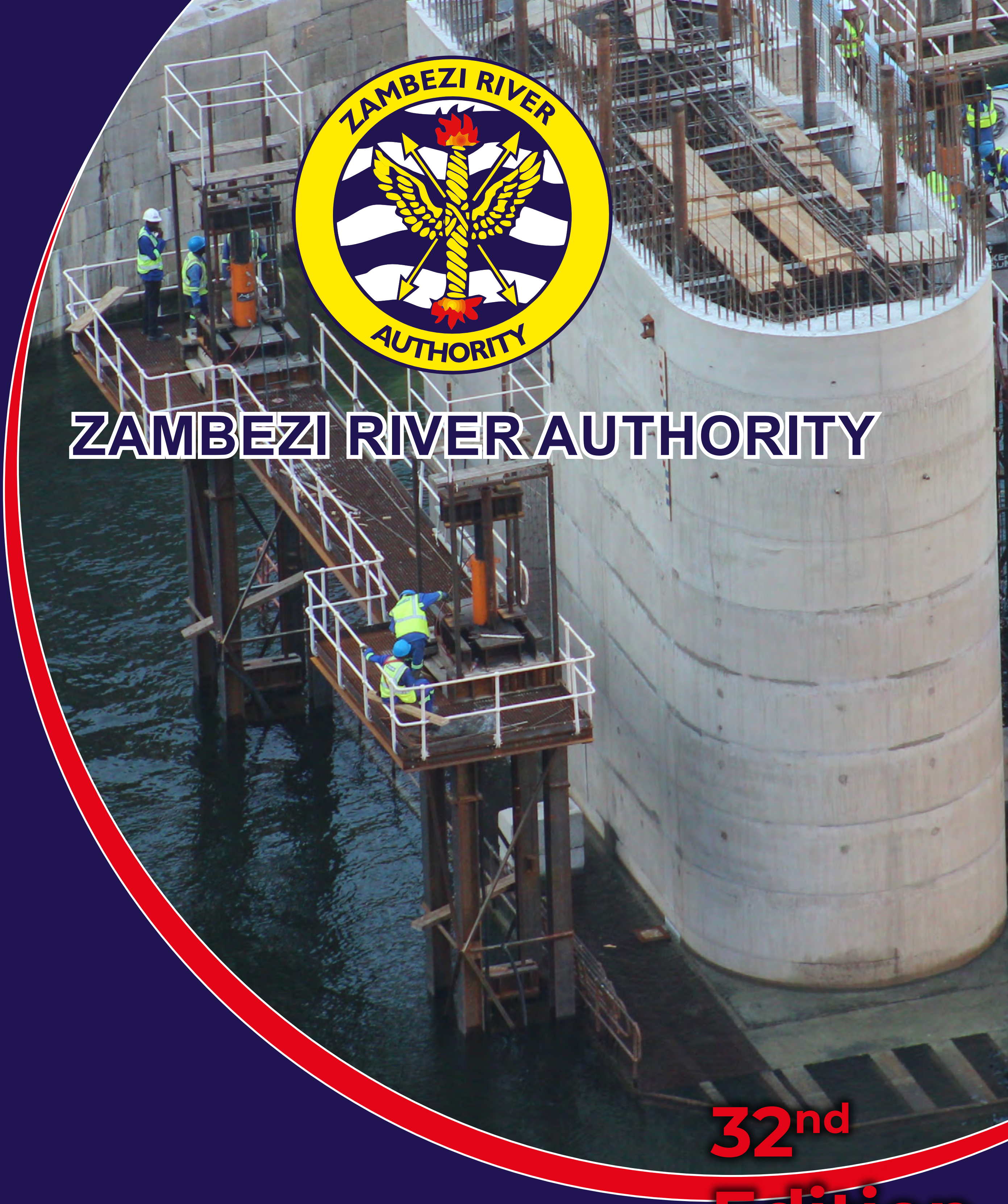


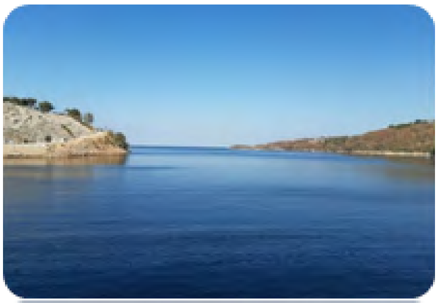
ZAMBEZI RIVER AUTHORITY

32nd Edition

ANNUAL REPORT

and Financial Statements for the year ended 31st December 2019

2019



CONTACT INFORMATION

LUSAKA OFFICE (Head Office)
Kariba House 32 Cha Cha Cha Road
P.O. Box 30233, Lusaka Zambia
Tel: +260 211 226950, 227970-3
Fax: +260 211 227498
e-mail: info@zambezira.org
Web: http://www.zambezira.org/

HARARE OFFICE
Club Chambers
Nelson Mandela Avenue
P.O. Box 630, Harare Zimbabwe
Telephone: +263 24 2704031-6
VoIP:+263 8677008291 :+263 8688002889
e-mail: info@zambezira.org

KARIBA OFFICE
Administration Block
21 Lake Drive Pvt. Bag 2001,
Kariba Zimbabwe
Tel: +263 261 2146140/179/673/251
VoIP:+2638677008292/3
e-mail: info@zambezira.org

The outgoing EU Ambassador Alessandro Mariani with journalists on a media tour of the KDRP

CONTENTS

Front Cover Photo: Kariba Dam Rehabilitation Project, Plunge Pool Reshaping
Back Cover Photo: Matongo Platform Gauging Station
Layout and Design: Public Relations and Communications Unit
Published by: Zambezi River Authority ©2019
Printed by: Printech Limited

MESSAGE FROM THE CHAIRPERSON

Mr. Trevor Kaunda
Board Chairperson
Permanent Secretary-
Ministry of Energy
Zambia

I am delighted to share the Zambezi River Authority's 2019 Annual Report and Financial Statements which shows how the Authority delivered against its just ended five-year Corporate Strategic Plan and the role it played in contributing to the socio-economic development of the Contracting States through, among other areas, a sustainable and secure energy provision to all its shareholders and stakeholders. For the last 33 years, the Authority has been discharging its statutory obligations and transforming its operations so as to remain relevant and as such, the year 2019 was no different.

The Authority's financial performance reflects the increasing global economic complexities and the challenges we must solve. Further, the Authority's growth also allows it to continue to serve and to deliver on its mandate through embracing new technology and new business models.

BUDGET PERFORMANCE REVIEW

During the year under review, the Authority achieved operating income of US$24.15 million compared with the budget of US$22.03 million giving rise to a favorable variance of 10%. This was as a result of the over-utilisation of water by the two Utilities, ZESCO Limited and Kariba Hydro Power Company (KHPC). The combined water utilisation was 36.02 Billion Cubic Metres (BCM) against an allocation of 34.00 BCM.

Furthermore, the operating expenditure was US$24.77 million against a budget of US$39.72 million resulting in a favorable variance of 37%. The under-expenditure was mainly due to non-execution of certain activities. Which could not be undertaken on account of liquidity challenges which the Authority was facing. The said activities which could not be undertaken due to liquidity challenges were under the following expenditure lines: Communication and Public Relations, Seminars and Workshops, Training and Development, Information and Communication Technology, Joint Operations Technical Committee and Project Management costs.

The adverse liquidity situation arose from non-settlement of water sales invoices by the two Utilities and the foreign exchange control regulations that restricted access to Authority funds that were held in commercial banks in Zimbabwe.

The total receivables from the two Utilities amounted to US$34.29 million whilethe restricted cash in Zimbabwe was US$19.64 million, bringing the total amount of funds the Authority was not able to access to US$53.93 million. The Authority's liquidity ratio continued to show a very good outlook of 2.45 times of current assets which could cover current liabilities. However, when the inaccessible funds mentioned above are removed, the Acid test ratio, showed a paltry 0.02 times or only about 2% of the current liabilities that could be covered by the current assets, which well described the precarious liquidity situation the Authority was facing. The Authority continued to engage ZESCO Limited and KHPC with a view to ensuring that the Utilities settled the outstanding obligations.

As a result of the adverse liquidity situation, the Authority was unable to meet its critical expenditure as it could not fully execute its 2019 budget.

Further, the Authority was unable to pay employees in Zambia their retrenchment packages and failed to settle scheduled loan repayments under the Kariba Dam Rehabilitation Project (KDRP). The said loans were contracted from the World Bank's International Development Association (IDA) and the African Development Bank (AfDB) by the Government of the Republic of Zambia and on-lent to the Authority.

MAINTENANCE OF KARIBA DAM

A sustained structural integrity and safety of the Kariba Dam and reservoir remained the pivotal aspiration of the Authority. In that regard, routine and preventative maintenance programmes for the dam and its appurtenances, including; collection, analysis and reporting of data from the dam safety monitoring instrumentation at the Kariba Dam continued during the review period as prescribed in the Standing Operations Procedures (SOP) manual as per best practice.

A bi-annual inspection of the dam meant to ensure that the infrastructure was safe, was carried out in February 2019. This was aimed at evaluating the state of the dam in accordance with the requirements of the SOP. A detailed assessment of the dam galleries, spillway and associated hydro-electromechanical equipment, dam plinths, South Bank complex and dam monitoring instruments was undertaken.

IMPLEMENTATION OF THE KARIBA DAM REHABILITATION PROJECT (KDRP)

The period under review saw the progressive implementation of the two components of the KDRP aimed at ensuring the long-term safety and reliability of Kariba dam as follows;

(a) Plunge Pool Reshaping

The construction of the permanent access road on the north bank tailrace platform was completed and subsequently utilized to facilitate passage of the 130-tonne crane for use upstream of the tailrace outfalls. The excavation of the lift platform foundations by underwater blasting was in progress. All the 41 cofferdam stop logs and the associated built-in parts were transported from the manufacturing factory, Trident Steel of South Africa to site. The targeted date for completion of the reshaping of the plunge pool remained as December 2021.

(b) Spillway Refurbishment

The spillway refurbishment contract was signed on 24th May 2019 and the contractor moved to site on 21st October 2019 in readiness for undertaking the refurbishment of the six spillway gates for the Kariba Dam. The Authority received the programme of works as well as the quality management plan. The project was scheduled to be completed by December 2023.

HYDROLOGICAL OUTLOOK AND RESERVOIR OPERATIONS AT KARIBA

The rainfall received during the 2018/2019 season was 60% below normal and this impacted negatively on the total inflows into Lake Kariba. The season's inflows were 36% higher than the worst year on record (1995/1995) but below that of the previous four years. The recorded river flows from the upper Kariba catchment gauging stations were 70% below the flows of 2018 thereby giving a continued grim picture at the end of the year.

Lake Levels at Kariba

The lake level at Kariba continued to recede, dropping by 5.66m from January to December 2019. It dropped from a lake level of 482.35m recorded on 1st January 2019 to 476.69m recorded on 31st December 2019 which was 1.19m above the minimum operating level of 475.5m. The stored usable water on 31st December 2019 was 7.62 Billion Cubic Metres (BCM) or 12% of live storage in comparison to 38.66 BCM or 60% of live storage recorded on the same date in 2018.

Water Allocation and Utilisation for Power Generation at Kariba Dam

The Authority initially allocated the two power utilities, ZESCO Limited and Zimbabwe Power Company (ZPC), a combined total of 38 BCM of water for power generation for the year 2019. Due to the poor rainfall performance in the Zambezi catchment which was contrary to what had been forecasted, the allocation was revised downwards to 36 BCM on 1st March 2019. Another downward revision to 34 BCM was effected on 1st April 2019 in order to ensure continued availability of water for power generation in view of the poor rainfall performance.

By the close of the year 2019, the ZESCO Limited operated Kariba North Bank power station had utilised 18.75 BCM of water which was 1.75 BCM (10.30%) above allocation while the ZPC operated Kariba South Bank power station had utilised 17.27 BCM which was 0.27 BCM (1.59%) above allocation. The utilisation above allocation by ZESCO Limited at its Kariba North bank power Station attracted water tariff penalties due to the fact that it utilized above the threshold limits provided for in the Water Purchase Agreement.

IMPLEMENTATION OF THE 2400MW BATOKA GORGE HYDRO-ELECTRIC SCHEME (BGHES)

The Authority continued to implement activities for the development of the BGHES which included the following:

(a) Land Acquisition

The land on which the Batoka Dam, the two power houses, the offices, employee townships and all other auxiliary infrastructure will be developed comprised 2700 hectares on the north bank and 3000 hectares on the south bank. The Authority made significant progress regarding the land acquisition process for the project infrastructure in both Contracting States.

(b) Roadmap for the development of the BGHES

The Authority convened an inaugural meeting between the Project Steering Committee (PSC) and the selected developer for the scheme, namely, the Consortium of Power Construction of China Limited (POWERCHINA) and General Electric from 6th to 7th August 2019 for purposes of agreeing on a road map for the development of the project infrastructure.

ENHANCEMENT OF THE AUTHORITY'S CORPORATE IMAGE

Media Coverage

The Authority received media coverage from national, regional and international media as well as online publications which were mainly positive. The year opened with a 9.4% coverage which peaked in July to 52% and closed off the year at 37%. The coverage was mainly due to the on-going developmental activities and associated publicity efforts on the part of the Authority regarding the implementation of the Kariba Dam Rehabilitation Project and the Batoka Gorge Hydro-Electric Scheme.

Implementation of projects under the Zambezi Valley Development Fund (ZVDF)

The Authority continued in its effort to collaborate with the displaced Tonga/Kore-Kore people by expending 2% of its water sales revenue and another 2% of the electricity revenue collected by the power utilities for the implementation of projects aimed at enhancing the displaced communities' socio-economic development. Based on the approved projects submitted by the communities, several development projects were carried out as follows:

Zambia

1. Rehabilitation of the Lusitu water supply scheme, Chirundu District,
2. Construction of a classroom block at Nkandazovu Basic School, Kalomo District,
3. Monitoring the performance and carrying out maintenance works for Phase 1 and 2 of the Mundulundulu water reticulation system, Siavonga District,
4. Construction of a classroom block at Manchamvwa Primary School, Siavonga District,
5. Construction of a classroom block at Sinafala Secondary School, Gwembe District,
6. Installation of solar systems at five (5) health centres in Sinazongwe District namely:
7. Kafwambila Clinic
8. Sulwegondwe Clinic
9. Sameja Clinic
10. Muziyo Clinic, and
11. Muzyo Clinic

Phase 1 and 2 of the construction of the superstructures at Njabalombe Rural Health Centre, Zimba District, and the donation of a Motorcycle to the Hamatuba clinic, Gwembe District, were also accomplished during the period under review.

Zimbabwe

1. Construction of a classroom block at Chikango Primary School, Gokwe North District,
2. Construction of a classroom block at Kushinga Primary School, Gokwe North District,
3. Connection of power supply at Chiroti Clinic, Hurungwe District,
4. Construction of a classroom block at Chisipite Primary School, Hurungwe District,
5. Construction of a superstructure at Chidyamugwamu Clinic, Nyami Nyami District, and
6. Construction of a classroom block at Ntibvule Primary School, Binga District.

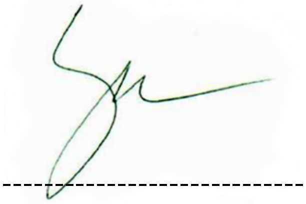
CHANGES IN CORPORATE GOVERNANCE

On behalf of the Board of Directors of the Zambezi River Authority, may I take this opportunity to thank the outgoing members of the Council of Ministers - Hon. Margaret Mwanakatwe, MP, Zambia's former Finance Minister and Hon. Joram Gumbo, MP Zimbabwe's former Energy and Power Development Minister. Furthermore, the Authority bade farewell to the former Chairperson / Co-Chairperson of the Board of Directors, Zambia's Permanent Secretary in the Ministry of Energy, Brigadier-General Emeldah Chola, Rtd.

I also wish to extend a warm welcome to new members of the Council of Ministers–Hon. Bwalya Ng'andu MP, Zambia's Finance Minister and Hon. Fortune Chasi, MP Zimbabwe's Minister of Energy & Power Development. I also wish to welcome Mr Trevor Kaunda, Permanent Secretary in the Ministry of Energy in Zambia to the Authority's Board of Directors as Chairperson /Co-Chairperson.

ACKNOWLEDGEMENTS

As the Authority continues to strive to make a positive economic and social impact in the Contracting States of Zambia and Zimbabwe, may I, on behalf of the Council of Ministers and the Board of Directors, express our sincere and profound gratitude and appreciation to our cooperating partners, stakeholders, management and staff for their role in facilitating the realisation of the Authority's goals and objectives during the year 2019.



Trevor Kaunda
Chairperson, Zambezi River Authority Board of Directors
Permanent Secretary, Ministry of Energy
ZAMBIA

Board members and Management attending a board meeting.

ZAMBEZI RIVER AUTHORITY PROFILE

The Zambezi River Authority was established as a body corporate on 1st October 1987 by parallel legislation in the Parliaments of Zambia and Zimbabwe following the reconstitution of the Central African Power Corporation (CAPCO).

The Authority is jointly and equally owned by the governments of Zambia and Zimbabwe.

The Authority's primary function is to operate, maintain, monitor and regulate the water level in the Kariba Dam reservoir. It is also mandated to construct, operate, monitor, and maintain any other dams on the Zambezi River and to collect, accumulate and process hydrological and environmental data of the Zambezi River for better performance of its functions and for any other purpose beneficial to the Contracting States.

KEY STRATEGIC FUNCTIONS

The following are the key strategic functions of the Authority.

a). The operation, monitoring and maintenance of the Kariba Complex.

b). In consultation with the national electricity undertakings, investigate the desirability of constructing new dams on the Zambezi River and make recommendations thereon to the Council of Ministers (COM).

c). To construct, operate, monitor and maintain any other dams on the Zambezi River.

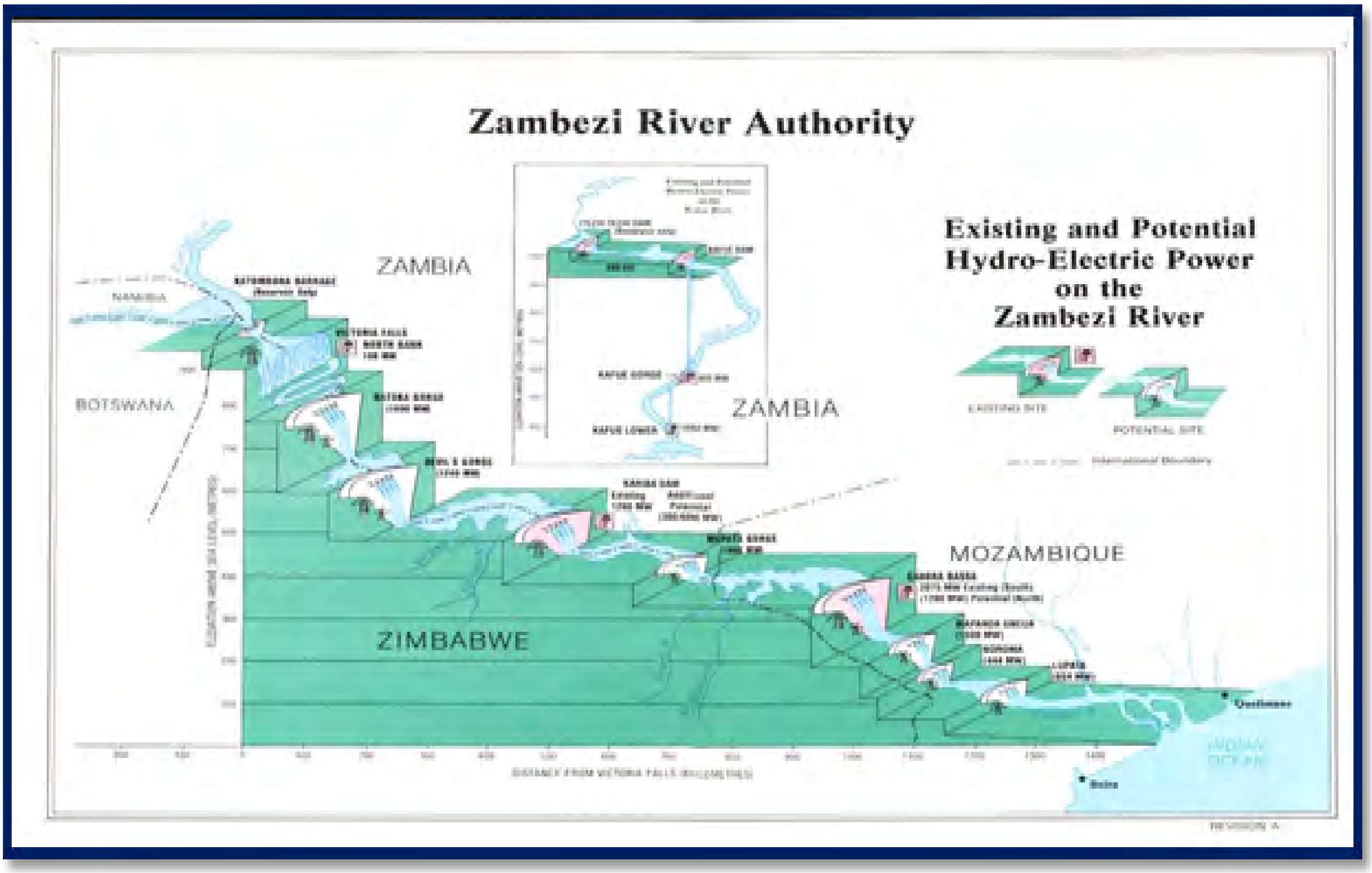
d). To collect, accumulate and process hydrological and environmental data of the Zambezi River for the better performance of its functions and for any other purpose beneficial to the Contracting States.

e). Regulate the water level in the Kariba reservoir and any other reservoirs owned by the Authority.

f). Submit development plans and programmes to the COM for approval.

The Authority is the only dam management organisation serving two states within the Zambezi River basin. The Authority generates its revenue from the sale of water from the Kariba Dam which is used for power generation by ZESCO Limited in Zambia and Zimbabwe Power Company in Zimbabwe.

EXISTING AND POTENTIAL HYDRO-ELECTRIC POWER SITES ON THE ZAMBEZI RIVER



OUR MISSION

To satisfy all stakeholders through purposefully and sustainably exploiting the natural advantages of the Zambezi River.

OUR VISION

To be a dynamic vibrant organization inspired by our passion to harness and manage the Zambezi waters for socio-economic development.

OUR VALUES

Fairness | Respect | Integrity | Transparency | Healthy and Safety | Professionalism

OUR 2015 TO 2019 STRATEGIC OBJECTIVES

Goal 1:
To secure the long term safety and reliability of the Kariba Complex by December 2022.

Goal 2:
To increase the utilisation of the Zambezi River through the commencement and further development of the two additional Hydro-Electric Schemes by 2019.

Goal 3:
To attain long term organisational sustainability and viability through improved operational efficiency and effectiveness.

Goal 4:
To have a positive corporate image for the Authority by 31 December 2019.

Goal 5:
To establish a Monitoring and Evaluation mechanism that would ensure effective implementation of the Corporate Strategic Plan.

Mukunganyika Environmental Boat

COUNCIL OF MINISTERS

The Zambezi River Authority is governed by a Council of Ministers (COM) consisting of four ministers, two of whom represent the Government of the Republic of Zambia while the other two represent the Government of the Republic of Zimbabwe.

The ministers designated as members of COM are those who hold the portfolios of Energy and Finance in the Contracting States.

According to the ZRA Acts, the chairpersonship of the COM is held alternately by the ministers responsible for Energy in the Governments of Zambia and Zimbabwe. For the year under review, Zambia held the chairpersonship of COM.

Hon. Mathew Nkhuwa
COM Chairperson
Minister of Energy
Zambia

Hon. Fortune Chasi
COM Co-Chairperson
Minister of Energy and Power Development
Zimbabwe
Appointed: 14th May 2019

Hon. Joram Gumbo
COM Co-Chairperson
Minister of Energy and Power Development
Zimbabwe
Retired on 14th May 2019

Hon. Dr. Bwalya Ng'andu
Minister of Finance
Zambia
Appointed: 13th July 2019

Hon. Mthuli Ncube
Minister of Finance and Economic Development
Zimbabwe

Hon. Margaret Mwanakatwe
Minister of Finance
Zambia
Retired on 13th July 2019

THE BOARD OF DIRECTORS

The Authority's Board of Directors is composed of two permanent secretaries with the energy portfolios and two permanent secretaries with the finance portfolios in the two Contracting States. In addition, the Board also comprises one independent member from each Contracting State. The Board is chaired alternately by the Energy Permanent.

