 433,288 euros of the loan amount received from the Dutch Rebo Bank was not completed by the Dutch contractor and according to clause 5.2 of the loan agreement, if the entire loan amount is not used, the remaining amount can be deducted proportionally from the loan repayment instalment's. However, the Board did not inform the Treasury about the unfulfilled tasks.	

	(ii)	Under the project, Rs. 259.1 million or 1,473,462 Euros were allocated for the construction of a data center building on the land belonging to the Battaramulla Urban Development Authority and it was decided to use the uncertain allocation of Rs.329.8 million or 1,875,447 Euros for the data center. Rs.544.2 million or 3,094,488 Euros, which is 15 percent of the total value, had been paid in advance to the Dutch contractor, but the data center was not built due to the lack of land ownership. Due to non-construction of this data center building, the initial objectives and expected benefits of the project could not be achieved properly.	disclosed by Annexure 2.
	(iii)	According to the contractor agreement, the contractor had to provide the necessary spare parts to maintain the hydrometer data system for 05 years and for that, Rs. 106.5 million or 605,894 Euros had been paid to the contractor. Under this, the contractor had provided 160 spare parts, and among them, 41 items of maintenance equipment stored in the warehouse at Ratmalana were not formally accepted and accounted for.	dislosed by Annexure 2.
	(b)	A land of 40 perches located on Densil Kobbekaduwa Mawatha, Battaramulla, belonging to the Urban Development Authority, was decided to be given to the Water Resources Board for a period of 30 years by the decision of the Council of Ministers No. AMA/16/2500/724/099 dated 06 December 2016. For the land proposed to build the new head office building of the board, the chief appraiser of the government will pay Rs. A tax amount of 2,700,000 was determined. Without signing a lease agreement with the Urban Development Authority, the board had paid Rs.23,344,253 as rent to the authority from 2016 to March 2023. Although the main office building on this land was to be constructed in 2018, provision had been allocated under the pilot project to establish an underground water monitoring information network, but it had not been utilized due to the absence of a formal lease agreement.	No. 2A, Hector Kobbakaduwa Mawatha , Colombo 07 , the head office of the Water Resources Board had been established and a case had been filed against the Timbirigasaya Divisional Secretary Water Resources Board to collect the tax amount of Rs.56,409,666.00 collected on that land from 2013-2017. The court had sent a summons to remove the Water Resources Board from the land. Meanwhile, the Urban Development Authority, under a Cabinet decision in 2016, asked the Water Resources Board to vacate the Hector Kobbakaduwa Mawatha land and transfer the land to the Urban Development Authority, Battaramulla Denzil Kobbakaduwa Mawatha. It was also decided to give a land of 40 perches to the Water Resources Board. Accordingly, to keep that land, taxes had to be paid from 2017. The purpose of keeping this land was to build the laboratory and data center of the Water Resources Board under the Netherlands project.

			Till now, the taxes for this land It was not possible to sign the agreement because the Land Commissioner General did not give approval under Section 6(1) of the Land Development Act. The reason for this was that the arrears of rent for the land in Hector Kobbackaduwa Mawatha for the period 2013-2017 were Rs.56.409.666. Because he had to pay. As decided in the discussion held with the Secretary of the Ministry of Lands and the Divisional Secretary of Thimbirigasaya to cut off this arrears of tax, a Cabinet Memorandum is currently being prepared.
	(c)	A support staff of 68 people including a drilling manager and 11 drilling officers were assigned to the drilling division of the board and the staff incurred a cost of Rs. 41,478,196 in the year under review in terms of salary, overtime, travel expenses and other costs. Among the 16 drilling rigs owned by the division, only 8 were in working condition and the division had built 437 tube wells in the year 2016, but by the year under review, it had continuously decreased to 79 tube wells. The operational inefficiency of the department has resulted in the continued deterioration of the reputation in the society regarding the quality and efficiency of the tube wells constructed by the board, but no analysis has been done and necessary corrective measures have not been taken.	According to the gazette on 17 March 2017, the activities of regulating the institutions that are building Nalaling were started from that year. Accordingly, borehole drilling companies, drilling machines and geohydrologists who conduct groundwater surveys were registered. Accordingly, after the year 2016, there has been some reduction in the number of wells built by the Water Resources Board due to the provision of space to external drilling companies for the construction of tube wells. Due to the registration of external drilling companies, there will be some increase in the income of the board.
	(c)	At the end of the year under review, there was a balance of Rs.15,919,957 in the tube well construction service advance account, in which there was an advance balance of Rs.1,637,828 which had not been completed for the relevant works older than one year. The board had repaid Rs.2,310,356 received due to non-provision of related services, in which Rs.883,055 had to be repaid due to the failure of construction of 04 tube wells.	A committee was appointed to conduct a preliminary investigation to identify the reasons for the delay in the services and the officials responsible for the amount of Rs 15,919,957.00 in the advance account as of 31.12.2022. On the recommendations of the committee, disciplinary action will be taken against the responsible officials. In order to be able to monitor the services performed by the board without delay and to monitor their performance step by step, the department heads will be assigned the responsibility to document the job details and work steps and conclude them in a formal manner.