Mr. Trevor Kaunda
Board Chairperson
Permanent Secretary-Ministry of Energy, Zambia
Appointed: 3rd September 2019

Dr. Gloria S. Magombo
Board Co-Chairperson
Secretary - Ministry of Energy & Power Development
Zimbabwe

Brig. Gen. (Rtd) Emeldah Chola
Board Chairperson
Permanent Secretary-Ministry of Energy, Zambia
Retired on 3rd September 2019

Mr. Mukuli Chikuba
Permanent Secretary
Ministry of Finance
Zambia

Mr. George T. Guvamatanga
Secretary
Ministry of Finance & Economic Development
Zimbabwe

Mr. Pascal Mubanga
Independent Board Member
Zambia

Eng. Israel Rwodzi
Independent Board Member
Zimbabwe

REMUNERATION AND COMPENSATION POLICY FOR BOARD MEMBERS

The Remuneration and Compensation Policy is provided in the Board Charter as follows:-

(a) Each member of the Board shall be paid out of the funds of the Authority such remuneration and allowances, if any, as the Council of Ministers may determine.

(b) Currently, Board Members are paid a quarterly fee determined and approved by the Council of Ministers and a variable fee per each meeting. The Chairperson and the Co-Chairperson are paid amounts which are higher than the rest of the Members in order to compensate for the increased responsibilities that they perform.

(c) In addition, a fixed sum subsistence allowance is paid to Board Members when they attend meetings held outside their hometowns.

REMUNERATION AND COMPENSATION FOR THE YEAR 2019

The total remuneration and compensation availed to Board members during the year 2019 was US$268,447.83

BOARD COMMITTEES

The Board recognises that in this global and complex business environment, demand on the Board's time continues to increase thereby necessitating the need to delegate issues to specialist Board Committees.

In this regard, the Board Charter in Articles 26, 27 and 28 provides for the establishment of three (3) Board Committees as follows:-

(a) Finance, Human Resource and Remuneration

The Committee has been charged with the prime responsibility of reviewing accounting systems and financial reporting in order to safeguard the Authority's assets, monitor the competence with which the Budget activities are carried out and recommend to the Board measures that would ensure the Authority's continued viability.

The Committee has also been mandated to review and recommend to the Board, comprehensive policies and strategies relating to the remuneration and terms and conditions of employment of employees, succession planning, training and development and separations.

The Committee has further been charged with the prime responsibility of reviewing and recommending Executive Management employees' and Director's remuneration policies by ensuring that such policies remain relevant in attracting, retaining and motivating both Executive Management employees and Directors.

During the year 2019, the Committee had the following members:

1. Mr. Mukuli Chikuba – Permanent Secretary, Ministry of Finance, Zambia
2. Mr. George T. Guvamatanga – Secretary, Ministry of Finance & Economic Development, Zimbabwe

(b) <u>Audit, Risk Management and Corporate Governance</u>

The Committee reviews accounting systems and financial reporting in order to safeguard the Authority's assets, monitor the competence with which external audits are carried out and ensure that the Auditor's recommendations are given due consideration.

In order to improve performance, the Board has to understand how to better manage risk. The Committee is therefore charged with the duty and responsibility of ensuring that the Authority has appropriate risk management systems and that the Board understands the key risk factors, their likely impact on Authority operations as well as how well the risk mitigation factors are working.

Further, the duty and responsibility of the Committee in relation to Corporate Governance is to ensure sound corporate governance structures and systems in the Authority, consider and deliberate on matters relating to the Board and individual Board Members, including appointments, induction, training and development and Board Procedures.

During the year 2019, the Committee had the following members:

1. Mr. Pascal Mubanga – Independent Board Member, Zambia
2. Eng Israel Rwodzi – Independent Board Member, Zimbabwe
3. Mr. David Kalaba – Independent Committee Member, Zambia
4. Ms Tariro Mpuka, Independent Committee Member, Zimbabwe

(c) <u>Technical and Projects</u>

The Committee is mandated to discharge the prime responsibility of reviewing technical issues arising from the two (2) engineering departments of the Authority being the Projects and Dam Management Services Department and Water Resources and Environmental Management Department, including reports issued by the Authority's consultants. The Committee also makes necessary recommendations to the Board on all technical issues.

During the year 2019, the Committee had the following members:

1. Mr. Pascal Mubanga - Independent Board Member, Zambia
2. Eng. Israel Rwodzi - Independent Board Member, Zimbabwe
3. Eng. Victor Mundende – Managing Director, ZESCO Limited
4. Eng. Robson Chikuri – Acting Managing Director – Zimbabwe Power Company

EXECUTIVE MANAGEMENT

Eng. Munyaradzi C. Munodawafa
Chief Executive

Mr. Peter Kapinga
Board Secretary/Corporate Services Director

Mr. Edward M. Kabwe
Director-Finance

Eng. David Z. Mazvidza
Director
Projects and Dam Management Services

Eng. Christopher Chisense
Director
Water Resources & Environment Management

The Co-Chairperson of the Board and Management officials during a Board Meeting held at the Authority's Kariba Office

OPERATIONS REPORTS

HYDROLOGY AND ENVIRONMENTAL

1.0 Gauging Stations Utilised During The Year 2020

One of the functions of the Authority is to collect and process hydrological data of the Zambezi River and its tributaries for sustainable management of the Kariba Dam and any infrastructure along the river. To this end, the Authority operates and maintains 15 hydrometric stations in the Kariba catchment for monitoring the river flows and the Kariba reservoir operation.

The stations are depicted in figure 1.1 and further listed in table 1.1 below.

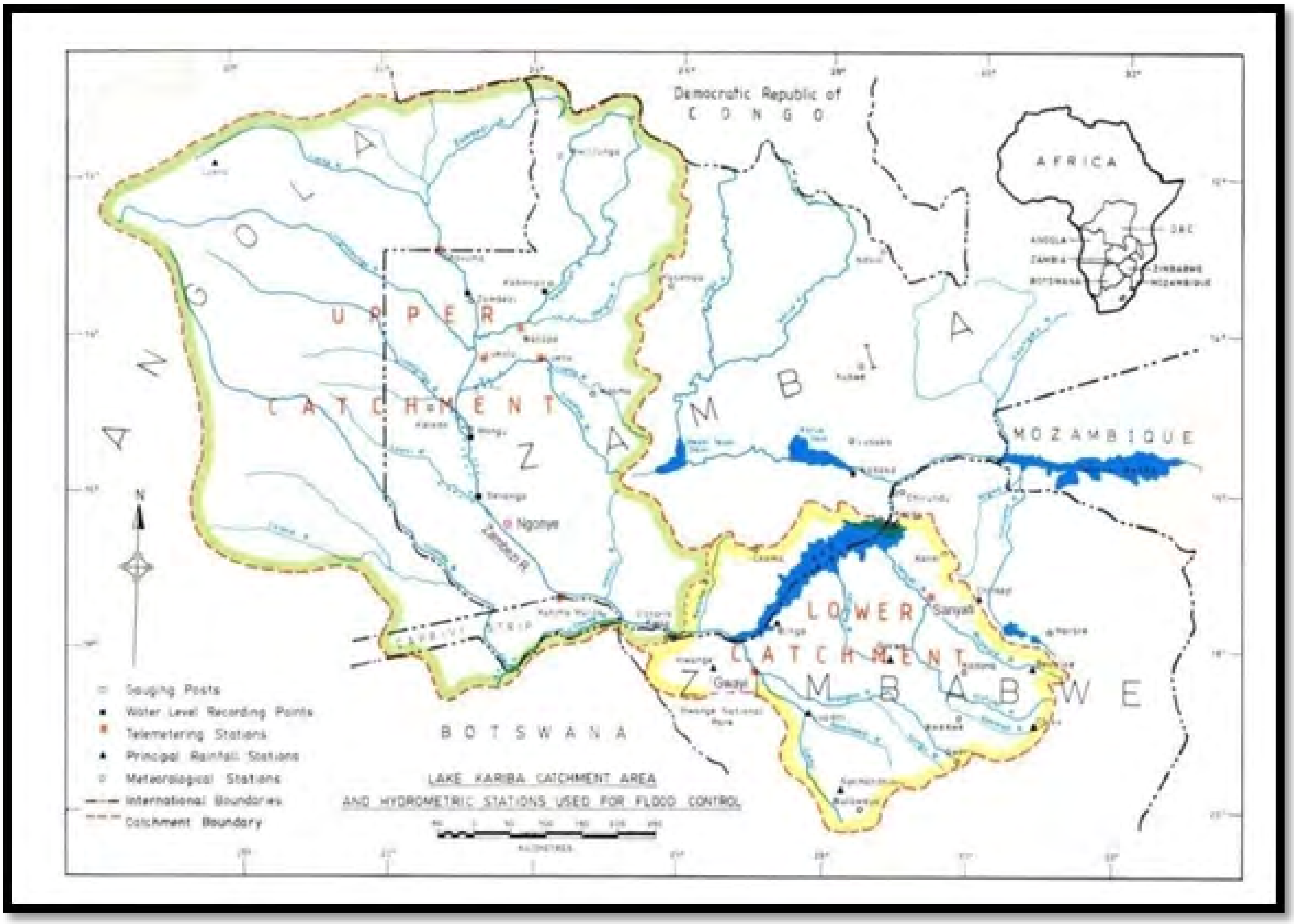


Figure 1.1: Lake Kariba Catchment Area Showing Hydrometric Stations

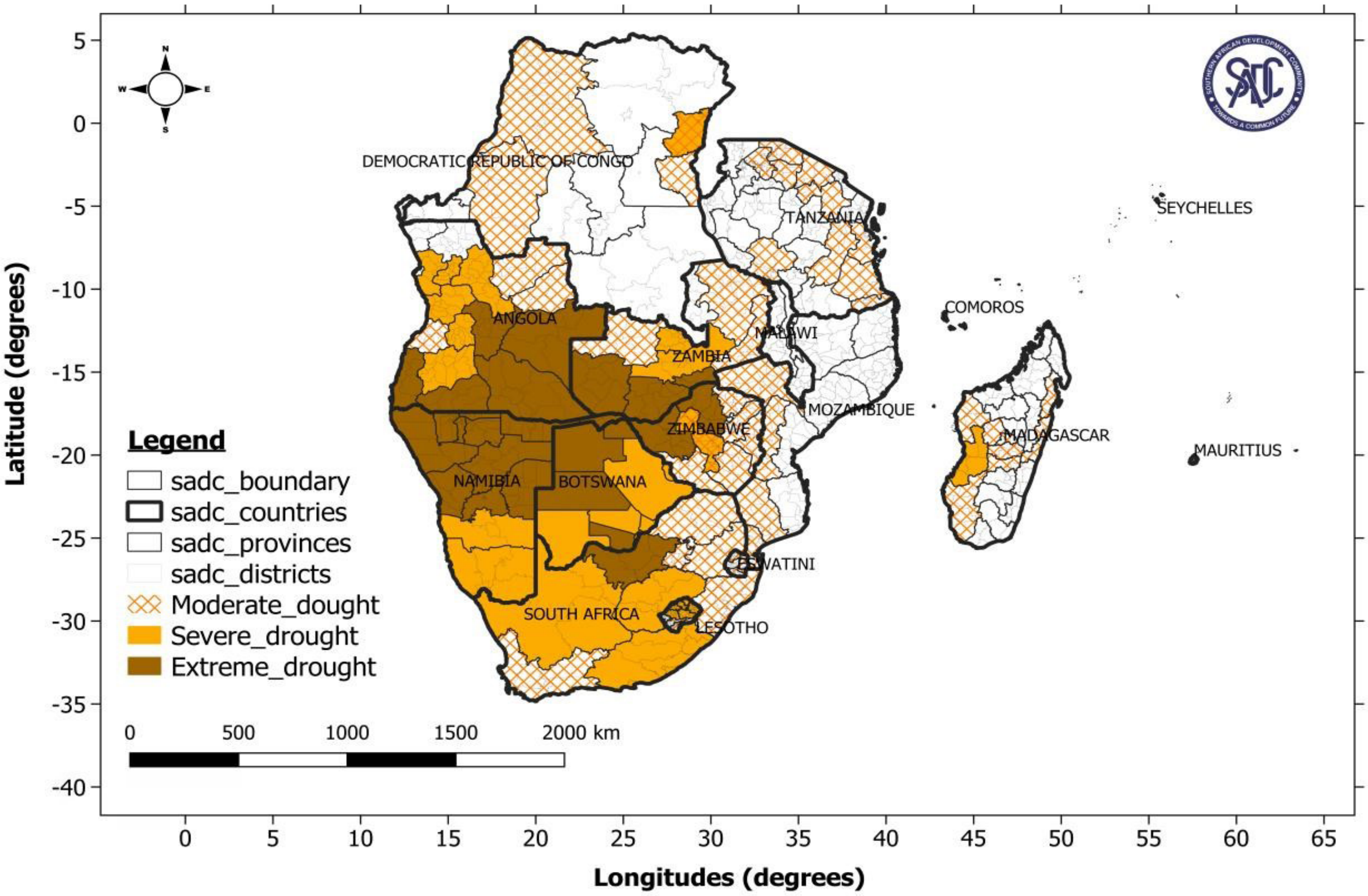
Table 1.1: List of Hydrometric Stations Managed by the Zambezi River Authority

No.	Station Name	River	Country	Data Collected	Type of Gauge
1	Chavuma	Zambezi	Zambia	Water Level & Flow	Manual/Telemetry
2	Watopa Pontoon	Kabompo	Zambia	Water Level & Flow	Manual
3	Lukulu	Zambezi	Zambia	Water Level	Manual
4	Kalabo	Luanginga	Zambia	Water Level & Flow	Manual /Telemetry
5	Matongo Platform	Little Zambezi	Zambia	Water Level	Manual/Telemetry
6	Senanga	Zambezi	Zambia	Water Level	Manual
7	Ngonye	Zambezi	Zambia	Water Level & Flow	Manual/Telemetry
8	Sesheke	Zambezi	Zambia	Water Level	Manual
9	Nana's Farm	Zambezi	Zambia	Water Level & Flow	Manual
10	Kalomo	Kalomo	Zambia	Water Level & Flow	Manual
11	Gwayi	Gwayi	Zimbabwe	Water Level & Flow	Manual/Telemetry
12	Ume	Ume	Zimbabwe	Water Level & Flow	Manual
13	Sanyati	Sanyati	Zimbabwe	Water Level & Flow	Manual/Telemetry
14	Victoria Falls – Big Tree	Zambezi	Zimbabwe (ZINWA)	Water Level & Flow	Manual
15	Kariba Dam (Lake and Tailrace)	Lake Kariba	Zimbabwe/ Zambia	Water Level	Manual

2.0 Rainfall Performance during the 2018/2019 Season

The 22nd Annual Southern Africa Regional Climate Outlook Forum (SARCOF-22), held in Lusaka, Zambia from 22nd to 24th August 2018 projected that the SADC Region would receive normal to below-normal rainfall in January-February-March 2019, while dry conditions would be experienced across the SADC region.

Some parts of the region such as southern Angola, northern and southern Botswana, northern Namibia, north-western South Africa, southern and western Zambia, and north-western Zimbabwe received the lowest seasonal rainfall since 1981 (Nana Dlamini, 2019, SADC Secretariat Disaster Risk Reduction Unit). Figure 2.1 below shows the extent of the affected areas in the SADC region during the 2018/19 Rainfall Season.



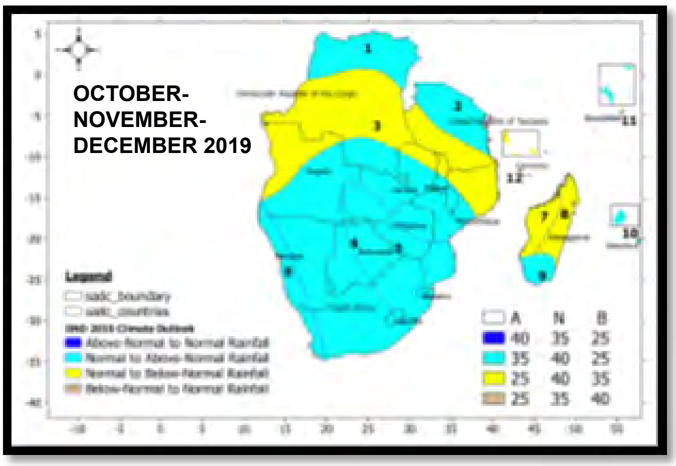
Situation over the SADC region during 2018/19 rainfall season (Courtesy: SADC CSC, 2019)

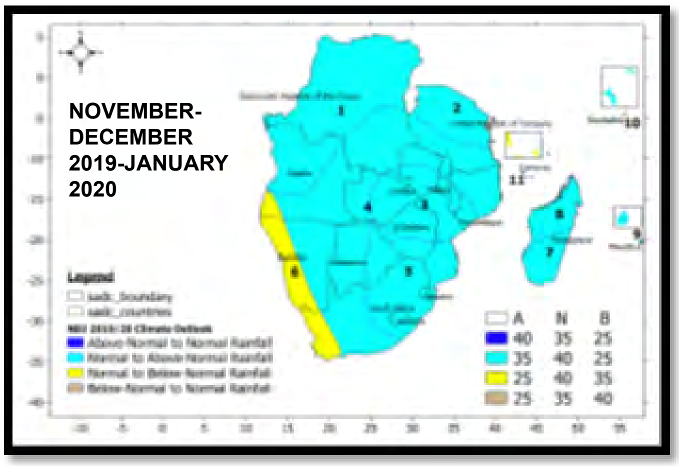
3.0 2019/2020 Regional Climate Seasonal Forecast

The 23rd Annual Southern Africa Regional Climate Outlook Forum (SARCOF-23), held in Luanda, Angola from 28th to 30th August 2019 presented a consensus outlook for the 2019/2020 rainfall season over the SADC region indicated Figure 3.1 as follows:

- The bulk of the SADC region would receive normal to above-normal rainfall for most of the period October to December (OND) 2019, with northern Mozambique, southern Tanzania, Northern Malawi, northern-most Zambia, the bulk of the DRC, north-western half of Angola, northern Madagascar and Comoros where normal to below-normal rainfall was expected.

- January to March (JFM) 2020, normal to above normal rainfall was expected for most parts of the region. However, the eastern half of Tanzania, eastern half of Botswana, westernmost parts of Namibia, the bulk of South Africa, bulk of Mozambique, southern Malawi, eastern Lesotho, central Zambia, southernmost Madagascar, south-western most Angola, Eswatini and Zimbabwe were more likely to receive normal to below normal rainfall.





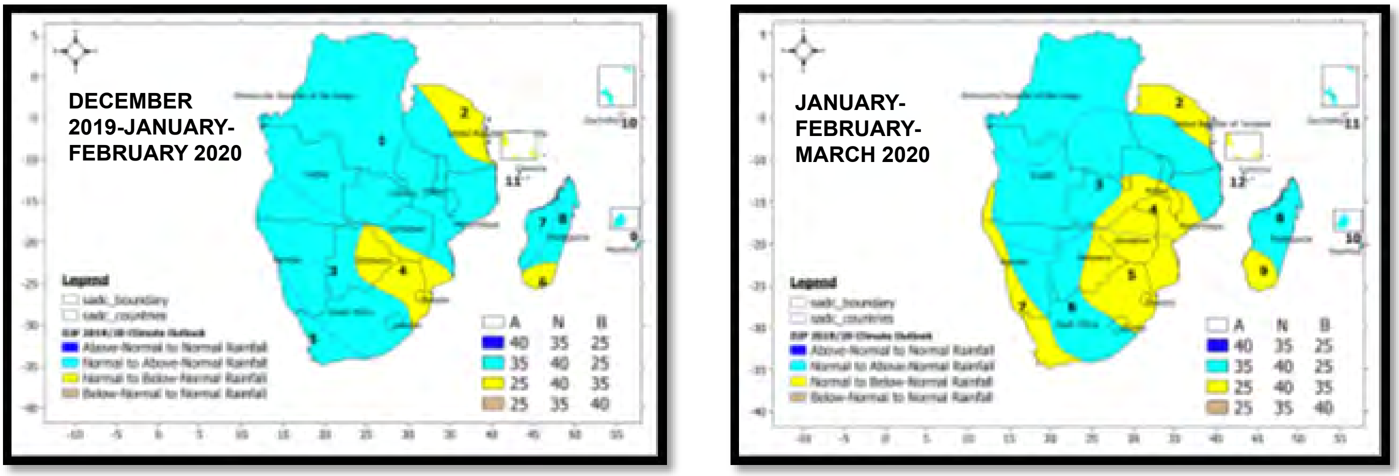


Figure 3.1: Rainfall Forecast for SADC Region, October 2019 – March 2020
(Courtesy: SARCOF-23, 28th August 2019, Luanda, Angola)

The above forecast was replicated in the down-scaled forecasts for the respective Meteorological Departments of both Zambia and Zimbabwe which indicated that the larger part of the Kariba Catchment would experience **Normal to Above-Normal** Rainfall during the 2019/2020 Rainy Season for the period October to December 2019 with **Normal to Below Normal** rainfall during the second half of January – March 2019 for the lower Kariba catchment. Figure 3.2 and 3.3 below depicts downscaled scenarios for the 2019/20 rainfall season across Zambia and Zimbabwe.

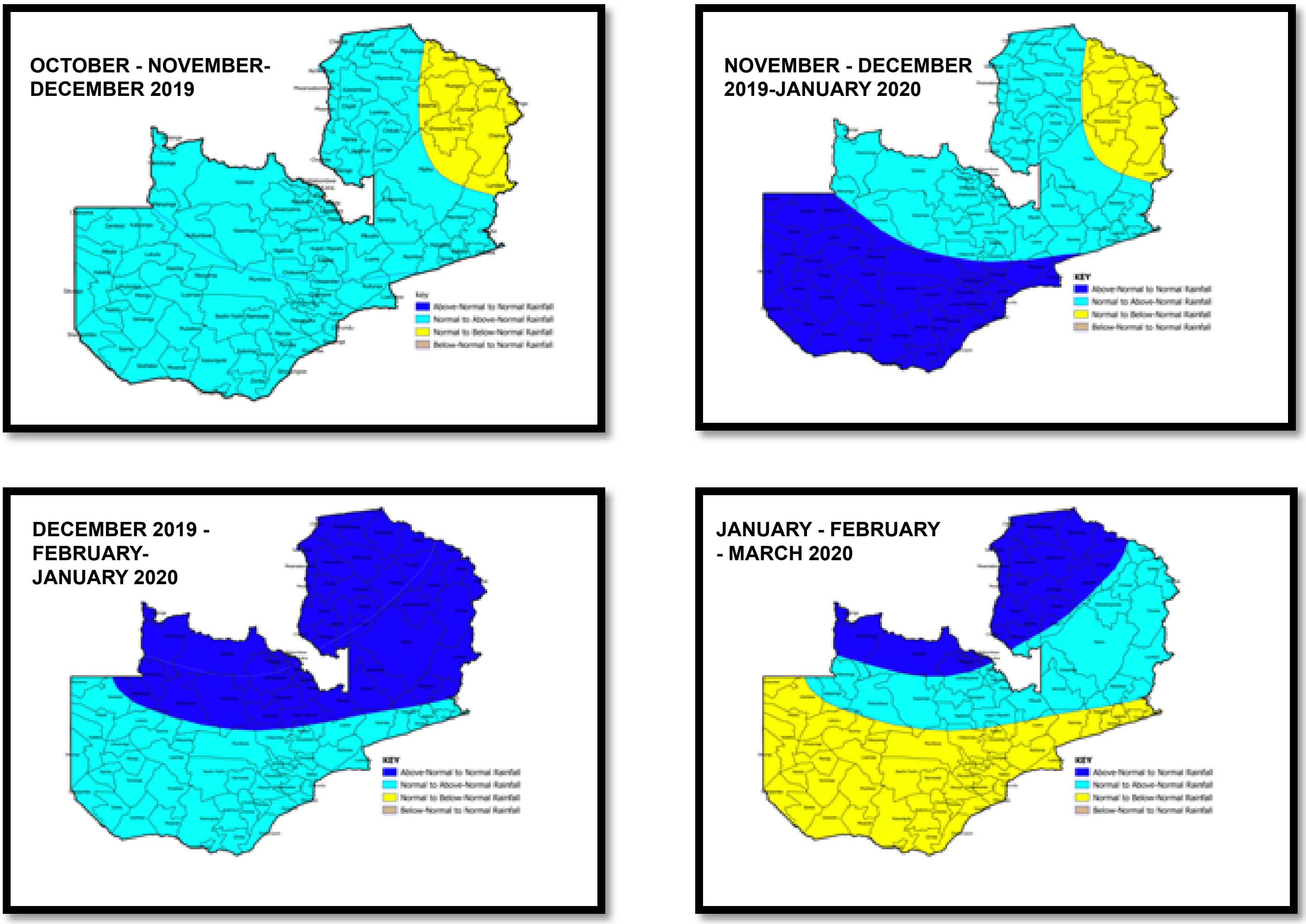


Figure 3.2: Down-scaled Rainfall Forecast for Zambia for October 2019 – March 2020
(Courtesy: Zambia Meteorological Department, Lusaka)