			Actions will be taken against the responsible officials regarding the reasons for the failure of construction of 04 tube wells.
	(d)	In the year 2021, the North Central Province Industrial Development Department had given Rs. 467,500 to the board to build 02 tube wells in Kurulunikawawa and Manerua meat processing center under development projects. Tube wells were not constructed in that year and in the year 2023, the amount paid in excess of Rs. 280,219 had to be spent. In this regard, based on the customer's complaint, according to the order made by the Customer Service Authority that the tube wells should be constructed under the old estimate, the tube wells were completed without charging additional fees. Here, as per the service agreement, due to non-construction of tube wells on the scheduled date, the additional cost incurred is Rs. 280,219 has been decided in the Board of Directors Resolution No. 1430 dated 25 December 2022 that the amount of 280,219 should be collected from the responsible parties, but no steps have been taken to collect the relevant money and take disciplinary action against the responsible Assistant Drilling Supervisor.	The responsible officers have been identified and the Board of Directors has given approval to take disciplinary action against those officers .
	(e)	To prepare a draft related to the amendment of the Water Resources Board Act, a private lawyer and a law firm were hired and paid Rs.620,000 as of the date of audit, 31 July 2023, and even after 04 years have passed since it was recognized that the Act should be amended, the work has not been completed.	Further, developing the draft prepared in 2017 and taking into account other trends in 2022, the amendment has been completed by a new law firm. The draft has been prepared and completed and submitted to the Hon'ble Minister and the amendments that have arisen are to be submitted to the Hon'ble Minister again. This is not an idle expense as it is based on the original legal facts and further amendments are carried forward. Since there is no legal officer in the ministry, the legal advisor of the Honorable Minister and a legal advisor of the President's office are being contacted for these matters.

	(f)	On 2019 September 18, to install fuel sensor equipment and GPS systems in the relevant machines and vehicles as a measure to prevent fraud in the water capacity tests and excessive fuel usage during normal vehicle driving. A contract was signed with a private company. There, 07 drilling rigs, 02 pump systems, 01 crew cabs, 12 cabs and 08 compressor systems were expected to be installed, but after more than 3½ years, on 21 March 2023, these systems were completed only for 12 cabs and 03 drilling machines.	for drilling machines, air pressure machines , generators and cabs etc. was completed and there was a difficulty in calculation due to the fact that fuel was issued from barrels in the work sites for the other machinery except cabs and then measuring equipment was provided. The problem was resolved. Due to the Covid-19 epidemic situation in 2020 and 2021, the deployment of work machinery to the centers was limited and due to technical faults in the machinery, the information records were not updated. Later, the reports of the units operating in the center were checked and only payments were made to them. has.
--	-----	--	---

.....
R.P Liyanarachchi
Internal Auditor

Ground water Studies- Summary 2022

WRB is the mandated Institution of the country responsible in all matters related to the groundwater resources. Considering this, the Board has given priority to the areas of research, monitoring, regulation and developing sustained groundwater management plans at river basin levels. Presently the Board has focusing mainly on regulatory and management aspect of groundwater resources adhering to the National Water Resources Policy of the country.

During the year 2022, the following projects & activities are scheduled to carry out as per the workplan. Basically, the projects and operations of activities are categorized into three areas.

Treasury grant projects, Generated activities and foreign funded projects.

Treasury grant projects

09 projects were conducted under treasury funds in 2022.

In long term groundwater monitoring project (LTGM), continuous groundwater quality and ground water level monitoring were carried out in about 12 areas of the country. 98% of water sampling was completed out of 2095 number of target samples. 48% water sample analysis were done out of 2095 of target samples. In the study on the direct and indirect impacts on the climate changes on the coastal aquifer system of Sri Lanka (SICC), western and eastern coastal belts have been selected to monitor water quality and water level changes. 100% groundwater investigations and test well construction was completed out of 10 number of target. 84% of biannual water level monitoring and insitu water sample analysis were completed out of 220 of target samples. 31% of chemical analysis were completed out of 220 of target water samples.

In hydrogeological assessment and identify of favorable aquifer recharge within Ma oya basin (Ma-Oya) 100% of baseline groundwater level and water quality assessment by insitu testing were completed out of 100 number of target samples. 100% of geophysical investigations were completed out of 50 number of targets. 50% of deep boreholes and aquifer recharge systems were completed.

Under combined inspections on groundwater related issues, 80% of meetings & combined inspections of groundwater issues were covered out of 100 number of targets. 12% of awareness programs were conducted out of 15 number of targets.

In the activity of development of groundwater Atlas for Sri Lanka, desk study, data compilation, screening, and processing, Analysis of data, preparation of spatial maps from available information were completed 100%. Vulnerability maps and productivity maps on GWR of the country were completed 70% and final report was completed 60%.

Under infrastructure development, improved capacity in scientific equipment and enhance of skill development within the institution, two number of pH meters were purchased.

In the project of emergency use of disaster events related to water sector, 40% of preliminary investigations and GW exploration assessment activities according to requirement of the community were completed out of 10 number. 60% of production boreholes were constructed out of 10 number of targets.

Generated Funds

Under generated funds, commercial activities, groundwater regulations and research oriented commercial activities were done.

Hydrogeological surveys (target-425, progress - 451(106%), Tube well construction (Target – 100, progress -55(55%), Pumping tests (target – 175, progress – 159 (91%), Tube well cleaning (Target – 10, progress -04 (44%), chemical analysis of water samples (Target-900, progress – 1044(116) were completed under generated funds.

Other than that, 52 number of privet drilling companies were registered. 72 number of registration certificates were issued for drilling machines. 10 number of external hydrogeologists were registered. Issued 583 number of approvals for external hydrogeological reports. 04 number of flow meters were installed. Information of 600 number of groundwater utilizing companies were collected. 20 numbers of join inspections and awareness programs were conducted. 15 number of drillers were trained.

Two research oriented commercial activities were carried out in sub catchment of Diyawannaoya and Lakwijaya power plant.

Foreign funded projects

Implementation if groundwater monitoring network project was carried out under foreign funds. Under this project, 190 of monitoring wells were constructed and data loggers were installed in Malwathuoya, Maduruoya, Kumbukkanaoya basins, Jaffna Peninsula and puththalam area.

Actions taken to rectify accounting and management weaknesses identified in the Auditor General's audit queries and audit reports.

The accounting deficiencies pointed out in the audit report have been corrected according to the Sri Lanka Public Accounting Standards.

1. Amendments have been submitted to the Water Resources Act to include the matters for the regular maintenance of groundwater regulation activities and have been forwarded to the Hon'ble Minister and the Ministry Secretary for approval.
2. Unnecessary stocks reported from goods survey activities have been identified and removed.
3. The Netherlands Project
 - (1) Arrangements have been made to book the goods and test pipes to be delivered by this project.
 - (2) The data obtained automatically from 190 old tube wells is planned to be provided to the Ratmalana data centre, to analyse the data storage and to provide it to the required department.

Actions taken during the year 2022 to improve the performance of the Water Resources Board

01. It is planned to utilize the drilling equipment and geohydrology equipment received under the Groundwater Regulation (Netherlands) project to complete the works under the World Bank project.
02. The Water Supply Board, the National Community Water Department and the Water Resources Board jointly implement programs to increase efficiency by sharing resources and capabilities.
03. In order to further formalize groundwater regulation activities, the Water Resources Board should take the initiative to prepare a formal program to work together with the relevant departments of the Sri Lanka Standard Institute and the Department of Health in giving approval to the water bottling and ground production industries that extract water for commercial purposes.
04. Providing advice from the ground water sector for the preparation of the National Water Resources Policy was done through those committees.

For the promotion of laboratory activities, a laboratory for water management was built in Ratmalana premises. Providing the necessary chemicals to the laboratories and starting the necessary activities for accreditation to raise the status of the laboratories.