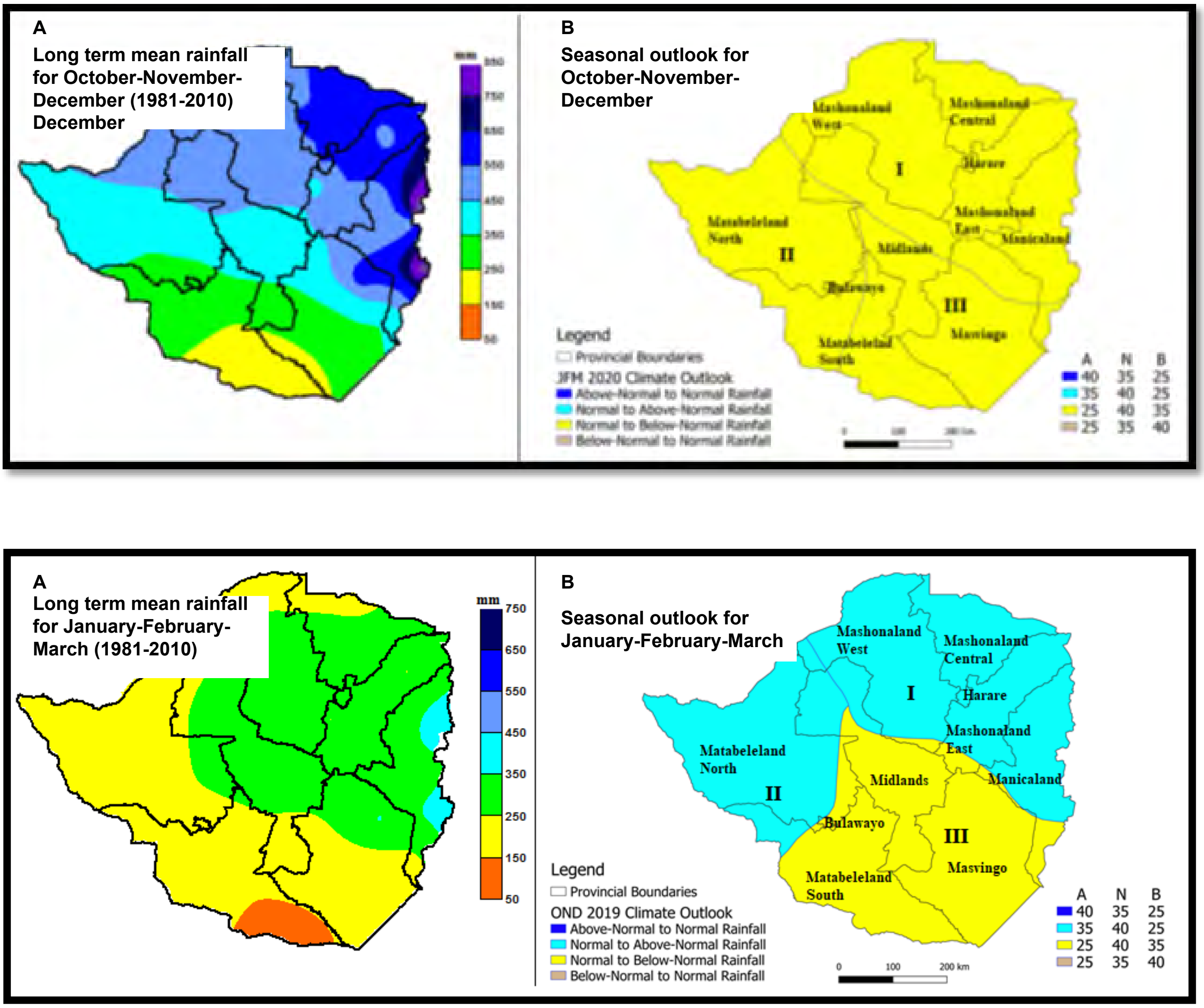


Figure 3.3: Down-scaled Rainfall Forecast for Zimbabwe for October 2019 – March 2020 (Courtesy: Meteorological Service Department, Harare)

4.0 River Flows

All Authority's hydrometric stations on the Kariba Catchment recorded below average flows during the 2018/19 hydrological season. Chavuma gauging station, which is about 12km downstream of the Zambezi River from the point the Zambezi River re-enters Zambia from Angola, recorded flows which were lower than both the long-term average and those of the previous season.

The Victoria Falls station (considered as the Main Inflow Station to Lake Kariba), peaked at 1,175m3/s on 8th May 2019. The peak was only 25% of the previous year's peak of 4,675 m3/s which was recorded on 16th May 2018.

For the period 1st October 2018 to 30th September 2019, **17.542 Billion Cubic Meters (BCM)** was recorded to have passed the Victoria falls station; an amount still below the long-term average of 35.081 BCM, but however greater than 12.274 BCM recorded during the same period during the 1995/96 season.

Figure 4.1 below shows a hydrograph-overlay for the 2019/20, 2018/19 and other selected hydrological years in comparison with the long term mean hydrograph for Victoria Falls Big-Tree Hydrometric Station.

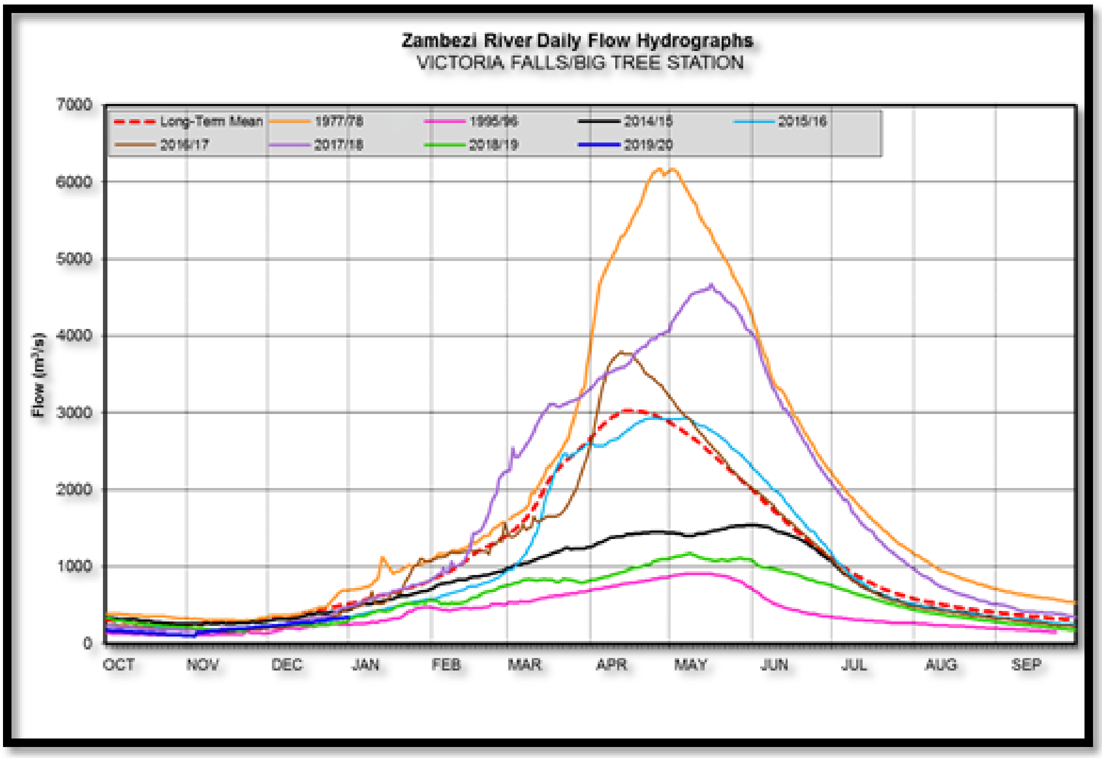


Figure 4.1:

5.0 Lake Levels

The Lake level at Kariba dropped by 5.66m from 482.35m, recorded on 1st January 2019 to 476.69m, recorded on 31st December 2019 and was just 1.19m above the minimum operating level (MOL).

The stored usable water in Lake Kariba on 1st January 2019 was 32.16 BCM (49.63% of live storage) and 5.33 BCM (8.23% of live storage) on 31st December 2019. In 2018 the lake closed with 32.32 BCM or 49.88% of live storage.

Figure 5.1 below shows lake level hydrographs for various past rainy seasons in comparison with the 2019/2020 and 2018/19 seasons. Figure 5.2 further depicts variations of end-of-month reservoir levels since impoundment in 1961 to December 2019.

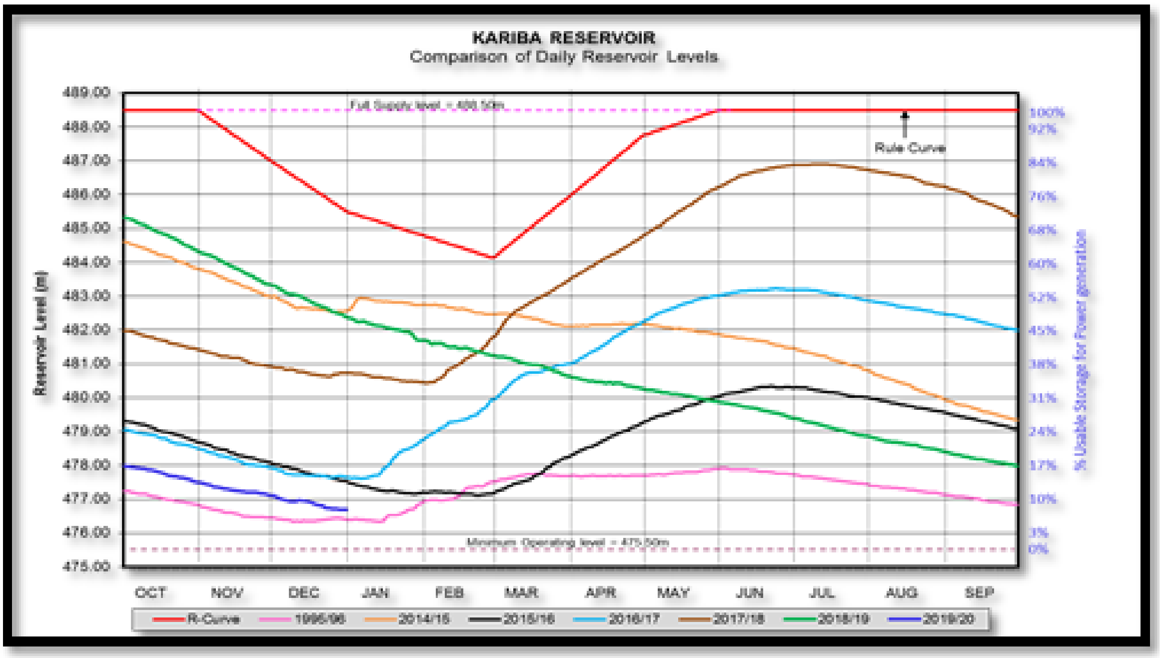


Figure 5.1:

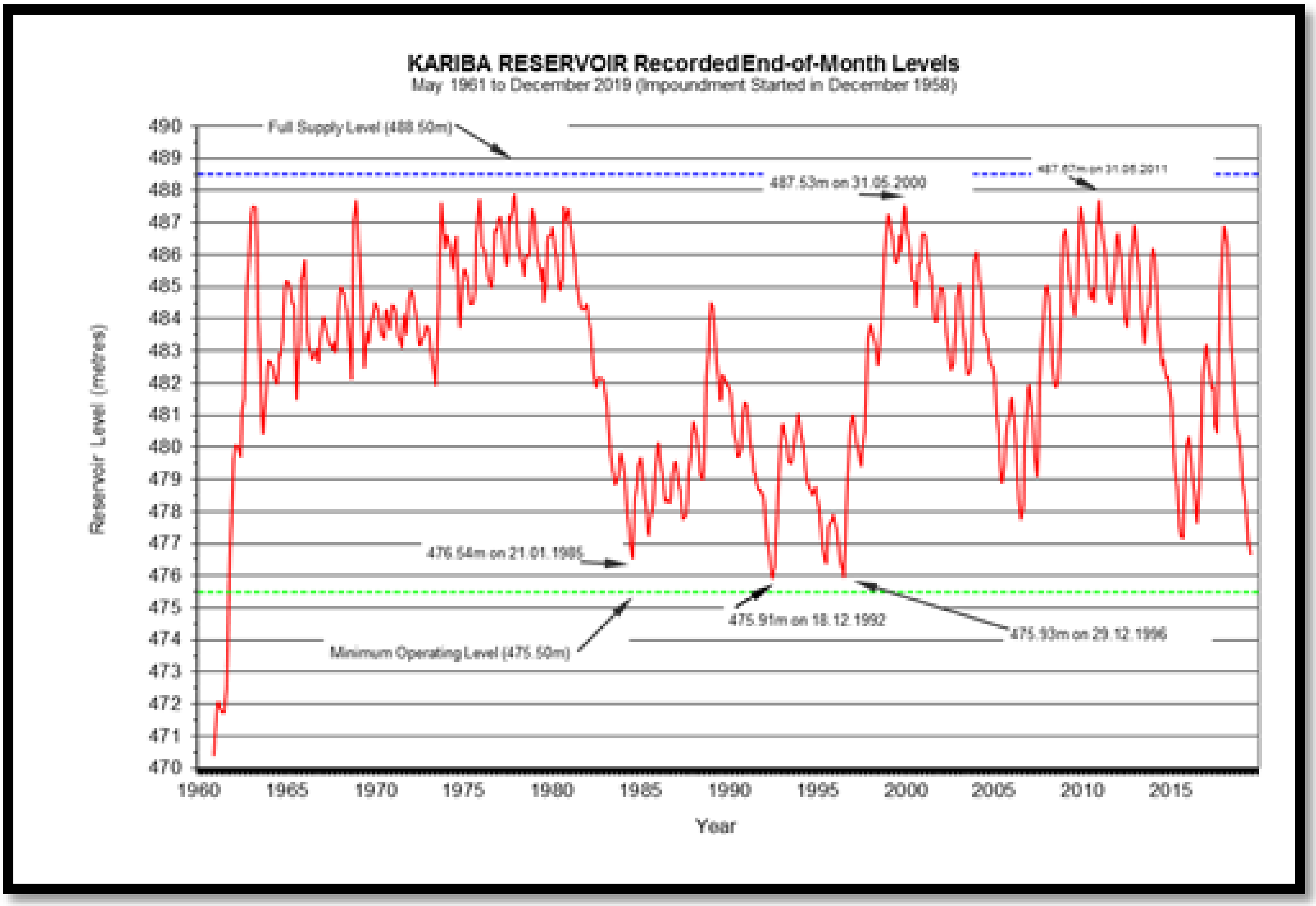


Figure 5.2:

6.0 Operating of Spillways

The spillway gates at the Kariba Dam remained closed during the period under review as the reservoir level remained way below the flood rule curve and hence no spilling was conducted.

7.0 Water Balance

The total inflow into Lake Kariba during 2019 was 18.84 BCM, a drop of about 70% from the 2018 record of 61.79BCM. The lower catchment contribution accounted for 16% inflow into the lake while 84% was from the upper Zambezi catchment.

On the other hand, the total outflow from the lake was 45.81 BCM, comprising 36.02 BCM turbine discharge and 9.79 BCM lost due to evaporation. The net effect on the reservoir was a storage decrease of 26.97 BCM.

Table 7.1 and figure 7.1 below gives the annual water balance of Lake Kariba for 2019 compared with the two preceding years. Figure 7.2 provides a schematic representation of the monthly water balance dynamics for 2019. Figure 7.3 provides historical water balance data.

Table 7.1 Comparative Annual Water Balance for Lake Kariba (January - December)

	Description	2019	2018	2017
INFLOWS	From the upper catchment	15.90	50.54	34.92
	From the lower catchment	2.94	11.25	17.44
	Total	18.84	61.79	52.37
OUTFLOWS	Turbine discharge Spillways discharge Evaporation	36.02 0.0 9.79	43.14 0.0 10.49	29.22 0.0 8.66
	Sub-Total	45.81	53.63	37.88
	Storage increase/decrease	-26.97	8.16	14.49
	Total	18.84	61.79	52.37

LAKE KARIBA WATER BALANCE
(All Volumes in Milliards)

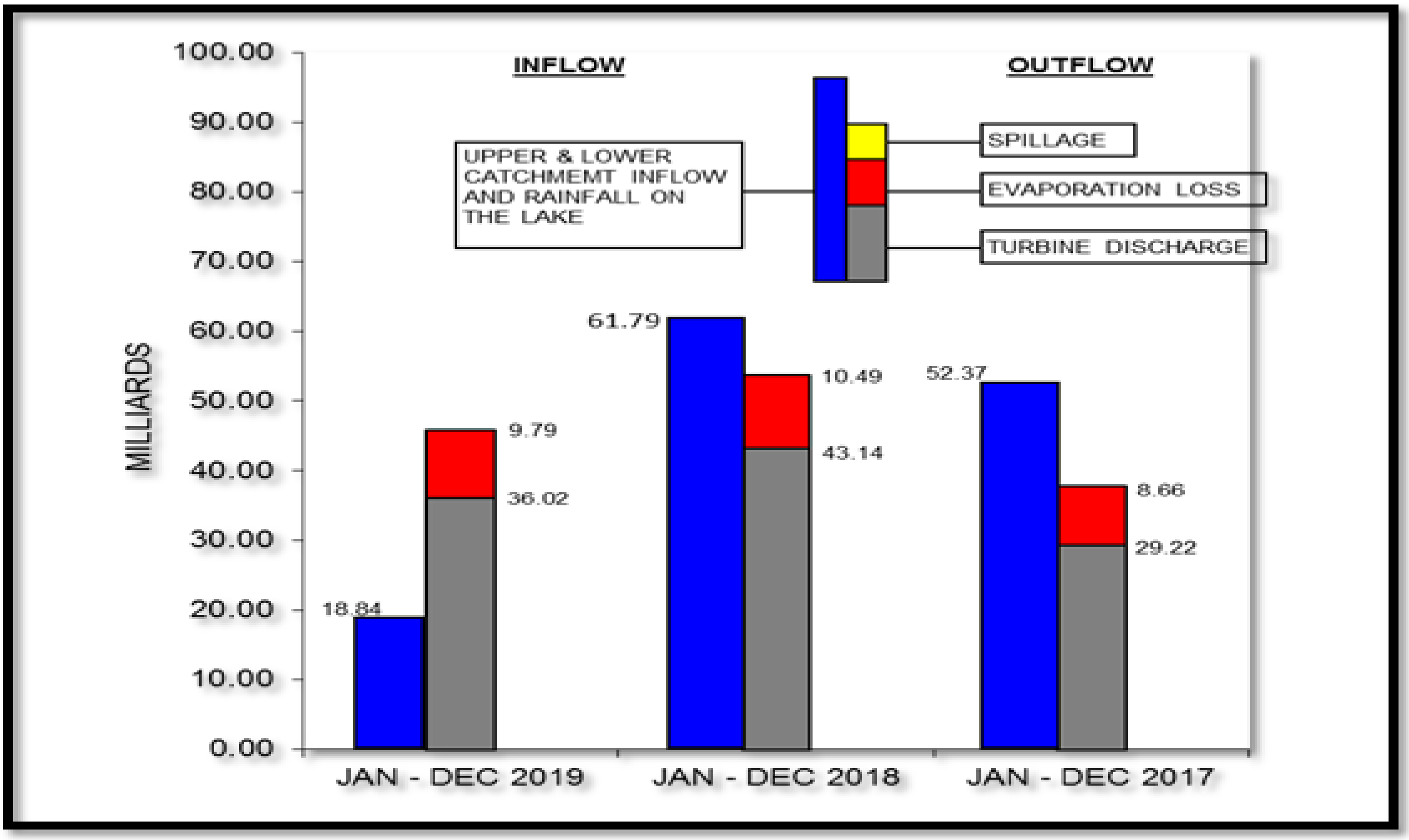


Figure 7.1: Lake Kariba Water Balance comparisons over three recent years

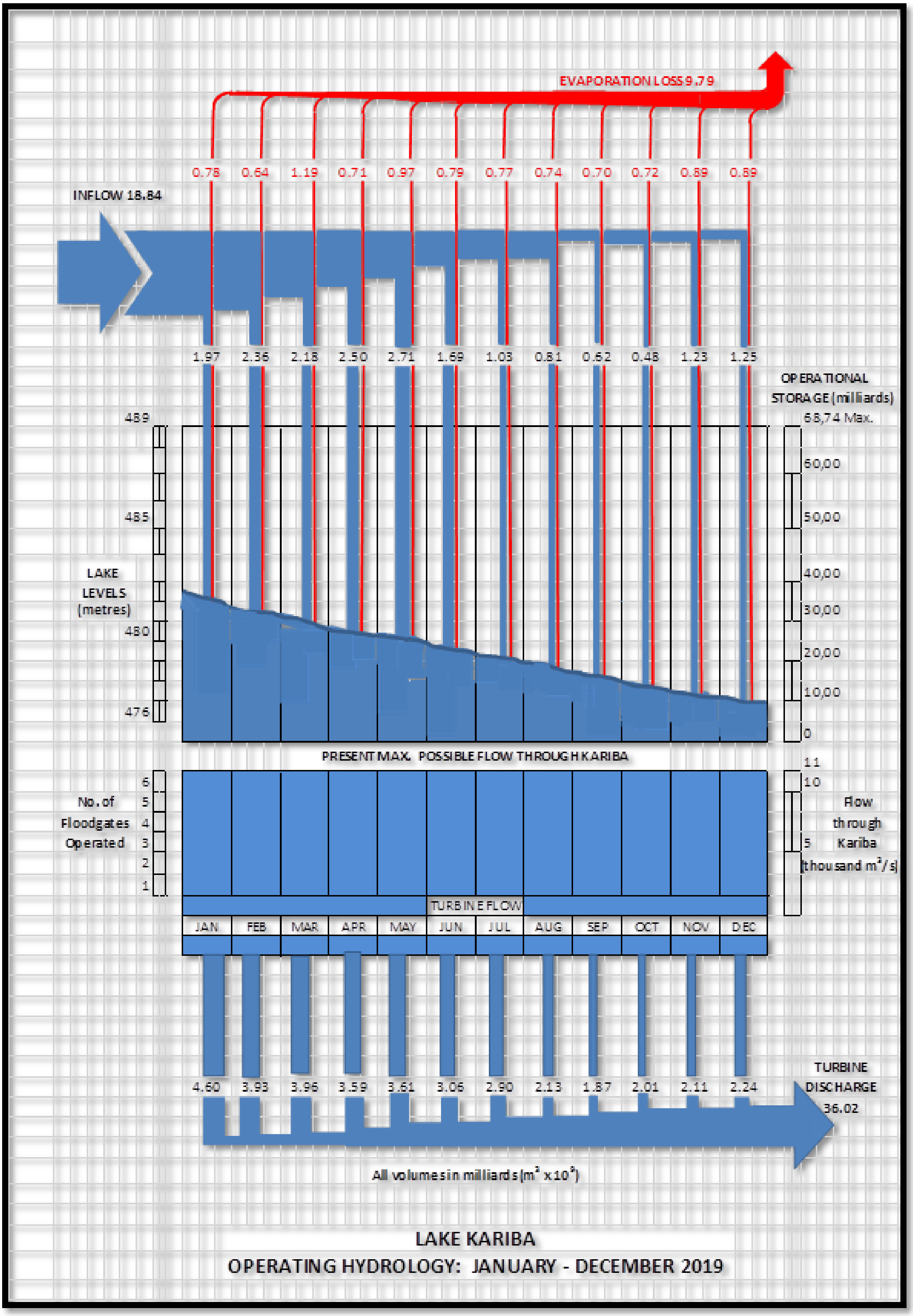


Figure 7.2: Schematic Representation of the Lake Kariba Water Balance for 2019

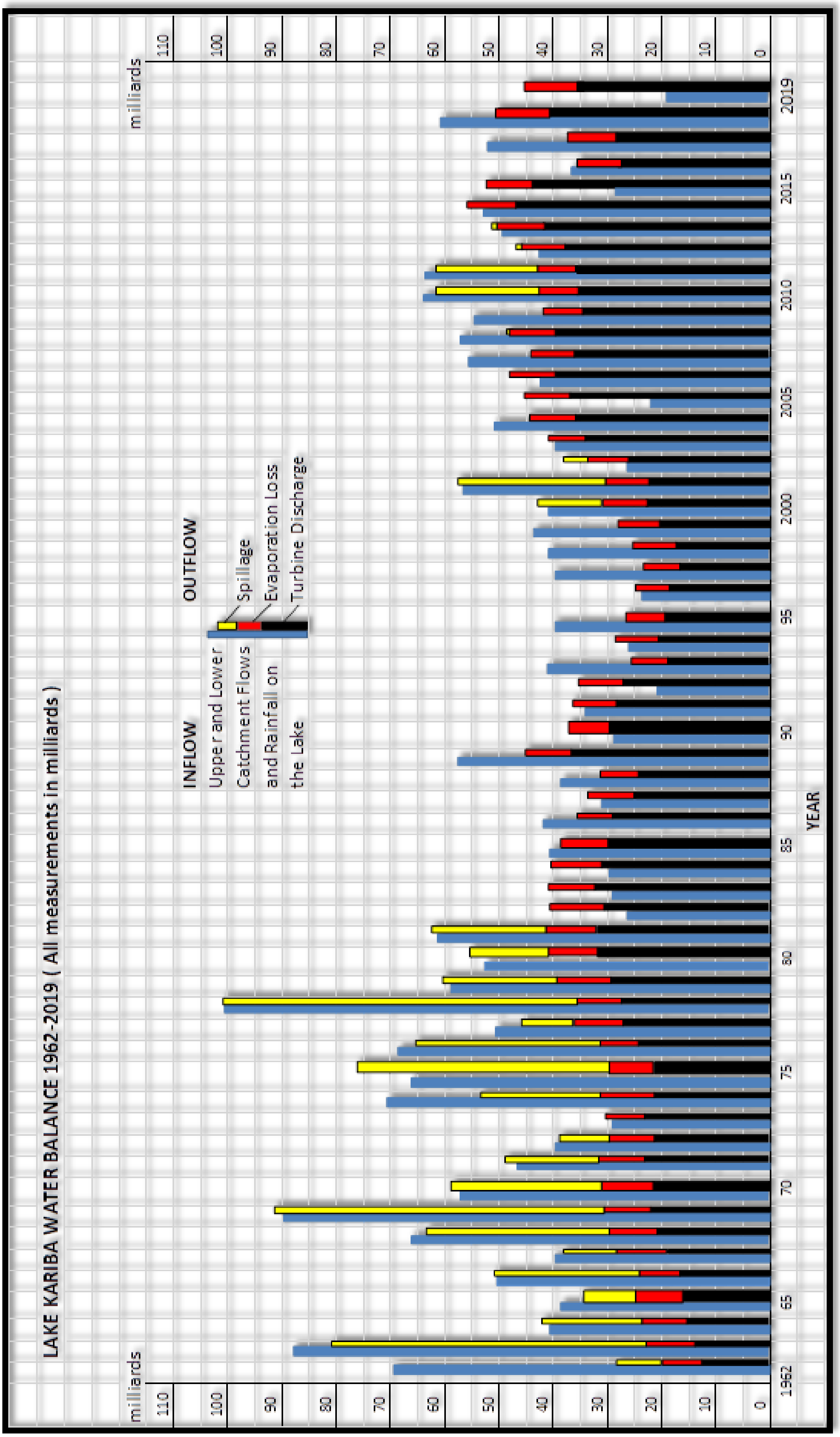


Figure 7.3: Lake Kariba Water Balance 1962 - 2019 (All Volumes in Milliards)

8.0 Water Usage and Energy Generation at Kariba

The climatic challenges over the Zambezi catchment that negatively impacted and resulted in low inflows into Lake Kariba made it imperative for the Zambezi River Authority to reduce the 2019 water allocation for energy generation at the Kariba Dam from the initial 38BCM to 36B CM and finally 34 BCM in April 2019 and hence providing for a combined generation of 750MW for the period April to December 2019. Table 8.1 below displays water usage statistics at the Kariba complex during the period January – December 2018.

ZESCO Limited utilised 10.30% above its annual water allocation while Zimbabwe Power Company (ZPC) utilised 1.59% above its 2019 annual water allocation.

Kariba North Bank Power Station water intake structure

TABLE 8.1: SUMMARY OF WATER USED FOR POWER GENERATION AT KARIBA COMPLEX IN MILLION CUBIC METERS (MCM) JANUARY – DECEMBER 2019

MONTH	ZRA Monthly Allocation per Power Utility	Kariba North Bank					Kariba South Bank				Cumulative Total (Actual) Utilisation at Kariba for Power Generation
		ZESCO LIMITED					ZPC				
		Utilisation Plan	Actual Utilisation	Variance		Utilisation Plan	Actual Utilisation	Variance			
	(BCM)	(BCM)	(BCM)	… from Allocation	… from Utilisation Plan	(BCM)	(BCM)	… from Allocation	… from Utilisation Plan	(BCM)	% of Annual Allocation
JAN	1.58	1.66	2.43	53.65%	47%	1.46	2.17	36.83%	48%	4.60	13.53%
FEB	1.58	1.5	1.86	17.68%	24%	1.21	2.07	30.80%	71%	8.53	25.10%
MAR	1.48	1.66	1.48	-0.28%	-11%	1.44	2.48	67.29%	72%	12.49	36.75%
APR	1.37	1.53	1.43	4.57%	-6%	1.29	2.16	57.25%	67%	16.09	47.31%
MAY	1.37	1.58	1.64	19.57%	4%	2.09	1.97	43.69%	-6%	19.70	57.94%
JUN	1.37	1.61	1.31	-4.27%	-18%	1.29	1.74	26.98%	35%	22.76	66.93%
JUL	1.37	1.67	1.62	17.86%	-3%	1.34	1.28	-6.76%	-5%	25.65	75.45%
AUG	1.37	1.00	1.50	8.95%	50%	0.69	0.64	-53.53%	-8%	27.78	81.72%
SEP	1.37	0.97	1.23	-10.62%	26%	0.64	0.65	-52.99%	1%	29.66	87.22%
OCT	1.37	0.97	1.36	-0.59%	41%	0.74	0.64	-53.12%	-13%	31.66	93.13%
NOV	1.37	0.94	1.46	6.61%	56%	0.75	0.65	-52.56%	-13%	33.78	99.35%
DEC	1.37	0.97	1.42	3.56%	47%	0.71	0.82	-39.99%	16%	36.02	105.95%
Total:	17.00	16.06	18.75	10.30%	17%	13.65	17.27	1.59%	27%	36.02	105.95%

		Monthly Break-down for the original 38BCM Allocation
		Original Power Stations' Utilisation Plans for the 38 BCM allocation
		Revised Monthly Break-down for the 34 BCM Allocation
		Revised Monthly Break-down for the 34 BCM Allocation
		Power Stations' Revised Utilisation Plans for the 34 BCM Allocation

The above information is further illustrated in figure 8.1

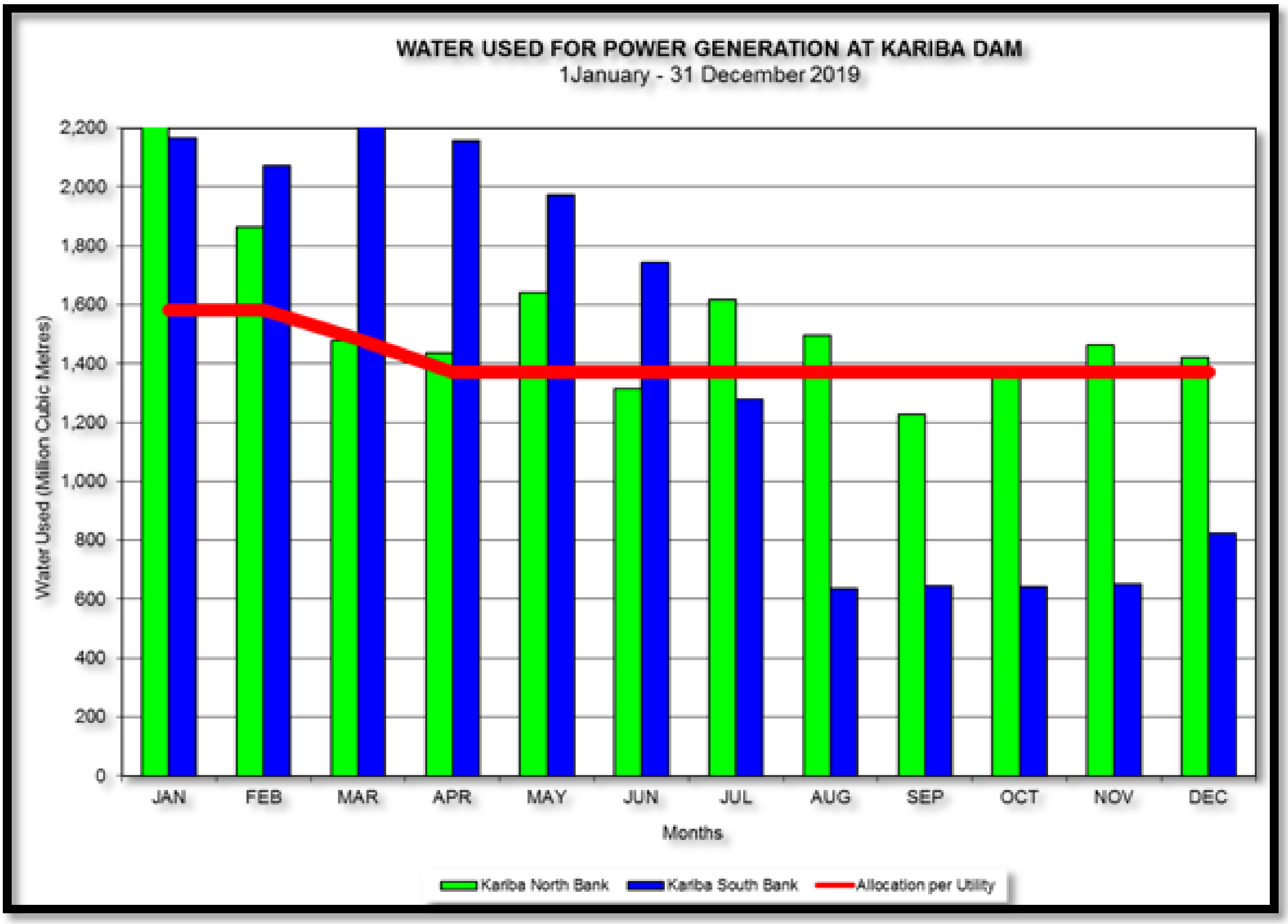


Figure 8.1: Comparison of water utilisation for power generation at Kariba Dam– 2019

ENVIRONMENTAL MONITORING AND MANAGEMENT

1. Environmental Monitoring and Management Programme

During the year 2019, the Authority implemented its Environmental Management Programme (EMP) aimed at meeting its environmental monitoring objectives provided for under both the Zambezi River Authority Acts and the 2015-2019 Corporate Strategic Plan.

The activities that the Authority undertook included:

a) Water quality monitoring and testing of water samples from Lake Kariba and the Zambezi River and its tributaries confirming the samples' compliance against the Authority's Water Quality Guideline provisions. Analysis was done to check the status of water temperature, pH, electrical conductivity, dissolved oxygen, total alkalinity, total suspended solids, total dissolved substances and heavy metals content, among others.

b) Water hyacinth monitoring through physical observation at various locations and noted hot spots along the lake environment.

1.1 Environmental Monitoring Operational Domain

Figures 1.1, 1.2 and 1.3 below show the Authority's operational domain and stations used to carry out the environmental monitoring programme. Figure 1.1 is a map of the Zambezi River Basin showing the location of the Authority's water sampling stations. Figure 1.2 shows the sampling sites on Lake Kariba corresponding to the five (5) hydro-geographic sub-basins. Figure 1.3 highlights the sub-basin of importance – the Kariba Eastern Basin (Basin 5), being the most downstream end of the lake.

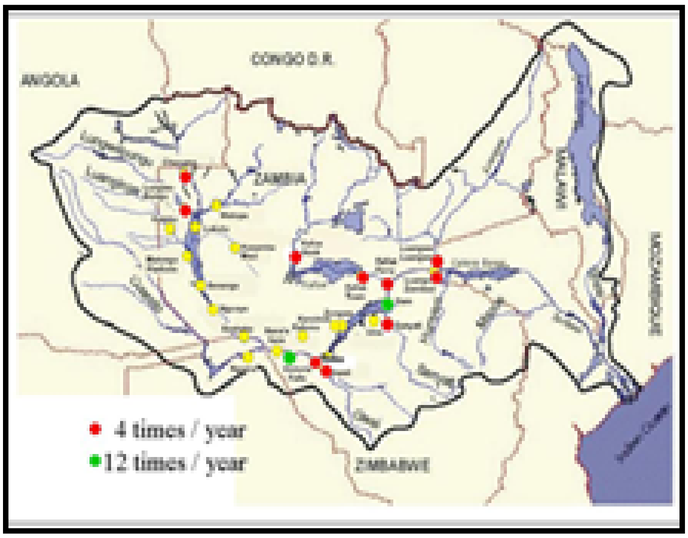


Figure 1.1: Location of the Authority's water quality sampling sites in the Zambezi Basin

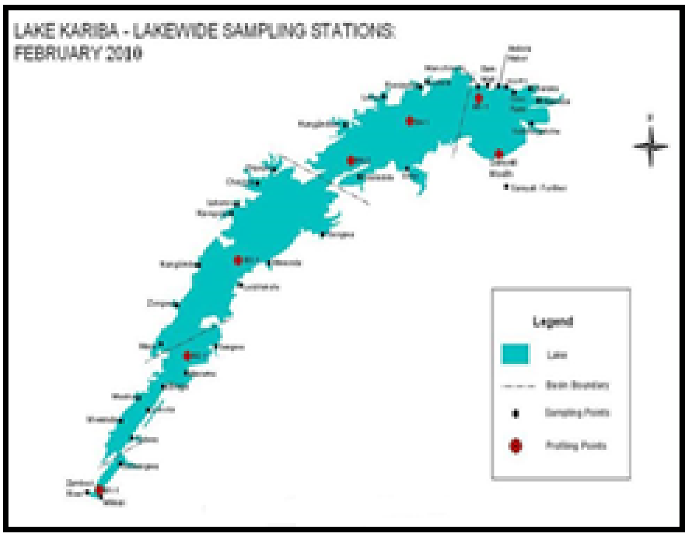
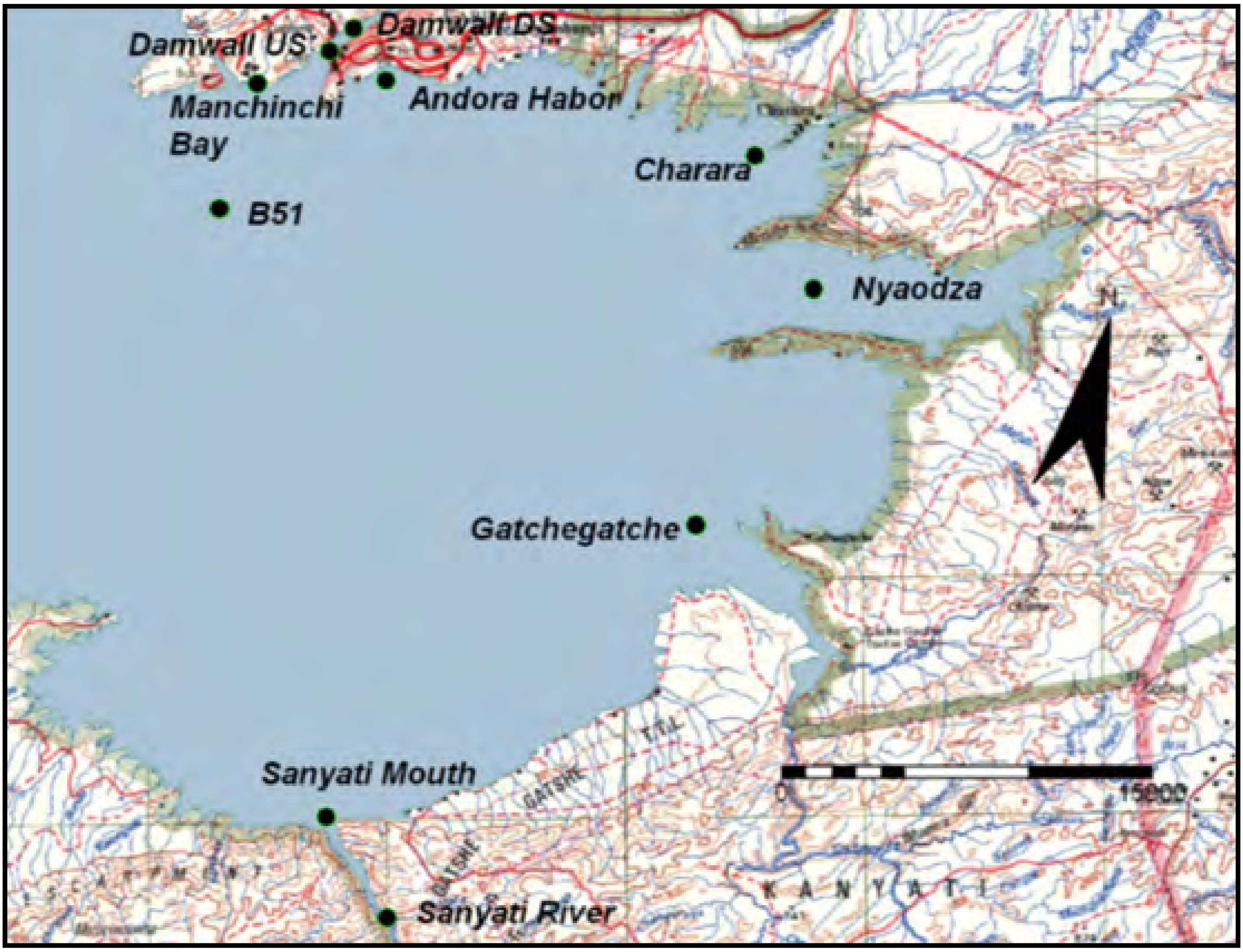


Figure 1.2: Location of the Authority's Water Quality Sampling Sites on Lake Kariba



1.3 Water Hyacinth (Eichhornia Crassipes) Monitoring

Figure 1.3: Monitoring Stations in the Kariba Eastern Basin

Water Hyacinth (Eichhornia Crassipes) monitoring on Lake Kariba's Eastern Basin was successfully conducted each month of 2019. For most hot spots around the lake, there was no significant manifestation of water hyacinth observed except for localised areas like Croc Farm and the University of Lake Kariba Research Station (ULKRS).

Figure 1.4 shows the local conditions observed at Gatche Gatche for highlighted months of 2019, where no weed manifestation was spotted.

January **May** **November**

Figure 1.4: Weed situation at Gatche Gatche

1.3 Water Quality Data Collection and Processing

In line with its Environmental Monitoring Programme, the Authority undertook monthly, quarterly and semi-annual sampling activities on both the lake Kariba reservoir and its tributaries.
Water quality data was generated to confirm the health status of the reservoir which was found to be in a healthy state supportive of aquatic ecosystem.

Below are some of the graphical and spatial maps of selected samples that were analysed.

1.3.1 Quarterly trend analysis for the Upper Catchment stations

Analysed trend data from the Upper Catchment stations for temperature and ammonia nitrogen shown in figure 1.5 and figure 1.6 below confirmed that both parameters were within the Authority's quality guideline and hence indicating a healthy aquatic ecosystem.

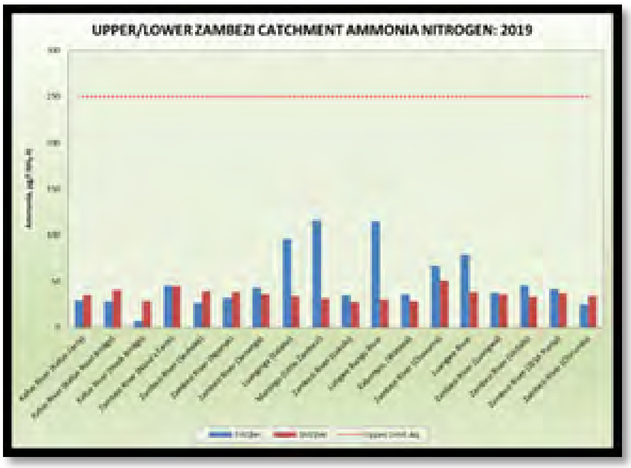


Figure 1.5: Graph of ammonia nitrogen

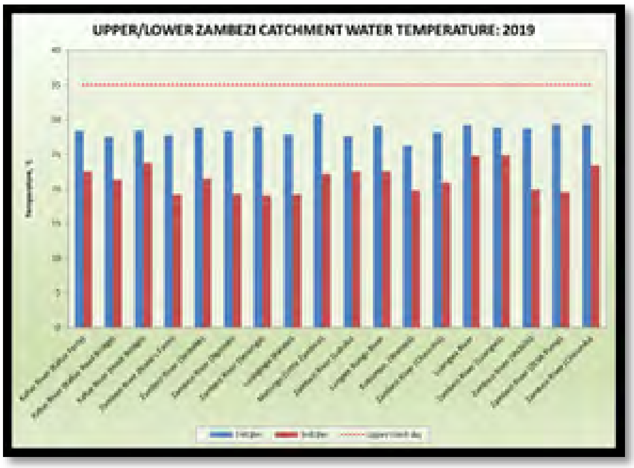


Figure 1.6: Water temperature results

1.3.2 Water quality analysis using spatial maps for Lake Kariba

Using the Geographic Information System, an assessment of the spatial variability of the water quality parameters on the lake was done in order to determine the water nutrient concentration distribution profile of sampled and analysed parameters.

Figure 1.7 and figure 1.8 for total pho sphorus and ammonia respectively, provides spatial nutrient concentration distribution

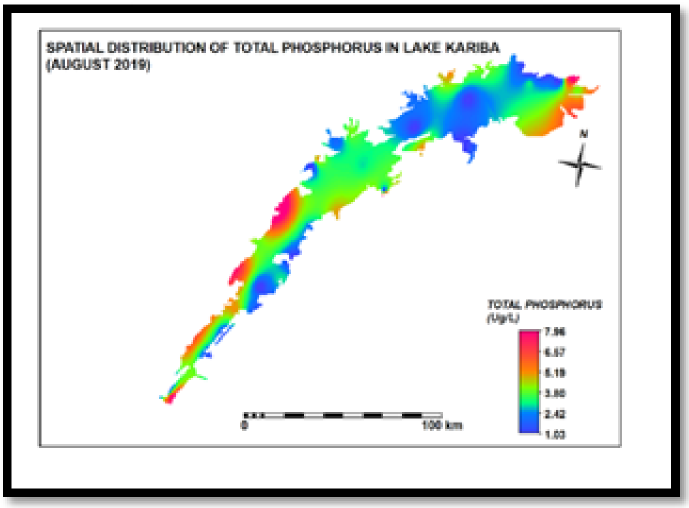


Figure 1. 5: Spatial distribution of total phosphorus in Lake Kariba

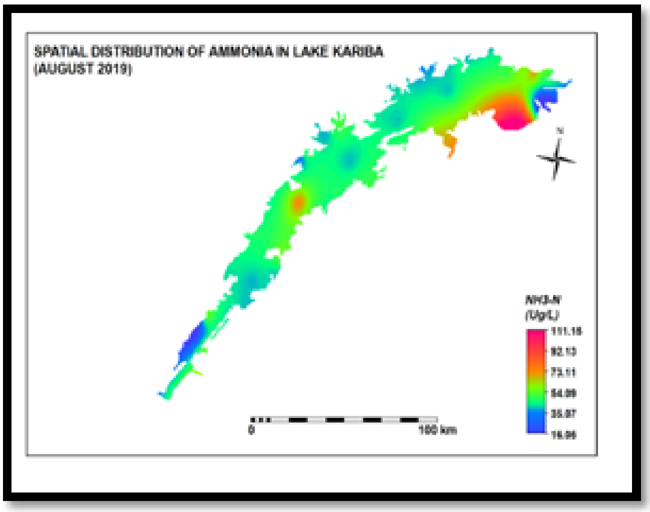


Figure 1. 6: Spatial distribution of ammonia nitrogen in Lake Kariba

The water quality results obtained from both in-situ measurements and through the Authority's environmental laboratory analyses indicated a healthy aquatic ecosystem of the waters in the lake, the Zambezi River and its tributaries as most parameters continued registering values within the requirements of the Authority's Water Quality Guidelines for livestock watering, irrigation and aquatic life.

1.3.3 Temporal Distribution of Heavy Metals and Major Cations for Lake Kariba

The Authority also monitored heavy metals and some cations in order to confirm their concentration levels in Lake Kariba. Below are graphs showing results of iron and calcium concentration sampled from strategic points on the lake.

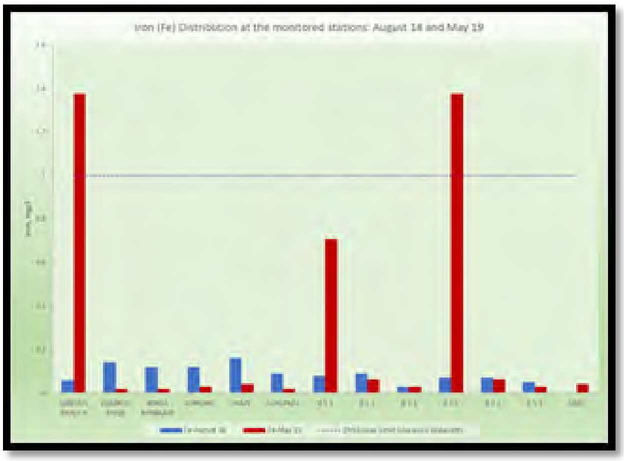


Figure 1.8: Iron

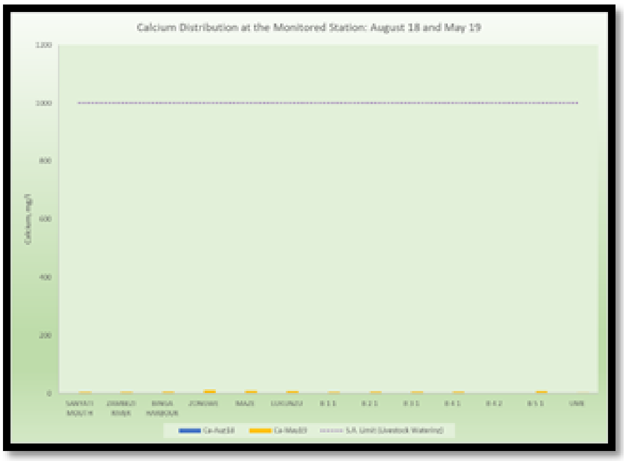


Figure 1.9: Graph of Calcium

The Environmental Monitoring and Management team aboard a speed boat on a water testing and analysis mission on Lake Kariba

PROJECTS AND DAM MANAGEMENT SERVICES

Overview

The Authority continued to carry out its mandate regarding projects and dam management services throughout the year as follows:

a) The development of hydropower infrastructure on the Zambezi River with the objective of completing the preparatory (feasibility) studies and other preconstruction activities for the Batoka Gorge Hydro-Electric Scheme. The feasibility studies included the following:
   - Environmental and Social Impact Assessment Studies.
   - Updating of the Engineering Feasibility Studies.
   - Assessment of the Legal and Financial Transaction issues.

b) The monitoring and maintenance of the Kariba Dam and its appurtenances, in line with the Standing Operating Procedures (SOP) for Kariba Dam and the implementation of key remedial actions continued during the year through activities meant for addressing the operation and maintenance (O&M) of Kariba Dam as recommended by the 2015 five-yearly inspection. The said activities were aimed at risk reduction and monitoring of measures to address potential failure modes (PFM) identified for the Kariba Dam. Some of these PFMs continued to be addressed through the Kariba Dam Rehabilitation Project (KDRP).

The implementation of the Kariba Dam Rehabilitation Project (KDRP) continued during the year. The spillway refurbishment works contract was awarded to a Consortium of GE Hydro France and Freyssinet International in May 2019 while the effective commencement date was 23 September 2019. The plunge pool contractor, Razel-Bec, continued with the implementation of the plunge pool reshaping works.

BATOKA GORGE HYDRO-ELECTRIC SCHEME

The Batoka Gorge Hydro-Electric Scheme (BGHES) is one of the schemes out of a cascade of potential hydro-electric schemes on the Zambezi River common to Zambia and Zimbabwe. An option analysis, which was part of the feasibility studies, recommended a site 47km downstream of the Victoria Falls as the most viable site out of several sites considered for developing the full generating head between the Victoria Falls and the Kariba Dam. The feasibility studies recommended a run-of-river scheme with limited peaking capacity for environmental needs and an installed capacity of 1200MW on each bank, with a total installed capacity of 2400MW.

The Authority continued to undertake activities for the development of the BGHES as follows:

- Preparatory studies
- Procurement of a developer
- Land acquisition for the project
- Mobilisation of project finances
- Development of job creation maximisation tools

Preparatory studies

There were three preparatory studies undertaken during the period under review, namely:

- Updating of the engineering feasibility studies (EFS) to assess and update the 1993 feasibility studies and develop a bankable feasibility study. The studies were completed in October 2019.
- Environmental and Social Impact Assessment (ESIA) studies to evaluate the design for the BGHES and to develop the required Environmental and Social Impact Assessments (ESIA), together with the Environmental and Social Management Plans (ESMPs), Resettlement Policy Frameworks (RPFs) and the Resettlement Action Plans (RAPs)/Livelihood Restoration Plans (LRPs), as required for each infrastructure investment associated with the project. The draft ESIA report and the associated ESMPs were completed in the fourth quarter of 2019.
- Legal and Financial Transaction Studies to identify legal and financial transaction issues to be considered and put in place for the development of the Batoka Gorge Hydro-Electric Scheme The provision of the related services will continue to financial close.
- In addition to the above studies, the Authority commenced the procurement of a technical advisor to provide technical support to the Authority during the negotiations and construction phases.

Procurement of the works developer

The Council of Ministers (COM) adopted the Build, Operate and Transfer (BOT) model as the preferred model for the development of the BGHES after considering the two countries' project commitments and residual capacity to raise sovereign guarantees required for the financing of the BGHES project. Furthermore, due to the critical power shortage in the contracting states of Zambia and Zimbabwe, compounded by the low water levels at the Kariba Dam, COM made an emergency decision to award the contract for the development of the BGHES to a Consortium of Power Construction Corporation of China Limited (Power China) and General Electric (GE) on a BOT mode at its extra-ordinary meeting held on 12th July, 2019. The Authority continued engaging the Developer for purposes of structuring and negotiating the agreements required for implementation of the project. Further, the developer continued to align the studies to the requirements of the prospective financiers of the project.

Land acquisition for the project

The Authority continued to engage key stakeholders in the Contracting States for the acquisition of land on which the dam, the two power houses, offices, employee townships and all other auxiliary infrastructure will be developed. This was being undertaken with the involvement of the power utility companies from Zambia and Zimbabwe. By December 2019, over 2700 hectares of land had been secured on the North Bank while over 3000 hectares was secured on the South Bank.

Financing of the project

Following the expiry of the Co-operation in International Waters in Africa (CIWA) grant on 31st December 2018, the Authority assumed the role of a sole financier of the preparatory studies and other project preparatory activities.

Job Creation Maximisation Activities

The Authority, with support from the African Union Development Agency (AUDA) - New Partnership for African Development (NEPAD), developed a tool kit to be used to develop strategies to maximise job creation for the BGHES. The tool kit will be used to estimate direct jobs, indirect jobs and induced jobs to be created by the project.

KARIBA DAM REHABILITATION PROJECT (KDRP)

The Kariba Dam Rehabilitation Works continued throughout the year and the progress status at the end of the year was as outlined below:

1. Plunge Pool Reshaping Works

Mobilisation

Supervisor's Representative (Engineer)

The Supervisor's Representative, Stucky Limited continued to mobilise expert staff required for the supervision and management of the project. The year ended with four expatriate and four local staff on site.

Contractor

The contractor's total workforce was 184 persons by year end; 119 being local while 65 were from outside Siavonga. A further 32 personnel were engaged and comprised the subcontractor's (Hydrokarst) workforce.

Whilst all the contractor's equipment, including that for the construction of the Cofferdam was at site, additional equipment was expected to be mobilized to address the geo-technical challenges encountered in the cofferdam foundations. Equipment for the plunge pool excavation works was yet to be mobilized.

Status of Works

The status of works was as follows:

a) Completed works:

- ✔ Establishment of the construction camp.

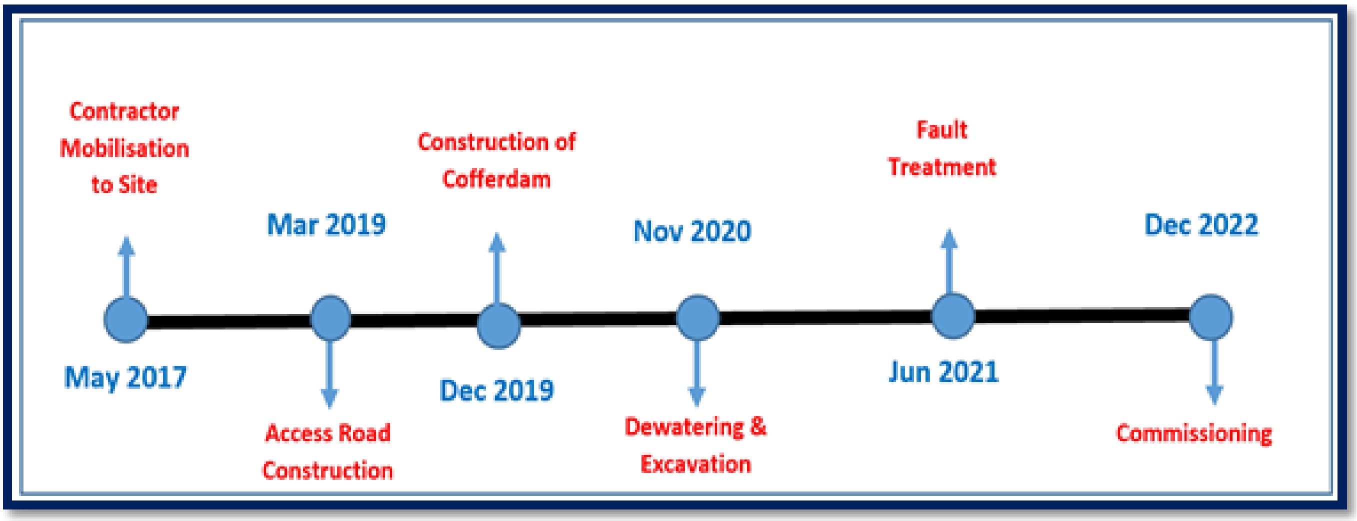
- Construction of explosives magazines.
- Construction of the temporary access road above water level.
- Construction of the permanent access road over the ZESCO Limited tailrace platform.
- Construction of the lift platform which will be used in the construction of the cofferdam piers.
- Excavation of the cofferdam foundations for piers number 2 to 5, from the left bank (North Bank).
- Fabrication of the 41 stop-logs for the cofferdam and their transportation from South Africa.
- Construction of Pier 1 and the north-bank wing wall.

b) Works in progress
- Development of permanent sections of the access road from the plunge pool to the dump-site.
- Construction of the Cofferdam – Pier 2 to 5.
- Cofferdam foundation excavations – Pier 6 to 8.

c) Pending Activities
- Additional cofferdam foundation excavations (Pier 6 to 8).
- Construction of the cofferdam.
- De-watering of the plunge pool.
- Blasting excavation to re-shape the plunge pool.
- Mucking of the excavated rock.
- Repair of the fault-zone with reinforced, abrasion-resistant concrete.

Project Timelines

The cofferdam foundation challenges outlined above had significant impact on the previously planned project timelines, resulting in the shifting of the completion date from December 2021 to December 2022 as indicated in the diagram below.



2. Spillway Refurbishment (Emergency Gate, New Gantry and Associated Civil Works)

Progress on the implementation of the Spillway Refurbishment Works is as presented below:

2.1. Key Project Time-line Information

Commencement Date:	23rd Sept 2019
Contract Duration:	51 Months
Projected End Date:	23rd Dec 2023
Contractor:	Consortium GE Hydro France & Freyssinet International

2.2 Contract Implementation Programme

Site establishment as well as procurement activities for mechanical equipment to be manufactured by specialist sub-contractors were underway within the contractor's camp.

The key milestones achieved to date are as follows:

• Contractor's program of implementation	21-10-2019
• Site hand-over to contractor	23-10-2019
• Quality management plan submitted	23-10-2019
• Last instalment of advance payment	15-11-2019

DAM SAFETY MONITORING

The Authority continued carrying out dam safety monitoring and surveillance activities aimed at ensuring the safety and reliability of the Kariba Dam. Dam safety monitoring activities which included data collection and analysis and interpretation of results of the various dam monitoring instruments were carried out throughout the year. Dam inspection and surveillance processes were also performed to identify any performance deficiencies that could threaten the structural integrity of the dam. These processes helped the Authority to ascertain the structural condition of the dam and where necessary prescribe measures to correct any identified performance deficiencies before they deteriorated into structural safety risks that would undermine the safety of the dam.

Bi-Annual Inspections

The Authority carried out Bi-annual inspections of the dam and appurtenances in compliance with the SOP manual. The inspections focused on on-condition monitoring and assessment of dam instruments, hydro-electromechanical equipment and state of the abutments. Progress made on the recommendations towards achieving the 2015 five-year inspection was also reviewed. In addition, the Authority also addressed the maintenance recommendations through the Kariba Dam Rehabilitation Project (KDRP) which seeks to rehabilitate the plunge pool and spillway as well as conducting various operational and maintenance (O&M) activities. The O&M activities focused on monitoring and maintenance of the South Bank slope and hydro-electromechanical equipment of the spillway as prescribed in the SOP manual.

Dam Instrumentation

The Kariba Dam is equipped with various instruments for data collection which is processed to monitor the response of the dam to various load combinations. The data was evaluated using statistical methods based on previous behavior as well as modelling using specialized software programs such as CONDOR®. Plots of time series gave deformation residuals that defined dam behavior. Amongst the monitoring instruments are pendulums, piezometers, strain-meters, extensometers, rock meters, joint meters, precision levelling of the dam crest and galleries as well as dedicated geodetic networks of the dam and South Bank slopes.

MONITORING RESULTS

Results of data analysis from the dam pendulums, mini-geodetic deformation survey of target T434, South Bank pendulum PS1-1(y) and CONDOR® software modelling are presented to demonstrate the behavior of the dam. The analysis of data from other instruments is performed in a similar manner.

Dam Pendulums

The analysis of data from dam pendulums showed a general deflection of the dam towards the upstream as shown in Figure 1. This behavior is attributable to the low reservoir water level that was experienced during the year. Due to the characteristic increase in concrete volume arising from the effects of Alkali Aggregate Reaction (AAR), stress releases in the upper sections of the dam cantilever results in deflection of the dam towards the upstream. This cyclic behavior is normal and reverses once the water levels and hydrostatic load starts to increase.

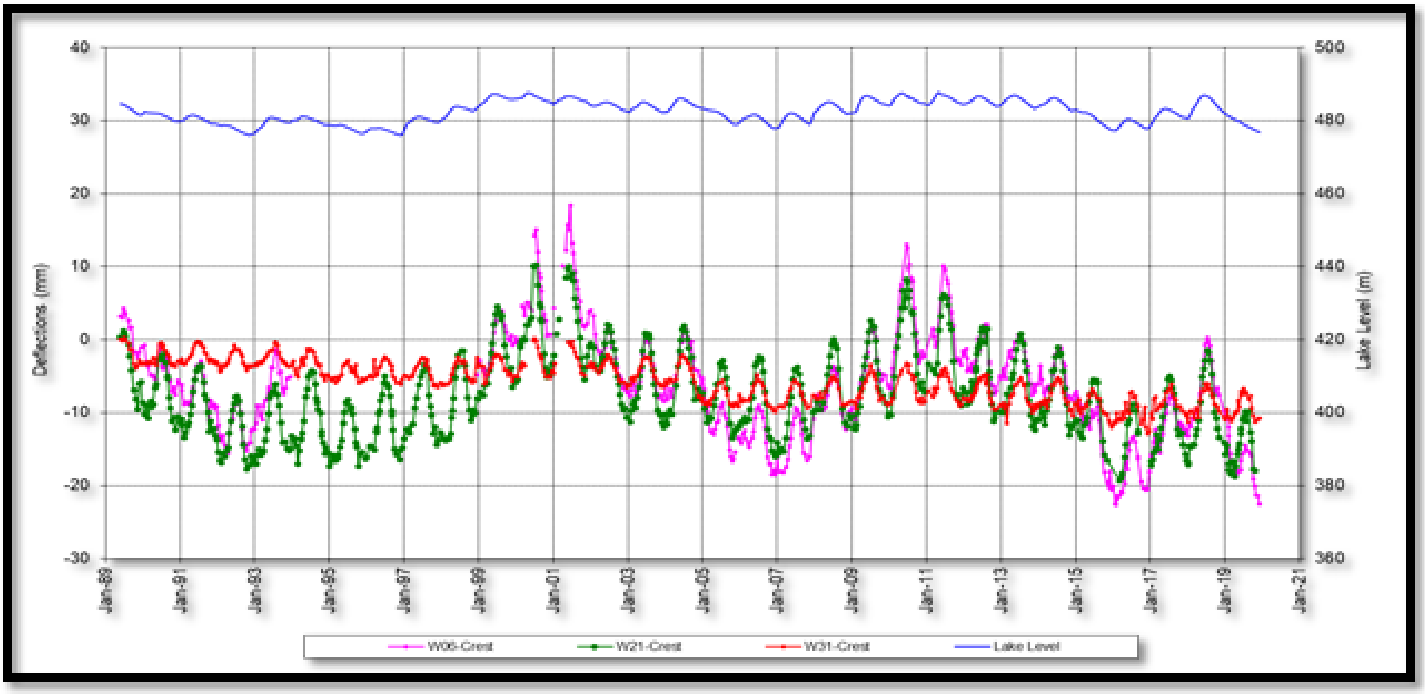


Figure 1. Dam pendulum deflections at the crest

Target T434 Measurements

Target T434 is located on the upstream of Pier 2 from where angles and distances are measured from control points located far away from the dam. Data collected from this station provided a means for establishing deformations around the station and also counterchecking results from other monitoring systems such as pendulums. As shown from the time series plot in Figure 2, the dam was deflecting towards the upstream during the period under review due to low water levels and effects of AAR.

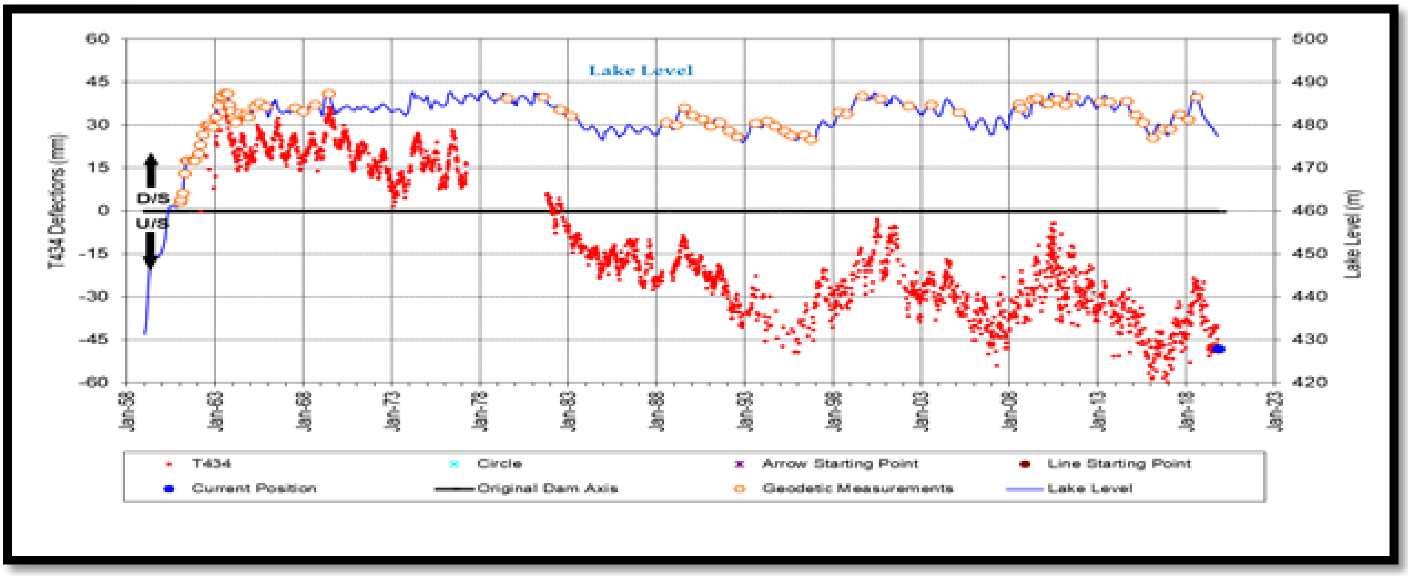


Figure 2. Results of target T434

South Bank Monitoring

The stability of the South Bank is monitored through visual inspections, a series of pendulums as well as a dedicated geodetic network. Results of analysis of the south bank slope monitoring systems showed that although the shallow slope continued to slide towards the downstream and the river, the sliding rate has been marginally lower in the last five years. A plot of the rate of sliding measured at pendulum PS1-1(y) is shown in Figure 3. The analysis of the results showed no abnormal movement of the slope during the period under review.

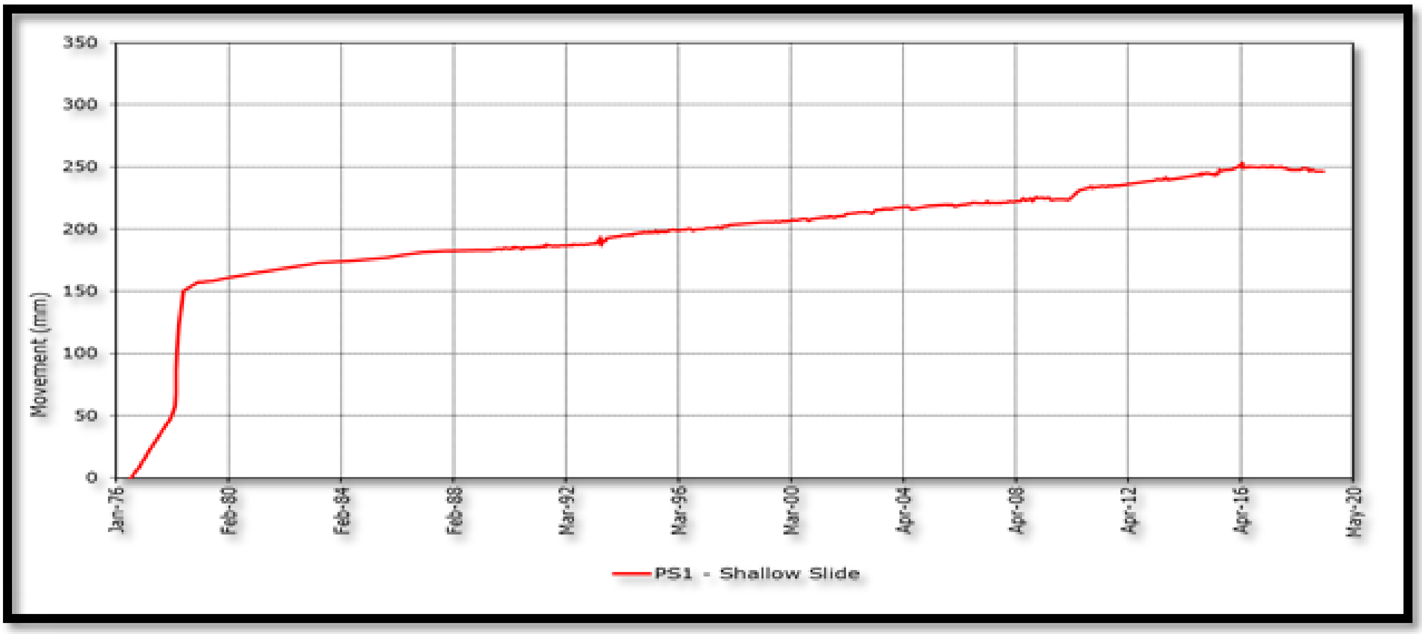


Figure 3. Sliding of the South Bank slope at pendulum PS1-1(Y)

CONDOR® Modelling

CONDOR® is a tailor-made software for statistical analysis of structural behavior based on hydrostatic-seasonal-time (HST) modelling of systems. Using this technique, the assessment of individual effects of load combinations due to hydrostatic pressure, seasonal temperature variations and the non-reversible deformation due to ageing of the dam is made possible. This process enables segregation of individual factors contributing towards the global deformation as well as quantification of the resultant deformation residuals from each of the contributing factors. Analysis of the collected dam safety data using the CONDOR® software showed no abnormal behavior of the dam, abutments and the South Bank slope.

Geodetic deformation measurements and analysis of results

Kariba Dam is fitted with geodetic deformation survey networks that are used to monitor the behavior of the dam and the South Bank slope. Deformation residuals are calculated using the Helmert transformation method within a three-dimensional space. Results of this technique produces absolute distortion-free deformations that are referenced to control beacons located far away from the foundation of the dam. From the two measurements carried out in 2019, the results of analysis showed that the dam was behaving normally.

Precision Levelling

Two precision levelling measurements of the crest of the dam and galleries were performed in 2019. The results of the measurements are shown in Figure 4.

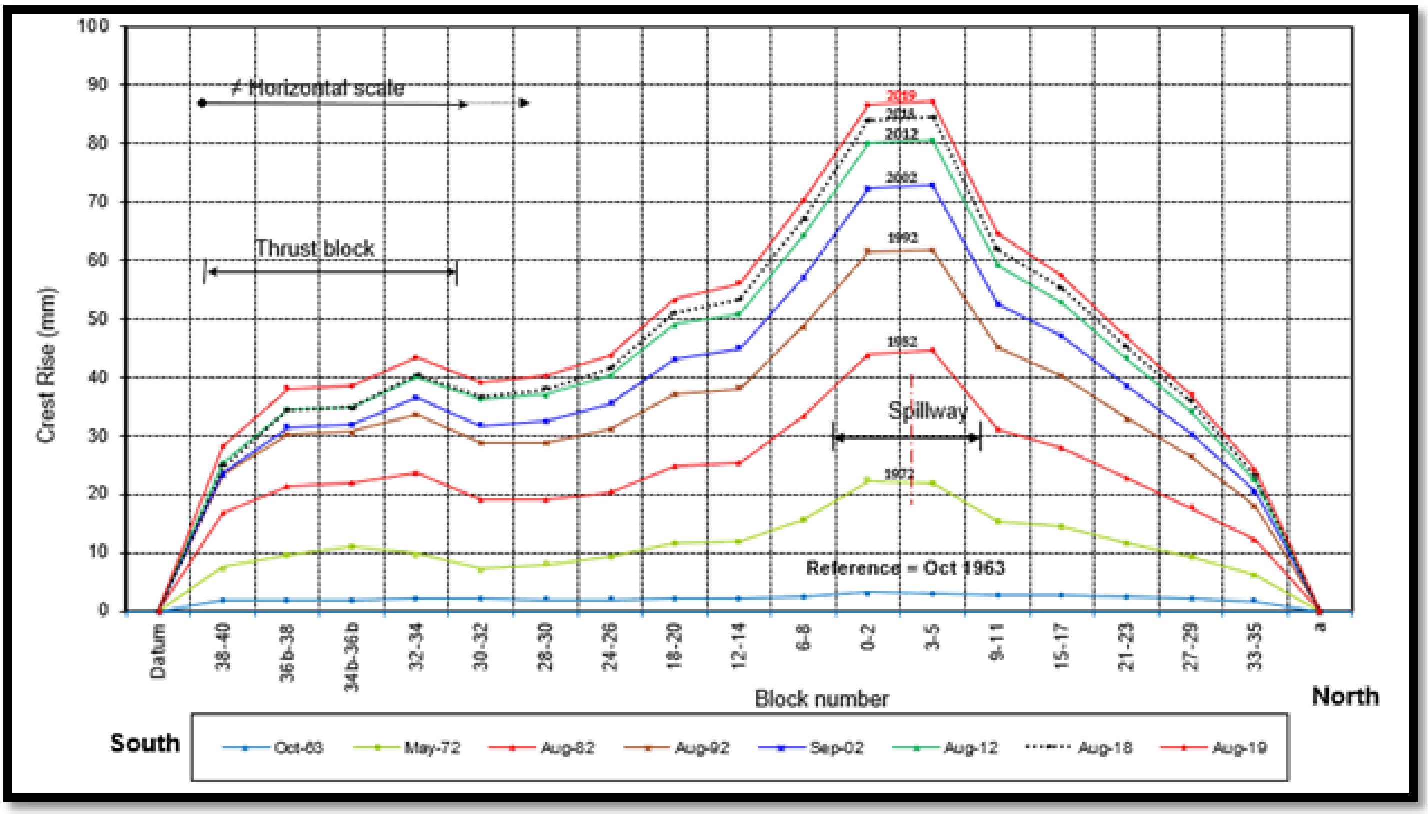


Figure 4. Results of precision levelling up to August 2019

Figure 4 shows a plot of the crest deformation in August 2019. The results show that dam crest levels were predominantly higher when compared to previous measurements. This is attributable to the low reservoir levels under which the effects of concrete swelling due to AAR is more pronounced. The behavior confirms results obtained from other monitoring systems such as the dam pendulums and geodetic deformation surveys.

Kariba Dam Maintenance 2019

Over and above the major rehabilitation of the dam, maintenance of the dam and related structures continued in the year in line with the requirements of the SOP manual.

The work carried out included but not limited to the maintenance of hydromechanical equipment which included rope dressing, lubrication of bearings and all the moving parts and removal of calcite build up in order to allow free movement of the gates. Pre-rainfall season works were also carried out to prevent accumulation of water and ingress of water into the south bank rock mass. This work included repairing of the south bank slope protection sealing and removal of debris from surface drains.

Testing of the gates under load could not be undertaken as opening would require stoppage of the ongoing plunge pool rehabilitation works. In the event of the need to pass floods arising, testing of the gates would be undertaken before spillage as the dam is operated in such a way that there should be an adequate lead period to spilling.

Dam Behaviour

The Authority performed dam safety monitoring and maintenance management processes of data collection and analysis during the year in accordance with requirements of the SOP manual. The results of analysis of data collected from the monitoring instruments indicated that the dam continued to behave normally as expected.

CORPORATE IMAGE AND VISIBILITY

ZAMBEZI VALLEY DEVELOPMENT FUND

The Authority continued to improve its corporate image through its corporate social responsibility by implementing several projects under the Zambezi Valley Development Fund (ZVDF). These projects were specifically targeted at communities that were displaced during the construction of the Kariba Dam. Out of the 34 projects which were approved for implementation during the strategic period 2015 to 2019, a total of 25 projects were completed in the last five years. Since inception of the ZVDF in 1997, the Authority has successfully implemented 45 developmental projects.

The following projects were at various stages of implementation at the end of December 2019.

ZAMBIAN PROJECTS

Lusitu Water Reticulation System, Chirundu District

The year under review closed with phase 2 of the implementation of the resuscitation of the Lusitu water scheme which involved installation of two surface pumps. These were procured and installed at the Lusitu water intake point and at the Pambazana booster pumping station. The installation of the two pumps greatly improved the water supply in the Lusitu area. It alleviated the need for the beneficiaries to walk long distances to fetch water from the crocodile infested Zambezi River.

Figure 1: The newly fabricated pipework and installed pump at Lusitu water intake point

Sinafala Secondary School, Gwembe District

The projects to construct a 1x3 classroom and a 1x2 laboratory block at Sinafala Secondary School were approved by the ZVDF Board of Trustees at its 33rd meeting held in Victoria Falls, Zimbabwe. The construction of the classroom block progressed well and had reached roof level before end of December 2019. The additional classroom block will improve the learning environment as it will decongest the existing limited facilities.

Figure 2: The 1x3 classroom block under construction at Sinafala Secondary School

Kalomo District

The construction of a 1x3 classroom block and sinking of six additional boreholes in the Nkandazovu area of Kalomo District progressed very well. The classroom block had reached foundation level by December 2019 and its completion will enable the Nkandazovu School to upgrade from its current status of primary school to secondary school. The sinking of the boreholes was completed and handed over to the six beneficiary communities in November 2019.

Figure 3: The foundation box for the 1x3 classroom block under construction at Nkandazovu Primary School

Figure 4: The civil works in progress at one of the completed boreholes in Nkandazovu area

Siavonga District

The project at Manchamvwa Primary School to construct a 1x2 classroom block had reached roof level while the other 1x2 classroom block was at foundation level. The school only has a 1x3 modern classroom block. Consequently, the construction of additional classroom blocks will de-congest and improve access to a conducive learning environment.

Figure 5: A 1x2 classroom block under construction at Manchamvwa Primary School

Sinazongwe District Installation of Solar System Project

The project to install solar systems at five health centres in Sinazongwe district was approved for Muziyo, Sulwegonde, Muuka, Siameja and Kamfwambila clinics. All the installed systems were commissioned and were operational.

Figure 6: The newly installed solar system after commissioning at Muziyo Clinic, Sinazongwe

ZIMBABWEAN PROJECTS

Chikango Primary School Gokwe North District

The construction of three F14 model staff houses that commenced in 2018 was completed successfully in 2019. The houses were handed over to the school administration for use by teachers. The community actively participated in the project through provision of labour and mobilisation of local construction materials like sand and crushed stones.

Figure 7: The three staff houses that were constructed at Chikango Primary School, Gokwe North

Kushinga Primary School Gokwe North District

The project to construct a 1x2 classroom block at Kushinga Primary School, in Simchembu chiefdom of Gokwe North district reached roof level. The improved infrastructure will provide access to quality education and reduce congestion in the small structures that are currently being used.

Figure 8: One of the structures currently being used as a classroom at Kushinga Primary School

Figure 9: A 1x2 classroom block under construction at Kushinga Primary School

Chisipite Primary School Hurungwe District

The works for the construction of a 1x2 classroom block at Chisipite Primary School, in Hurungwe District of Zimbabwe progressed well. The classroom was at slab level as at December 2019. The members of the local community continued to support the project through the provision of locally made bricks as part of their contribution.

Figure 10: One of the existing classrooms at Chisipite Primary School in Hurungwe District

Figure 11: The 1x2 classroom block under construction at Chisipite Primary School in Hurungwe District

MEDIA COVERAGE

The Authority, through the Public Relations and Communications Unit, worked closely with key media institutions which resulted in positive media coverage at national, regional and level. Online media institutions from within and outside the two Contracting States took the lead in providing wide publicity of the Authority's activities on their websites and social media platforms. A total of 107 media institutions published Authority related stories at least once.

The year opened with a 9.4% coverage (as shown in figure 1) which peaked in July to 52% (as shown in figure 2) and closed off the year at 37% (figure 1).

The coverage was mainly due to activities on the Kariba Dam Rehabilitation Project, the Batoka Gorge Hydro Electric Scheme as well as updates on water levels at the Lake Kariba.

Figure 2 also showcases the five months when the Authority recorded the highest coverage in the year.

Figure 1 – Total Number of Media Mentions

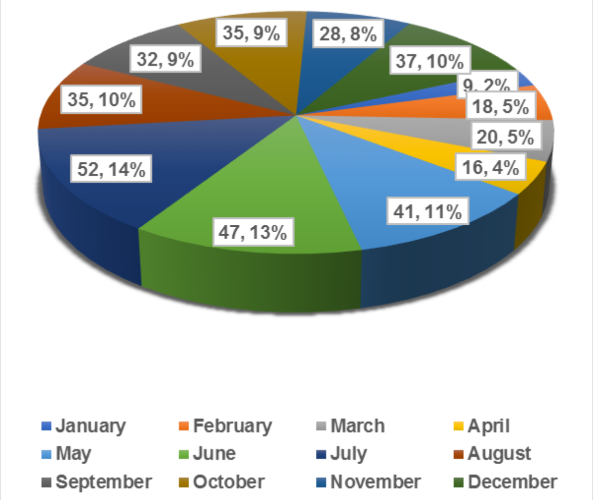
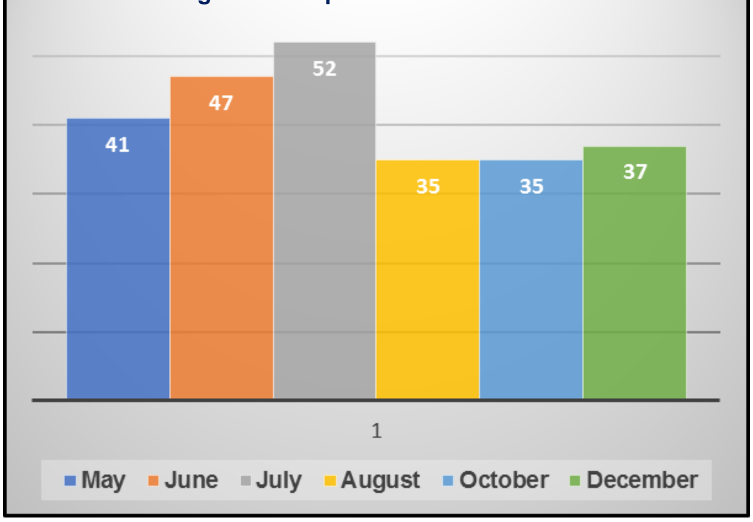


Figure 2 – Top Five Months of 2019



AUTHORITY OWNED MEDIA

Social Media - Apart from publicity through mass media, the Authority also continued to utilize its own media and Facebook to share updates with over 8000-page followers. The comments and discussions that followed every post showed that the public was keen to fully understand the Authority's operations and developmental activities.

a). **Website** – The Authority website continued to serve as another key information dissemination channel. The contacts page carried a messaging platform where followers shared their views on matters of concern thus providing a two-way communication system.

b). **Press Releases** – The Authority released several press statements to the media and downstream stakeholders informing them of various undertakings by the Authority. Much of the recorded positive publicity arose from such initiatives.

c). **KDRP Animation Video** - To simplify the highly technical works at the KDRP, an animation video was produced and approved for dissemination in September 2019.

STAKEHOLDER ENGAGEMENT

Throughout the year under review, the Authority worked in liaison with the KDRP appointed communications consultant to increase stakeholder engagement through:

a). Presentation to the Zambia Chamber of Commerce and site visits to the Kariba Dam.

b). Shooting of a KDRP documentary during visits to local communities, traditional chiefs and members of local communities with a view to sensitizing them on the project.

c). Six radio programme were aired during the last quarter of 2019. The programmes covered environmental issues and grievance procedures following the development of a programme for an awareness campaign for grievance redress mechanism and gender-based violence.

d). Stakeholder engagements were conducted at village and local government levels in respect of the development of the Batoka Gorge Hydro-Electric Scheme during the environmental and social impact assessment programmes.

CAPACITY BUILDING

Crisis management workshops were conducted for front office personnel in Lusaka and Kariba offices in July 2019.

HUMAN RESOURCES AND ADMINISTRATION REPORT

STRATEGIC LEADERSHIP AND PEOPLE MANAGEMENT

1. Employee / Employer Relations

The Authority continued to experience harmonious employee-employer relations across its entire network during the period under review.

2. Employee Establishment

The employee complement as at 31st December 2019 was 147 against the approved establishment of 188 which include the recently approved additional 21 positions under the Projects and Dam Management Services Department, three positions under the ICT Section and one position under the Legal Services Section.

2.1 Summary of the opening and closing number of employees

The details of the employee complement for the period under review are reflected below:

DETAILS	Numbers
Opening number of employees as at 1st January 2019	152
Engagements	145
Separations	150
Closing number of employees as at 31st December 2019	147

2.2 Summary of employee engagements and separations

The details of employee engagements and separations during the period under review and for the year 2018 are indicated below:

ENGAGEMENTS/SEPARATIONS	2019	2018
Engagements	145	8
Deaths	1	0
Retirement/Medical Discharge	4	3
Resignation	1	1
Dismissal	0	0
Expiry of Employment Contracts	10	3
Retrenchments	134	0

3. Details of Employee Engagements

130 employees were engaged on 1st May 2019 after being retrenched on 30th April 2019.

Further, 10 employees, whose employment contracts expired, had the same renewed as follows:

No	Name	Position	Department	Date Contract Renewed
1	Mr. Brian Kajiko	Gauge Reader	Water Resources and Environmental Management	1st January 2019
2	Eng. David Z. Mazvidza	Director – Projects and Dam Management Services	Projects and Dam Management Services	1st April 2019
3	Mr. Patrick Mwansa	Dam Safety Monitoring Technician	Projects and Dam Management Services	14th June 2019
4	Mr. Rocky Mpembamoto	Artisan Assistant	Projects and Dam Management Services	17th June 2019
5	Mr. Mulemwa Mulemwa	Gauge Reader	Water Resources and Environmental Management	14th July 2019
6	Mrs. Cecilia M. Kalenga	Management Accountant	Finance	1st August 2019
7	Mr. Edward M. Kabwe	Director – Finance	Finance	1st September 2019
8	Eng. Christopher Chisense	Director – Water Resources and Environmental Management	Water Resources and Environmental Management	1st September 2019
9	Mrs. Misozi L. Mbawo	Procurement Officer	Corporate Services	17th September 2019
10	Eng. Munyaradzi C. Munodawafa	Chief Executive	Executive Office	1st October 2019

The following employees were also engaged during the period under review:

Mr. Patience H. Mwiinga was appointed as Administrative Assistant - Kariba on 16th March 2019 under the Human Resource and Administration Section in the Corporate Services Department

Eng. Avitol Nkweendenda was appointed as Project Manager - Batoka Gorge Hydro-Electric Scheme on 10th June 2019 under the Projects Section in the Projects and Dam Management Services

Mr. Clement Machayi was appointed as Administrative Assistant - Lusaka on 14th October 2019 under the Human Resource and Administration Section in the Corporate Services Department

Mrs. Eunice K. Mudenda was appointed as Accounts Assistant on 1st April 2019 under the Financial Accounting Section in the Finance Department

Ms. Musonda Charity Bwalya was appointed as Accounts Clerk on 12th August 2019 under the Financial Accounting Section in the Finance Department

4. Details of Employee Separations

The Authority bade farewell to nine employees who left the Authority as indicated below:

No	Name	Department	Position	Mode of Separation	Date of Separation
1	Mr. Thomas Mupfurutsa	Projects and Dam Management Services	Dam Maintenance Assistant	Normal Retirement	2nd March 2019
2	Mrs. Mercy Gamela	Corporate Services	Administrative Assistant	Retrenchment	30th April 2019
3	Mr. Nyambe Simangolwa	Finance	Accounts Clerk	Retrenchment	30th April 2019
4	Mrs. Bwanga Kaniki	Water Resources and Environmental Management	Information Communication Technology Technician	Retrenchment	30th April 2019
5	Mrs. Mwaka Simbule	Corporate Services	Public Relations and Communications Officer	Retrenchment	30th April 2019
6	Mr. Clever Chifana	Projects and Dam Management Services	Painter	Normal Retirement	6th May 2019
7	Ms. Lucia Chikukwa	Projects and Dam Management Services	General Worker	Normal Retirement	20th August 2019
8	Mr. Davie Tasiya	Projects and Dam Management Services	Electrical Assistant	Normal Retirement	9th November 2019
9	Mr. Charles Lovemore Bingura	Corporate Services	Records Supervisor	Death	14th December 2019

The Authority reports with sadness the death of a dedicated and committed employee, Mr. Charles Lovemore Bingura, who died after 45 years of unbroken service to the Authority. May his soul rest in eternal peace.

5. Employee Placements and Promotions

There were no employee placements and promotions recorded during the period under review.

6. Training and Development / Capacity Building

Every year, the Authority empowers employees with knowledge and skills vital for effective execution of the corporate strategic objectives through training and development programmes. Consequently, during the year 2019, employees attended various professional workshops and seminars which included Contract Management and Administrative Disciplines Modules 3 and 4 under FIDIC Contracts and Financial Fitness. The Authority spent a total amount of US$ 163,920.65 on training and development programmes.

Further, employees attended strategic planning workshops on the formulation of the corporate strategy to run for a five year period from 2020 to 2024.

Authority employees and key stakeholders attending a strategic planning workshop

7. **Performance Management System**
The performance management system action plan for the year 2019 was implemented on schedule. However, the performance management system processes were not executed on schedule due to the re-organisation exercise necessitated by the retrenchment and re-engagement of employees.

8. **Retrenchment of employees on permanent and pensionable employment service and termination of employment contracts for executive management employees and their re-engagement on revised terms and conditions of service**

The Council of Ministers, at its 36th meeting held on 15th June 2018, in its quest to ensure the Authority's long-term sustainability by containing employment costs, approved the retrenchment exercise for employees on permanent and pensionable employment service and termination of employment contracts for executive management employees and the re-engagement of all employees on revised terms and conditions of service.

The retrenchment exercise involved 134 employees whose employment service was terminated effective 30th April 2019. The said employees were re-engaged on 1st May 2019.

Only four out of the 134 employees opted to separate from the Authority following their offer of employment on revised terms and conditions of service effective 1st May 2019. All the four employees were based in Zambia.

Consequently, the rest of the employees, who were re-engaged, commenced work on 1st May 2019.The cost for the retrenchment exercise was US$12.8 million and the Authority was expected to save US$4.7 million annually after the re-engagement of employees on revised terms and conditions of service. The savings would arise from the reduction of the pay structure by 15%, reduction of some employment allowances and the abolishment of some employment allowances.

The Authority was yet to realize the anticipated savings since the revised terms and conditions of service applied to only 55 employees, based in Zimbabwe, who were paid the retrenchment packages in September 2019. The Authority also implemented revised terms and conditions of service for four executive management employees whose employment contracts came to an end and were subsequently renewed.

The employees based in Zambia were not paid the retrenchment packages except for two employees who opted to separate from the Authority. The said employees continued to serve under the previous terms and conditions of service.

9. Employee Welfare and Wellness Programmes

The Authority recognises that healthy workers build a healthy organization and a healthy organization produces excellent business performance results. Therefore, the Authority continued to improve the welfare and wellbeing of employees through human resource strategies aimed at achieving the following:

- ✔ Improved employee satisfaction;
- ✔ Improved employee productivity;
- ✔ Mitigatingoccupational health and safety risks;
- ✔ Reducing costs associated with absenteeism;
- ✔ Improving employees' organisational culture; and
- ✔ Improved organisational image through execution of corporate social responsibility obligations.

In that regard, the Authority undertook the following initiatives:

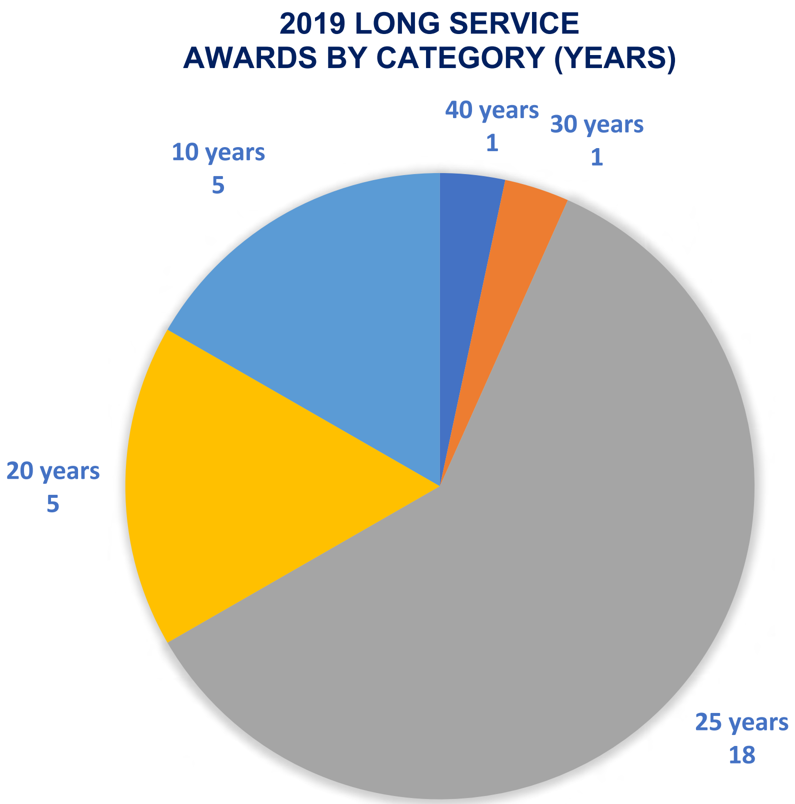
a) **HIV/AIDS** - The Authority supported employees by facilitating training programmes, providing counselling services and medical support. Employees who had disclosed their HIV/AIDS status continued to receive food packs and nutritional supplements on a monthly basis.

b) **Health and Safety** - In keeping with the Authority's core values, the safety of employees and other stakeholders is cardinal to the operations of the Authority. In that regard, the Occupational Health and Safety Committee and representatives continued spearheading the management of health and safety issues in the Authority.

c) **Long Service Awards** - As a long-standing tradition, each year, the Authority recognises long serving employees through awards for 10, 15, 20, 25, 30, 35 and 40 years' service.

As at 30th April 2019, 30 employees received awards in their respective categories with one employee attaining 40 years service.

The categories for the recipients of the long service awards are as indicated in the chart below:



d) **Social Sports**

The Authority values the health and vitality of its employees. This is exemplified by one of the Authority's core values of health and safety. During the period under review, the Authority facilitated the employees' participation in social football, golf, gym, swimming and athletics as follows:

i) **Social Football**
The social soccer club committee organised local social games with other social clubs in Kariba and Siavonga.

ii) **Golf**
Employees at Head Office participated in golf tournaments held locally in Lusaka.

iii) **Provision of Gym facilities**
Employees at both the Head Office and Kariba station utilised Authority facilities for their stay-fit programmes. This continued during the period under review with the gym equipment being in fair state.
However, since the gym premises in Kariba have limited space, plans to expand the same were underway.

iv) **Athletics**
Authority employees participated in the Lafarge Marathon in Lusaka, Zambia, Econet Vic Falls Marathon in Victoria Falls, Zimbabwe and Intercompany Relay in Ndola, Zambia.

v) **May Day Activities**
Authority employees joined their colleagues from other organisations in both Zambia and Zimbabwe in commemorating the Labour Day/ Workers Day which falls on 1st May each year. The Zimbabwean nationals celebrated Workers Day in Kariba while their Zambian counterparts celebrated Labour Day in Siavonga.

For the first time, the Authority presented Excellence Awards and prizes to 24 employees during the Labour Day celebrations in Siavonga, as follows:

Employees who participated in the labour day celebrations in Siavonga, Zamba

Excellence Awards

- 10 employees received the Unsung Hero Award;
- Six employees received the Light Bulb Award; and
- Eight employees received the Bureaucracy Buster Award.

Naming of the Enterprise Resource Planning (ERP) Project

Three employees who participated in the naming competition for the Enterprise Resource Planning (ERP) project were awarded prizes for being the first, second and third winners.

Kariba Office Administration Building Front view

FINANCIAL STATEMENTS FOR THE YEAR THE YEAR ENDED 31 DECEMBER 2019

TABLE OF CONTENTS	**PAGE NO**

Directors Report

The Directors submit their report together with the audited annual financial statements for the year ended 31 December 2019, which disclose the state of affairs and financial performance of Zambezi River Authority ("the Authority").

Establishment and Functions

The Zambezi River Authority ("the Authority") was established as a corporate body on 1 October 1987 by parallel legislation in the Parliaments of Zambia and Zimbabwe under the Zambezi River Authority Acts No.17 and 19 respectively. It was tasked with the management of the Zambezi River, which flows between the two countries' common border. ZRA is also mandated to maintain the Kariba Dam Complex (Kariba Complex) and to construct and maintain other dams or infrastructure on the river forming the border between the two countries.

Principal Functions

The functions of the Authority are set out in the schedule to the Zambezi River Authority Acts of 1987 as follows:

(a) Operate monitor and maintain the Kariba Complex. Kariba complex means:

- (i) the Kariba Dam and reservoir
- (ii) all telemetering stations relating to the Kariba Dam
- (iii) any other installations owned by the Authority

(b) In consultation with the National Electricity Undertakings, investigate the desirability of constructing new dams on the Zambezi River and make recommendations thereon to the Council of Ministers ("the Council");

(c) Subject to the approval of the Council, construct, operate, monitor, and maintain any other dams on the Zambezi River;

(d) Collect, accumulate and process hydrological and environmental data of the Zambezi River for the better performance of its functions and for any other purpose beneficial to the Contracting States;

(e) In consultation with the National Electricity undertakings, regulate the water level in the Kariba reservoir and in any other reservoir owned by the Authority;

(f) Make such recommendations to the Council as will ensure the effective and efficient use of the waters and other resources of the Zambezi;

(g) Liaise with the National Electricity Undertakings in the performance of its functions that may affect the generation and transmission of electricity to the Contracting States;

(h) Subject to provisions of Article 13, recruit employ and provide for the training of staff as may be necessary for the performance of its functions under the Agreement;

(i) From time to time and subject to the approval of the Council, make such revision of salaries, wages, and other remuneration to its employees as it considers appropriate

(j) Submit development plans and programmes to the Council approval;

(k) Give effect to such directions, as may from time to time, be given by the Council; and

(l) Carry out such other functions as are provided for in the Agreement or are incidental or conducive to the better performance of its functions.

Directors Report (continued)

Place of Business

(a) Head Office: House, 32 Cha Cha Cha Road, P.O. Box 30233, Lusaka, Zambia
(b)Harare Office: Club Chambers, Nelson Mandela Avenue, P.O. Box 630, Harare, Zimbabwe
(c)Kariba Office: Administration Block, 21 Lake Drive, (Pvt) Bag 2001, Kariba, Zimbabwe

Results

	Year ended 31 December				
		2019		2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Revenue	239,972	314,940	24,151	281,704	25,812
(Deficit)/surplus for the year	(83,240)	(111,722)	(8,376)	107,430	9,251

The deficit for the year has been deducted from the revenue reserve.

Property, plant, and equipment

The Authority purchased property, plant and equipment amounting to US$ 18.88 million or ZMW 246.07 million or ZWL 187.56 million (2018 US$ 4.72 million; ZMW 56.95 million) during the year. In the opinion of the Directors, the carrying value of property, plant and equipment is not more than their recoverable value.

Average number of employees

The total remuneration of employees during the year amounted to US$ 20.50 million or ZMW 277.19 million or ZWL 203.71 million (2018: US$ 10.35 million (ZMW 110.92 million). Included in this amount is US$ 11.56 million or ZMW150.70 million or ZWL 114.87 million in respect of retrenchment packages. The average number of employees was as follows:

Month	Number	Month	Number
January	152	July	148
February	152	August	148
March	152	September	148
April	153	October	149
May	148	November	148
June	148	December	147

The Authority has policies and procedures to safeguard the occupational health, safety, and welfare of its employees.

Related party transactions
The Authority has a common enterprise relationship with Governments of the Republic of Zambia and Zimbabwe. Other related party relationships and material balances that the Authority has with its related parties are listed in Note 24 to the financial statements.

Gifts and donations
The Authority made the following donations to charitable organisations and events during the year.

		2019		2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Donations and sponsorships	2,281	2,992	230	315	3,490

Directors Report (continued)

Breach of loan terms of agreement

The Authority has a 30 year subsidiary loan agreement dated 20 August 2015 with the Government of the Republic of Zambia for a loan amount of US$ 144 million to finance the Kariba Dam Rehabilitation Project. According to schedule 1 of this subsidiary loan agreement, the Authority is required to make repayments biannually on 1 March and 1 September. The Authority has in the current financial year defaulted on loan repayments totalling US$ 8,920,000 having paid only US$ 2,000,000. The amount in default is made up of current year repayments of US$ 5,947,000 (principal of US$ 3,800,000 and interest of US$ 2,147,000) and 2018 principal arrears of US$ 2,973,000. On 1 March 2020 US$ 2,945,000 will fall due (principal of US$ 1,900,000 and interest of US$ 1,0450,000), bringing the total amount outstanding to US$ 11,865,000. This is in contravention of section 3.04(ii) of Article III of the subsidiary loan agreement which states that repayments should not be delayed by more than 30 days from due date and failure of which the Government of Zambia has the right to cancel the loan agreement in accordance with Section 5.03 of Article V of the subsidiary loan agreement. The Authority has engaged both the Zambian and Zimbabwean Governments highlighting the challenges in settlement of the said obligation due to delayed payments from ZESCO Limited and failure to access the United States Dollars in Zimbabwe. The Council of Ministers has elected to resolve the Authority's liquidity challenges to enable it to settle its obligation to the Zambian Government.

Introduction of the Zimbabwe Dollar ("ZWL")

On 22 February 2019, the Government of the Republic of Zimbabwe issued Statutory Instrument SI No. 33 of 2019 (SI33) which introduced an electronic currency, the Real Time Gross Settlement Dollar ("RTGS Dollar"). The SI deemed for accounting and other purposes that all assets and liabilities that were valued in US$ immediately before 22 of February 2019 to be valued in RTGS Dollars at a rate of 1:1. The RTGS dollar was thereafter tradable on the foreign exchange market with future exchange rates being determined by the inter-bank market.

On 24 June 2019, the Government of the Republic of Zimbabwe through the enactment of Statutory Instrument Number 142 of 2019 introduced and designated the Zimbabwe Dollar ("ZWL") as the sole currency for legal tender purposes in Zimbabwe and that reference to the Zimbabwe Dollar shall be consistent with the use of Bond notes and the electronic money also known as the RTGS Dollar. Accordingly, all funds held by the Authority in Zimbabwean banks with the exception of the Ring-Fenced Funds reported as Restricted cash, are denominated in Zimbabwe Dollar. The Government of the Republic of Zimbabwe has reiterated its commitment to release United States Dollar equivalent of the Ring-Fenced Funds as evidenced by the release of US$ 3 million in 2019.

The Authority has elected to present its 2019 financial results in three currencies namely; the Zimbabwe Dollar, the Zambian Kwacha and the United States Dollar. The United States Dollar has been retained because it is the pivot currency through which the Authority's in country operations in both Contracting States have been translated into the local currency of the other. This practice is consistent with the provisions of International Accounting Standard 21 ("IAS 21") "The Effects of Changes in Foreign Exchange Rates", which requires a reporting entity to determine its functional currency and translate the foreign operation's results into that currency but, still permits presentation in any currency or currencies. Furthermore, the adopted approach enables the Authority to meet the interests of the Cooperating Partners who are financing of the critical projects within the Authority.

Retrenchment

On 15 June 2018, the Council of Ministers ("The Council") approved the Authority's retrenchment plan which included termination of contracts of employment and re-engagement of permanent, pensionable and contract employees. The retrenchment is an effort to ensure the Authority's long-term sustainability by containing its cost of employment. Subsequently on 28 January 2019, the Authority issued notice of termination of employment to all its employees effective 1 February 2019 to 30 April 2019. The Authority has since effected the Revised Terms and Conditions of Service for its Zimbabwe based employees following the effecting of payment of retrenchment packages totalling US$ 4.51 million paid in local currency equivalent.

Directors Report (continued)

Retrenchment (continued)

The exercise is yet to be fully implemented on the Zambian side due to lack of funds. Consequently, employees on the Zambian side continue to serve under the current Terms and Conditions of Service pending the payment of retrenchment packages. This is in keeping with the Zambian Constitution which requires that retrenchees and retirees be maintained on the employer's payroll until the attendant termination packages are paid. It is expected that once fully implemented the Authority shall make annual savings of US$ 4.2 million.

Risk management and control

The Board, through the Audit, Corporate Governance and Risk Management Committee exercises oversight over Enterprise Risk Management (ERM) processes in the Authority. The Authority adopted ISO31000:2009 as its framework for ERM. Using this framework, the Authority systematically identifies, analyses and responds to risks, including the mapping of inter - relationships between risks. The Board accomplishes its oversight role through:

(i) Developing policies and procedures on risk management;
(ii) Following up executive management's implementation of policies and procedures on risk management,
(iii) Following up on assurance that risk management policies and procedures are working as intended; and
(iv) Taking steps to foster a risk aware culture.

The Authority manages risk under five (5) categories namely: Operational, Financial, Project Management, Strategic and Reputational risk. The significant risks dealt with by the Authority across the five (5) categories in the period under review included Credit, Liquidity, Dam safety, Hydrological, Protracted stakeholder approval and Funding withdrawal risks. In the period under review the Audit, Corporate Governance and Risk Management Committee convened four (4) meetings as scheduled.

(a) Operational risk

Operational risk is in this instance the risk of dam failure due to operational deficiencies. The following are the significant risks noted under this category:

(i) Dam Safety risk – This is the risk of compromise to the safety of Kariba Dam complex. To manage this risk the Authority has adopted international standards for dam maintenance and safety monitoring. Furthermore, the Authority is currently undertaking the Kariba Dam Rehabilitation Project aimed at securing the long-term safety and reliable operation of Kariba Dam Complex

(ii) Hydrological Risk – This is a risk to the sustainable operation of the reservoir. The Authority continues to operate the reservoir in line with international best practice. Dialogue with the Power Utilities on the water usage is another migratory factor being employed by the Authority manage the Hydrological risk.

(b) Financial risk

This is the risk that the Authority will experience financial loss due to change in market conditions. The following are the significant risks noted under this classification:

(i) Credit Risk – This is the risk that the Authority may be unable to collect what it is owed. This ranges from sales receipts to deposits and investments placed with financial institutions. The Authority has suffered loss from impairment of its long-term investments with the Commercial Bank of Zimbabwe following the conversion of investments from United States Dollars to the Zimbabwean Dollar.

Directors Report (continued)

Risk management and control (continued)

Financial risk (continued)

(i) Credit Risk (Continued)

Furthermore, the deterioration of the receivable collection days on its balances outstanding from the Utilities has raised credit risk to the fore of the risks requiring urgent attention. This has had a knock on effect on liquidity risk that has materialised itself in the Authority's failure to meet its obligations including loans.

(ii) Liquidity Risk - This is the risk that the Authority may fail to settle its obligations as and when they fall due. Liquidity risk is strongly correlated with credit risk and the consequence of it materialising can give rise to an exposure to reputational risk. The Authority continues to explore ways of tightening its credit control mechanisms, including lobbying the principal shareholders for preferred consideration by trade creditors, so as to ensure sufficient liquidity for its operations.

The Authority's financial risk exposures are discussed on pages 42 to 49 in Note 21 to the financial statements.

(c) Project Management Risk

This is this risk that a project may not be properly implemented or delayed. The Authority considered the risk of protracted stakeholder approval during the period under review. The risk emanates from the need to secure prior approval from financiers before proceeding to the next stage of any project related procurement. The Authority continues to interact with project financiers for quick turnaround time on all prior approvals. Any delay is obtaining prior approval affects subsequent processes relating to the project.

(d) Strategic Risk

This is the risk that the strategy may not be properly implemented. To manage this risk, the Authority has adopted a rational approach to Strategy formulation and performs a periodic evaluation of strategy implementation.

(e) Reputational Risk

This is the risk that adverse publicity will negatively impact the Authority's operations. To manage this risk, the Authority has a policy framework in place to manage all communication on its operations with existing and potential stakeholders.

Governance Structure

The Council of Ministers and Directors who held office during the year and to the date of this report were as below:

(a) Council of Ministers

Name	Title	Resigned/Appointed
Hon. Mathew Nkhuwa MP	Chairperson	
Hon. Fortune Chasi MP	Co - Chairperson	Appointed May 2019
Hon. Dr. Bwalya Ng'andu MP	Member	Appointed July 2019
Hon. Prof. Mthuli Ncube MP	Member	
Hon. Joram M Gumbo MP	Co - Chairperson	Retired May 2019
Hon. Margaret D Mwanakatwe MP	Member	Retired July 2019

Directors Report (continued)

Governance Structure (continued)

(b) Board of Directors

Name	Title	Resigned/Appointed
Mr. Trevor Kaunda	Chairperson	Appointed September 2019
Dr. Gloria S. Magombo	Co - Chairperson	
Mr. Mukuli Chikuba	Member	
Mr George T Guvamatanga	Member	
Mr. Pascal Mubanga	Member	
Engineer Israel Rwodzi	Member	
Brigadier General Emelda Chola (Retired)	Chairperson	Retired September 2019

(c) Executive management

Name	Position
Engineer. Munyaradzi C. Munodawafa	Chief Executive
Mr. Peter Kapinga	Board Secretary/Corporate Services Director
Mr Edward M. Kabwe	Director – Finance
Engineer. David Mazvidza	Director – Projects & Dam Safety
Engineer. Christopher Chisense	Director – Water Resources & Environmental Management

Auditor

PricewaterhouseCoopers, were appointed to fill a casual vacancy in accordance with the Zambezi River Authority Acts No. 17 and 19 for the audit of the annual financial statements for the financial periods from 2017 to 2019.The auditor, PricewaterhouseCoopers, has indicated its willingness to continue in office and a resolution for its reappointment will be proposed at the next Council of Ministers Meeting.

On behalf of the Board:

Board Secretary

01/04/2020
Date

Zambezi River Authority
Statement of Directors' responsibilities
For the year ended 31 December 2019

The Zambezi River Authority Acts No. 17 and 19 require the Directors to prepare annual financial statements for each financial year that give a true and fair view of the state of affairs of the Authority as at the end of the financial year and of its financial performance. It also requires the Directors to ensure that the Authority keeps proper accounting records that disclose, with reasonable accuracy, the financial position of the Authority. The Directors are also responsible for safeguarding the assets of the Authority.

The Directors accept responsibility for the annual financial statements, which have been prepared using appropriate accounting policies supported by reasonable estimates, in conformity with International Financial Reporting Standards and with the requirements of the Zambezi River Authority Acts No. 17 and 19. The Directors are of the opinion that the annual financial statements give a true and fair view of the state of the financial affairs of the Authority and of its financial performance in accordance with International Financial Reporting Standards. The Directors are also responsible for such internal control, as the Directors determine necessary to enable the preparation of annual financial statements that are free from material misstatements, whether due to fraud or error.

Nothing has come to the attention of the Directors to indicate that the Authority will not remain a going concern for at least twelve months from the date of these annual financial statements.

Chairperson

1/4/2020
Date

Co-Chairperson

01/04/2020
Date

pwc

Independent auditor's report

To the Shareholders of Zambezi River Authority

Report on the audit of the annual financial statements

Our opinion

In our opinion, the annual financial statements give a true and fair view of the financial position of Zambezi River Authority as at 31 December 2019, and of its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and the requirements of the Zambezi River Authority Act.

What we have audited

The annual financial statements of Zambezi River Authority are set out on pages 11 to 53 and comprise:

- the statement of financial position as at 31 December 2019;
- the statement of income and expenditure and other comprehensive income for the year then ended;
- the statement of changes in reserve for the year then ended;
- the statement of cash flows for the year then ended; and
- the notes to the annual financial statements, which include a summary of significant accounting policies.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the *"Auditor's responsibilities for the audit of the annual financial statements"* section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the Authority in accordance with the International Ethics Standards Board for Accountants' (IESBA) International Code of Ethics for Professional Accountants (including International Independence Standards) (the "IESBA Code"). We have fulfilled our other ethical responsibilities in accordance with the IESBA Code.

Key audit matters

We have determined that there are no Key Audit Matters to communicate in our report.

PricewaterhouseCoopers , PwC Place, Stand No 2374, Thabo Mbeki Road, P.O. Box 30942, Lusaka, Zambia
T: +260 (0) 211 334000, F: +260 (0) 211 256474, www.pwc.com/zm

A list of Partners is available from the address above

pwc

Report on the audit of the annual financial statements (continued)

Other information

The Directors are responsible for the other information. The other information comprises the Authority's Annual Report but does not include the annual financial statements and our auditor's report thereon.

Our opinion on the annual financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the annual financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the annual financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Directors for the annual financial statements

The Directors are responsible for the preparation of the annual financial statements that give a true and fair view in accordance with IFRS as issued by the IASB and the requirements of the Zambezi River Authority Act and for such internal control as the Directors determine is necessary to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

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

The Directors are responsible for overseeing the Authority's financial reporting process.

Auditor's responsibilities for the audit of the annual financial statements

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

As part of an audit in accordance with ISAs, we exercise professional judgement and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the annual financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

pwc

Report on the audit of the annual financial statements (continued)

Auditor's responsibilities for the audit of the annual financial statements (continued)

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

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

From the matters communicated with the Directors, we determine those matters that were of most significance in the audit of the annual financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Report on other legal and regulatory requirements

The Zambezi River Authority Act requires that in carrying out our audit we consider whether the Authority has kept proper accounting records and other records and other registers required by this Act.

In respect of the foregoing requirements, we have no matter to report.

PricewaterhouseCoopers

PricewaterhouseCoopers
Chartered Accountants
Lusaka

4 May 2020

Charity Mulenga
Practicing Certificate Number: AUD/F000945
Partner signing on behalf of the firm

Zambezi River Authority
Annual Financial Statements
For the year ended 31 December 2019

Statement of income and expenditure and other comprehensive income

			Year ended 31 December			
			2019		2018	
	Notes	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Revenue	5	239,972	314,940	24,151	281,704	25,812
Other income	6	2,362	6,129	238	4,830	584
Fair value gain on financial assets through profit or loss	13	479	674	48	541	45
(Provision)/Reversal of impairment of financial assets	14	(47,902)	(62,844)	(4,821)	2,358	196
Depreciation of property, plant and equipment	9	(37,625)	(49,364)	(3,786)	(32,928)	(3,526)
Depreciation of Investment Property	10	(391)	(513)	(39)	(476)	(39)
Employee benefits expense	8	(203,712)	(277,187)	(20,502)	(110,917)	(10,354)
Governance costs		(8,205)	(10,793)	(826)	(10,024)	(909)
Administration and travel costs		(28,093)	(36,575)	(2,826)	(38,315)	(3,556)
Other operating expenses		(6,178)	(8,273)	(622)	(7,236)	(653)
Results from operating activities		**(89,293)**	**(123,806)**	**(8,985)**	**89,537**	**7,600**
Finance income	7	19,475	24,928	1,960	19,500	1,792
Finance costs	7	(13,422)	(12,844)	(1,351)	(1,607)	(141)
(Deficit)/Surplus for the year		**(83,240)**	**(111,722)**	**(8,376)**	**107,430**	**9,251**
Other comprehensive income for the year						
Items that will be subsequently reclassified to profit or loss:						
Exchange differences on translation		2,428,332	290,445	-	322,394	-
Impairment loss on revaluation		-	-	-	(13,599)	(1,128)
Total other comprehensive income for the year		2,428,332	290,445	-	308,795	(1,128)
Total comprehensive income for the year		**2,345,092**	**178,723**	**(8,376)**	**416,225**	**8,123**

The notes on pages 16 to 53 are an integral part of these financial statements.

Zambezi River Authority
Annual Financial Statements
For the year ended 31 December 2019

Statement of financial position

		As at 31 December				
			2019		2018	
Non - current assets	**Notes**	**ZWL'000**	**ZMW'000**	**US$'000**	**ZMW'000**	**US$'000**
Property, plant and equipment	9	2,699,317	2,190,249	156,559	1,705,008	141,383
Investment property	10	23,951	19,434	1,389	17,215	1,428
Long term investments	11	932	756	54	9,411	780
Other receivables	14	10,005	8,118	580	7,938	658
		2,734,205	2,218,557	158,582	1,739,572	144,249
Current assets						
Inventory	12	2,321	1,888	135	2,362	196
Financial assets at fair value through profit or loss	13	761	617	44	17,123	1,420
Trade and other receivables	14	736,383	597,507	42,710	318,261	26,391
Cash and cash equivalents	15	13,988	11,350	811	23,497	1,948
Restricted cash	16	338,593	274,738	19,638	292,612	24,264
		1,092,046	886,100	63,338	653,855	54,219
Total assets		3,826,251	3,104,657	221,920	2,393,427	198,468
Funds and Liabilities						
Revaluation reserve		1,377,507	1,117,723	79,894	993,393	82,374
Translation reserve		1,090,435	446,614	-	315,198	-
Revenue reserve		30,430	462,866	65,010	539,889	70,906
		2,498,372	2,027,203	144,904	1,848,480	153,281
Non - current liabilities and grants						
Capital grants	19	680,800	552,408	39,486	374,063	31,018
Deferred capital grants	19	-	-	-	4,354	361
		680,800	552,408	39,486	378,417	31,379
Current liabilities						
Borrowings	17	185,590	150,589	10,764	27,665	2,294
Trade and other payables	18	461,489	374,457	26,766	138,865	11,515
		647,079	525,046	37,530	166,530	13,809
Total funds and liabilities		3,826,251	3,104,657	221,920	2,393,427	198,468

The financial statements on pages 11 to 51 were approved for issue by the Board of Directors on 01-04-20 2020 and signed on its behalf by:

Chairperson

Co - Chairperson

The notes on pages 16 to 53 are an integral part of these financial statements.

Statement of changes in reserves (ZWL)

	Revaluation reserves ZWL'000	Translation reserve ZWL'000	Revenue reserve ZWL'000	Total Reserves ZWL'000
Balance at 1 January 2018	85,982	-	59,175	145,157
Surplus for the year	-	-	9,251	9,251
Amortisation of revaluation reserve	(2,480)	-	2,480	-
Revaluation loss	(1,128)	-	-	(1,128)
Total comprehensive income for the year	(3,608)	-	11,731	8,123
Balance at 1 January 2019	82,374	-	70,906	153,280
Deficit for the year	-	-	(83,240)	(83,240)
Amortisation of revaluation reserve	(42,764)	-	42,764	-
Exchange differences on translation	1,337,897	1,090,435	-	2,428,332
	1,295,133	1,090,435	(40,476)	2,345,092
Balance at 31 December 2019	1,377,507	1,090,435	30,430	2,498,372

Statement of changes in reserves (ZMW)

	Revaluation reserve ZMW'000	Translation reserve ZMW'000	Revenue reserve ZMW'000	Total reserves ZMW'000
Balance at 1 January 2018	848,384	181,320	424,470	1,454,174
Change of Accounting Policy note 15	-	-	(21,919)	(21,919)
Restated total equity as at 1 January 2018	848,384	181,320	402,551	1,432,255
Surplus for the year	-	-	107,430	107,430
Amortisation of revaluation reserve	(29,908)	-	29,908	-
Revaluation loss	(13,599)	-	-	(13,599)
Exchange differences on translation	188,516	133,878	-	322,394
Total comprehensive income for the year	145,009	133,878	137,338	416,225
Balance at 1 January 2019	993,393	315,198	539,889	1,848,480
Deficit for the year	-	-	(111,722)	(111,722)
Amortisation of revaluation reserve	(34,699)	-	34,699	-
Exchange differences on translation	159,029	131,416	-	290,445
	124,330	131,416	(77,023)	178,723
Balance at 31 December 2019	1,117,723	446,614	462,866	2,027,203

Statement of changes in reserves (US$)

	Revaluation reserves US$'000	Revenue reserve US$'000	Total Reserves US$'000
Balance at 1 January 2018	85,982	59,175	145,157
Surplus for the year	-	9,251	9,251
Amortisation of revaluation reserve	(2,480)	2,480	-
Revaluation loss	(1,128)	-	(1,128)
Total comprehensive income for the year	(3,608)	11,731	8,123
Balance at 1 January 2019	82,374	70,906	153,280
Deficit for the year	-	(8,376)	(8,376)
Amortisation of revaluation reserve	(2,480)	2,480	-
	(2,480)	(5,896)	(8,376)
Balance at 31 December 2019	79,894	65,010	144,904

The notes on pages 16 to 53 are an integral part of these financial statements.

Zambezi River Authority
Annual Financial Statements
For the year ended 31 December 2019

Statement of cash flows

	Year ended 31 December				
		2019		2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Cash Inflow from Operating Activities					
Operating Results	(83,240)	(111,722)	(8,376)	107,430	9,251
Depreciation 0f Property plant & Equipment	37,625	49,364	3,786	32,928	3,526
Depreciation on investment property	391	513	39	476	39
Receivables impairment provision	47,902	62,844	4,821	(2,358)	(196)
Gain on disposal of assets	(967)	(1,233)	(97)	(2,640)	(380)
Interest received	(19,475)	(24,928)	(1,960)	(19,500)	(1,792)
Fair value gain on financial assets through profit and loss	(479)	(674)	(48)	(541)	(45)
Increase in accounts receivable	(837,011)	(350,933)	(21,059)	(100,998)	(4,225)
Restricted cash	(314,329)	17,874	4,626	(292,612)	(24,264)
Increase in Inventories	(2,125)	474	61	(680)	(26)
Increase in accounts payables	449,974	235,592	15,251	80,089	5,560
Cash Generated From Operations	(721,734)	(122,829)	(2,956)	(198,406)	(12,552)
Interest received	19,475	24,928	1,960	19,500	1,792
Net Cash Inflow from Operating Activities	(702,259)	(97,901)	(996)	(178,906)	(10,760)
Investing Activities					
Purchase of property, plant and equipment	(187,562)	(246,068)	(18,876)	(57,416)	(4,722)
Proceeds from disposal of property plant and equipment	108	142	11	252	26
Proceeds from financial assets at fair value through profit and loss	14,938	19,428	1,490	-	-
Payments to purchase assets at fair value through profit and loss	(660)	(866)	(66)	(7,996)	(505)
Net Cash Outflow on Investing Activities	(173,176)	(227,364)	(17,441)	(65,160)	(5,201)
Financing Activities					
Revenue grants Received	84,151	110,401	8,468	85,989	1,742
Proceeds from long-term Loans	82,009	115,464	8,254	14,461	1,199
Loan repayment	-	-	-	(13,217)	(1,096)
Net Cash Outflow on Financing	166,160	225,865	16,722	87,233	1,845
Changes in Cash and Cash Equivalents	(709,275)	(99,400)	(1,715)	(156,833)	(14,116)
Effects of changes in exchange rates on cash held in foreign currencies	721,315	87,253	578	25,062	328
Cash and Cash Equivalents at start of year	1,948	23,497	1,948	155,268	15,736
Cash and Cash Equivalents at end of year	**13,988**	**11,350**	**811**	**23,497**	**1,948**

The notes on pages 16 to 53 are an integral part of these financial statements.

Notes to the annual financial statements

1 General information

The Zambezi River Authority ("the Authority") is mandated to manage the Zambezi River, which flows between Zambia and Zimbabwe, the two contracting states' common borders. The Authority is also charged with the responsibility to maintain the Kariba Dam Complex (Kariba Complex) and construct and maintain other dams or infrastructure on the river forming the border between the two states. Its registered Head Office is:

Kariba House
32 Cha Cha Cha Road
P O Box 30233
Lusaka, Zambia.

2 Summary of significant accounting policies

The principal accounting policies applied in the preparation of these financial statements are set out below. These policies have been consistently applied to all years presented, unless otherwise stated.

(a) Basis of preparation

The annual financial statements of Zambezi River Authority have been prepared in accordance with International Financial Reporting Standards (IFRS) and interpretations issued by the IFRS Interpretations Committee (IFRS IC) applicable to entities reporting under IFRS and the requirements of the Zambezi River Authority Act. The financial statements comply with IFRS as issued by the International Accounting Standards Board (IASB).

The measurement basis applied is the historical cost basis, as modified by the revaluation of buildings and financial assets at fair value through profit or loss. The annual financial statements are presented in United States Dollars (US$), Zambia Kwacha ("ZMW" or "K") and in Zimbabwean Dollars ("ZWL') rounded to the nearest dollar or kwacha.

In accordance with the Zambezi River Authority Acts No. 17 and 19, the annual financial statements for the period ended 31 December 2019 have been approved for issue by the Directors.

The preparation of annual financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires the Directors to exercise judgement in the process of applying the Authority's accounting policies. The areas involving a higher degree of judgement or complexity, or where assumptions and estimates are significant to the annual financial statements, are disclosed in Note 3.

(b) Changes in accounting policy and disclosures

(i) New and amended standards adopted by the Authority

The Authority has adopted all the new, revised or amended accounting pronouncements as issued by the International and Accounting Standards Board (IASB), which were effective for the Authority from 1 January 2019.

The amendments listed below did not have any material impact on the amounts recognised in prior periods and are not expected to significantly affect the current or future period:

(i) IFRS 16 Leases
(ii) Prepayment Features with Negative Compensation Amendments to IFRS 9
(iii) Interpretation 23 Uncertainty over income Tax Treatments
(iv) Annual Improvements to IFRS Standards 2015-2017 Cycle

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(b) Changes in accounting policy and disclosures (continued)
(i) New and amended standards adopted by the Authority

IFRS 16 Leases

IFRS 16 Leases, replaces the current guidance in IAS 17 and is a far-reaching change in accounting by lessees in particular.

Under IAS 17, lessees were required to make a distinction between a finance lease (on balance sheet) and an operating lease (off balance sheet). IFRS 16 now requires lessees to recognise a lease liability reflecting future lease payments and a 'right-of-use asset' for virtually all lease contracts. The IASB has included an optional exemption for certain short-term leases and leases of low-value assets; however, this exemption can only be applied by lessees.

For lessors, the accounting stays almost the same. However, as the IASB has updated the guidance on the definition of a lease (as well as the guidance on the combination and separation of contracts), lessors will also be affected by the new standard.

At the very least, the new accounting model for lessees is expected to impact negotiations between lessors and lessees. Under IFRS 16, a contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

IFRS 16 supersedes IAS 17, 'Leases', IFRIC 4, 'Determining whether an Arrangement contains a Lease', SIC 15, 'Operating Leases – Incentives' and SIC 27, 'Evaluating the Substance of Transactions Involving the Legal Form of a Lease'.

IFRS 16 has no material impact on the Authority's accounting practices in the current period, as there are no leased assets except for office space rented for Harare office operations.

Prepayment Features with Negative Compensation Amendments to IFRS 9 Financial Instruments

The narrow-scope amendment covers two issues:

- The amendments allow companies to measure particular pre-payable financial assets with so-called negative compensation at amortised cost or at fair value through other comprehensive income if a specified condition is met—instead of at fair value through profit or loss. It is likely to have the biggest impact on banks and other financial services entities.

How to account for the modification of a financial liability. The amendment confirms that most such modifications will result in immediate recognition of a gain or loss. This is a change from common practice under IAS 39 today and will affect all kinds of entities that have renegotiated borrowings.

Interpretation 23 Uncertainty over income Tax Treatments

IFRIC 23 provides a framework to consider, recognise and measure the accounting impact of tax uncertainties. The Interpretation provides specific guidance in several areas where previously IAS 12 was silent. The Interpretation also explains when to reconsider the accounting for a tax uncertainty. Most entities will have developed a model to account for tax uncertainties in the absence of specific guidance in IAS 12. These models might, in some circumstances, be inconsistent with IFRIC 23 and the impact on tax accounting could be material. The interpretation will not have an impact on the Authority's accounting practices in the year under review because it is exempt from payment of taxes on its income, profits and capital gains.

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(b) Changes in accounting policy and disclosures (continued)

(i) New and amended standards adopted by the Authority

Annual Improvements to IFRS Standards 2015-2017 Cycle

These amendments include minor changes to:
- IFRS 3, 'Business combination' - a company remeasures its previously held interest in a joint operation when it obtains control of the business.
- IFRS 11,'Joint arrangements', - a company does not remeasure its previously held interest in a joint operation when it obtains joint control of the business.
- IAS 12,' Income taxes' - The amendment clarified that the income tax consequences of dividends on financial instruments classified as equity should be recognised according to where the past transactions or events that generated distributable profits were recognised.

IAS 23,' Borrowing costs' - a company treats as part of general borrowings any borrowing originally made to develop an asset when the asset is ready for its intended use or sale.

IAS 23 is the most relevant to the Authority's reporting as there is a significant component of loan financing in the Kariba Dam Rehabilitation project. The impact of the improvement will however only take effect once the project works have been completed which is likely to be between 2023 and 2025.

(ii) *New and amended standards not early adopted by the Authority*

Certain new accounting standards and interpretations have been published that are not mandatory for 31 December 2019 reporting periods and have not been early adopted by the Authority. These standards are not expected to have a material impact on the entity in the current or future reporting periods and on foreseeable future transactions.

IFRS 17 Insurance Contracts: IFRS 17 was issued in May 2017 as replacement for IFRS 4 Insurance Contracts. It requires a current measurement model where estimates are re-measured in each reporting period.

Definition of a Business –Amendments to IFRS 3: The amended definition of a business requires an acquisition to include an input and a substantive process that together significantly contribute to the ability to create outputs. The definition of the term outputs' is amended to focus on goods and services provided to customers, generating investment income and other income, and it excludes returns in the form of lower costs and other economic benefits. The amendments will likely result in more acquisitions being accounted for as asset acquisitions.

The amendments are effective for financial periods beginning 1 January 2020. The Company does not expect the new amendments to have a material impact on its annual financial statements.

Revised Conceptual Framework for Financial Reporting: The IASB has issued a revised Conceptual Framework which will be used in standard-setting decisions with immediate effect. Key changes include:

(i) increasing the prominence of stewardship in the objective of financial reporting
(ii) reinstating prudence as a component of neutrality
(iii) defining a reporting entity, which may be a legal entity, or a portion of an entity
(iv) revising the definitions of an asset and a liability
(v) removing the probability threshold for recognition and adding guidance on derecognition
(vi) adding guidance on different measurement basis, and

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(b) Changes in accounting policy and disclosures (continued)

(ii) New standards and interpretations not yet adopted (continued)

Revised Conceptual Framework for Financial Reporting (continued)

(vii) stating that profit or loss is the primary performance indicator and that, in principle, income and expenses in other comprehensive income should be recycled where this enhances the relevance or faithful representation of the financial statements.

No changes will be made to any of the current accounting standards. However, entities that rely on the Framework in determining their accounting policies for transactions, events or conditions that are not otherwise dealt with under the accounting standards will need to apply the revised Framework from 1 January 2020. These entities will need to consider whether their accounting policies are still appropriate under the revised Framework.

The new framework is effective for financial periods beginning 1 January 2020. The Company does not expect the new framework to have a material impact on its annual financial statements.

Sale or contribution of assets between an investor and its associate or joint venture – *Amendments to IFRS 10 and IAS 28:*

The IASB has made limited scope amendments to IFRS 10 financial statements and IAS 28 Investments in associates and joint ventures. The amendments clarify the accounting treatment for sales or contribution of assets between an investor and its associates or joint ventures. They confirm that the accounting treatment depends on whether the nonmonetary assets sold or contributed to an associate or joint venture constitute a 'business' (as defined in IFRS 3 Business Combinations). Where the non-monetary assets constitute a business, the investor will recognise the full gain or loss on the sale or contribution of assets. If the assets do not meet the definition of a business, the gain or loss is recognised by the investor only to the extent of the other investor's interests in the associate or joint venture. The amendments apply prospectively. In December 2015 the IASB decided to defer the application date of this amendment until such time as the IASB has finalised its research project on the equity method.

The amendments apply prospectively. In December 2015 the IASB decided to defer the application date of this amendment until such time as the IASB has finalised its research project on the equity method.

The above standards are expected not to have a material impact on the Authority.

There are no other IFRSs or IFRIC interpretations that are not yet effective that would be expected to have a material impact on the Authority.

(c) Foreign currency translation

(i) Functional and presentation currency

The Authority as a bi national institution has operations in both Zambia and Zimbabwe and, prior to the introduction of the RTGS Dollar on 22 February 2019, the Authority's presentation currencies were the Zambian Kwacha ("ZMW") and the United States Dollar ("US$"). However, following the adoption of the Zimbabwe Dollar ("ZWL") as sole legal tender for Zimbabwe on 24th June 2019, the Authority's presentation currencies are the Zambian Kwacha ("ZMW"), the Zimbabwe Dollar ("ZWL") and, United States Dollar ("US$"). The functional currency of the Authority is United States Dollars.

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(c) Foreign currency translation (continued)

(i) Functional and presentation currency (continued)

Comparative statement of financial position items on the Zimbabwean ledger have been translated on a 1:1 ratio from United States Dollars (“US$”) to the Zimbabwe Dollar (“ZWL”) as provided for in SI 33 and SI 142 of 2019 respectively as at 1 January 2019 and, thereafter translated using the closing exchange rate at the end of 2019. Consequently, the closing US$ balances for 2018 have been used as the ZWL comparative information for 2018 converted on a 1:1 basis, as there was no ZWL prior to February 2019. Income statement items on the other hand have been translated at an average rate as provided for in *IAS 23.*

Any differences arising from this process have been recognised in other comprehensive income and accumulated in the translation reserve in equity.

Equity items have been translated at the closing exchange rate. Exchange differences arising on retranslating equity items and opening net assets have been transferred to the translation reserve within equity.

(ii) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions or valuations where items are re-measured. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the income statement.

Foreign exchange gains and losses that relate to borrowings and cash and cash equivalents are presented in income and expenditure within ‘finance income or cost’. All other foreign exchange gains and losses are presented in income or expenditure within ‘other income or expenses’.

(d) Revenue recognition

Revenue comprises the fair value of the consideration received or receivable for the sale of goods and services in the ordinary course of the Authority’s activities.

The Authority identifies contracts with customers, the performance obligations within it, the transaction price, and its allocation to the performance obligations. Revenue is recognised when control of the product passes to the customer and is measured based on expected consideration. It is the Authority’s policy to recognise revenue from a contract when it has been approved by both parties, rights have been clearly identified, payment terms have been defined, the contract has commercial substance, and collectability has been ascertained as probable.

Collectability of customer’s payments is ascertained based on the customer’s historical records, guarantees provided, the customer’s industry and advance payments made if any.

Water Sales Revenue is a product of the following:

- Water used as measured using flow meter equipment
- The agreed annual fixed charge
- The variable charge

Disaggregation of revenue from contract with customers

The Authority derives revenue from one source i.e. sale of water to Kariba Hydro Power Company (KHPC) and ZESCO Limited (ZESCO). The Authority has determined that the disaggregation of revenue based on the criteria of type of products meets the revenue disaggregation disclosure requirement of IFRS 15 as it depicts how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. See further details in note 5.

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(e) Other income

Other income is recognised on an accruals basis in accordance with the substance of the relevant agreements.

(f) Interest income

Interest income is recognised using the effective interest method.

(g) Rental income

Rental income from properties is recognised in the income and expenditure on a straight-line basis over the term of the relevant lease agreement.

(h) Property, plant, and equipment

Land and buildings are recognised at fair value based on periodic, but at least triennial, valuations by external independent valuers, less subsequent depreciation for buildings. A revaluation surplus is credited to revaluation reserve. All other property, plant and equipment is stated at historical cost less accumulated depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of the items.

Construction work in progress is carried at cost and is not depreciated until the asset is brought into use.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Authority and the cost of the item can be measured reliably. The carrying amount of any component accounted for as a separate asset is derecognised when replaced. All other repairs and maintenance are charged to income and expenditure during the reporting period in which they are incurred.

Increases in the carrying amounts arising on revaluation of buildings are recognised in other comprehensive income and accumulated in the revaluation reserve. To the extent that the increase reverses a decrease previously recognised in income and expenditure, the increase is first recognised in income and expenditure. Decreases that reverse previous increases of the same asset are first recognised in other comprehensive income to the extent of the remaining surplus attributable to the asset; all other decreases are charged to income and expenditure. Each year, the difference between depreciation based on the revalued carrying amount of the asset charged to income and expenditure and depreciation based on the asset's original cost is reclassified from the property, plant, and equipment revaluation surplus to revenue reserve.

Land is not depreciated. Depreciation on other assets is calculated using the straight-line method to allocate their cost or revalued amounts to their residual values over their estimated useful lives, as follows:

Buildings	2.5%
Kariba Dam Complex	2.5%
Motor Vehicles	25%
Equipment and Machinery	10 - 20%
Furniture and Fittings	20%
Computers	25%

The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount. Property, plant, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units).

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

h) Property, plant, and equipment (Continued)

Non-financial assets that suffered impairment are reviewed for possible reversal of the impairment at each reporting date.

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount and are included in income and expenditure. When revalued assets are sold, the amounts included in the revaluation reserve relating to that asset are transferred to retained earnings.

(i) Investment Property

Property that is held for long-term rental yields or for capital appreciation or both, and that is not occupied by the Authority is classified as investment property. Investment property also includes property that is being constructed or developed for future use as investment property.

All investment property is stated at historical cost less accumulated depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of the items. Subsequent expenditure is capitalised to the asset's carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Authority and the cost of the item can be measured reliably. All other repairs and maintenance costs are expensed when incurred. When part of an investment property is replaced, the carrying amount of the replaced part is derecognised.

Depreciation on investment property is calculated using the straight-line method to allocate their cost to their residual values over their estimated useful lives over 40 years.

Investment properties are derecognised when they have been disposed. If an investment property becomes owner-occupied, it is reclassified as property, plant, and equipment. Its fair value at the date of reclassification becomes its cost for subsequent accounting purposes.

If an item of owner-occupied property becomes an investment property because its use has changed, any difference resulting between the carrying amount and the fair value of this item at the date of transfer is treated in the same way as a revaluation under IAS 16. Any resulting increase in the carrying amount of the property is recognised in income statement to the extent that it reverses a previous impairment loss, with any remaining increase recognised in other comprehensive income and increase directly to equity in revaluation surplus within equity. Any resulting decrease in the carrying amount of the property is initially charged in other comprehensive income against any previously recognised revaluation surplus, with any remaining decrease charged to income and expenditure.

(j) Inventories

Inventories are stated at the lower of cost and net realisable value. Cost is determined using the average cost method. Net realisable value is the estimated selling price in the ordinary course of business, less applicable variable selling expenses.

(k) Financial Instruments

Financial instruments comprise trade and other receivables (excluding prepayments), financial assets at fair value through profit or loss, cash and cash equivalents, borrowings, other non-current liabilities (excluding provisions) and trade and other payables.

Financial assets and liabilities are recognised in the Authority's statement of financial position when the Authority becomes a party to the contractual provisions of the instruments.

Notes to the annual financial statements

2 Summary of significant accounting policies (continued)

(k) Financial Instruments (continued)

All financial assets and liabilities are initially measured at fair value, including transaction costs except for those classified as at fair value through profit or loss which are initially measured at fair value, excluding transaction costs. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognised immediately in income and expenditure. Financial assets are recognised (derecognised) on the date the Authority commits to purchase (sell) the instruments (trade date accounting).

Financial assets and liabilities are classified as current if expected to be realised or settled within 12 months; if not, they are classified as non-current.

(i). Offsetting financial instruments

Offsetting of financial assets and liabilities is applied when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously. The net amount is reported in the statement of financial position.

(ii). Financial instrument classification

The Authority classifies financial assets on initial recognition as measured at amortised cost, or fair value through profit or loss on the basis of the Authority's business model for managing the financial asset and the cash flow characteristics of the financial asset. The Authority classifies its financial instruments into the following categories:

Amortised cost

The asset is held within a business model with the objective to collect the contractual cash flows; and the contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal outstanding.

Financial assets are not reclassified unless the Authority changes its business model. In rare circumstances where the Authority does change its business model, reclassifications are done prospectively from the date that the Authority changes its business model.

(iii). Financial liabilities are classified as measured at amortised cost.

(iv). Subsequent measurement

Subsequent to initial recognition, financial instruments are measured as described below.

Financial assets at fair value through profit and loss: These financial assets are subsequently measured at fair value and changes therein (including any interest or dividend income) are recognised in income and expenditure.

Financial assets at amortised cost: These financial assets are subsequently measured at amortised cost using the effective interest method, less any impairment losses. Interest income, foreign exchange gains and losses and impairments are recognised in income and expenditure. Any gain or loss on derecognition is recognised in income and expenditure.

Financial liabilities comprise trade and other payables, borrowings, and other non-current liabilities (excluding provisions). All financial liabilities are subsequently measured at amortised cost using the effective interest method.

Notes to the annual financial statements

2 Summary of significant accounting policies (Continued)

(k) Financial Instruments (Continued)

(v). De-recognition

Financial assets are derecognised when the rights to receive cash flows from the assets have expired or have been transferred and the Authority has transferred substantially all risks and rewards of ownership. Financial liabilities are derecognised when the obligations specified in the contracts are discharged, cancelled, or expires.

(vi). Substantial modification

A substantial modification of the terms of an existing debt instrument or part of it is accounted for as an extinguishment of the original debt instrument and the recognition of a new debt instrument. Substantial modification (continued). Gains or losses arising from the modification of the terms of a debt instrument are recognised immediately in income and expenditure where the modification does not result in the derecognition of the existing instrument.

(vii). Impairment

Under IFRS 9 the Authority calculates allowance for credit losses as expected credit losses (ECL's) for financial assets measured at amortised cost and contract assets. ECL's are a probability weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Authority expects to receive). ECLs are discounted at the original effective interest rate of the financial asset.

The Authority applies the simplified approach to determine the ECL for trade receivables and contract assets. This results in calculating lifetime expected credit losses for trade receivables and contract assets. ECL for trade receivables is calculated using a provision matrix. Refer to note 21 for more detail about ECL and how this is calculated.

(l) Trade receivables

Trade receivables are amounts due from customers for services rendered in the ordinary course of business. If collection is expected in one year or less (or in the normal operating cycle of the business if longer), they are a classified as current asset. If not, they are presented as non-current assets.

Trade receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method less provision for impairment.

(m) Cash and cash equivalents

Cash and cash equivalents include cash in hand, deposits held at call with banks, other short term highly liquid investments with original maturities of three months or less.

(n) Borrowings

Borrowings are initially recognised at fair value, net of transaction costs incurred. Borrowings are subsequently measured at amortised cost. Any difference between the proceeds (net of transaction costs) and the redemption amount is recognised in income and expenditure over the period of the borrowings using the effective interest method. Fees paid on the establishment of loan facilities are recognised as transaction costs of the loan to the extent that it is probable that some or all of the facility will be drawn down. In this case, the fee is deferred until the draw down occurs. To the extent there is no evidence that it is probable that some or all of the facility will be drawn down, the fee is capitalised as a prepayment for liquidity services and amortised over the period of the facility to which it relates.

Notes to the annual financial statements

2 Summary of significant accounting policies (Continued)

(n) Borrowings (continued)

Borrowings are removed from the statement of financial position when the obligation specified in the contract is discharged, cancelled or expired. The difference between the carrying amount of a financial liability that has been extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in income and expenditure as other income or finance costs. Borrowings are classified as current liabilities unless the Authority has an unconditional right to defer settlement of the liability for at least 12 months after the reporting period.

(n) Borrowing costs

General and specific borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying asset are capitalised during the period of time that is required to complete and prepare the asset for its intended use or sale. Qualifying assets are assets that necessarily take a substantial period of time to get ready for their intended use or sale.

Other borrowing costs are expensed in the period in which they are incurred.

(0) Trade payables

These amounts represent liabilities for goods and services provided to the Authority prior to the end of financial year which are unpaid. The amounts are unsecured and are usually paid within 30 days of recognition. Trade and other payables are presented as current liabilities unless payment is not due within 12 months after the reporting period. They are recognised initially at their fair value and subsequently measured at amortised cost using the effective interest method.

(p) Employee benefits

(i) Retirement benefit obligations

The Authority subscribes to defined contribution schemes for the benefit of its permanent and pensionable staff. The funds are managed by Prudential Insurance for the Zambian employees and Zimnat life Assurance for the Zimbabwean employees. Both funds are overseen by a Board of Trustees composed of management and employee representative trustees.

A defined contribution plan is a pension plan under which the Authority pays fixed contributions into a separate entity. The Authority has no legal or constructive obligations to pay further contributions if the fund does not hold sufficient assets to pay all employees the benefits relating to employee service in the current and prior periods.

The Authority's contributions to the defined contribution schemes are charged to income and expenditure in the period to which they relate. The Authority has no further obligation once contributions have been paid.

The Authority and all its employees contribute to the appropriate National Social Security Funds in the two Contracting States, which are defined contribution schemes.

(ii) Termination benefits

Termination benefits are payable when employment is terminated by the Authority before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. The Authority recognises termination benefits at the earlier of the following dates: (a) when the Authority can no longer withdraw the offer of those benefits; and (b) when the entity recognises costs for a restructuring that is within the scope of IAS 37 and involves the payment of termination benefits.

Notes to the annual financial statements

2 Summary of significant accounting policies (Continued)

(p) Employee benefits *(continued)*

(ii) Termination benefits *(continued)*

In the case of an offer made to encourage voluntary redundancy, the termination benefits are measured based on the number of employees expected to accept the offer.

(q) Grants

Grants are not recognised until there is reasonable assurance that the Authority will comply with the conditions attaching to them and that the grants will be received. Grants whose primary condition is that the Authority should purchase, or otherwise acquire non-current assets are recognised as capital grants in the statement of financial position and transferred to income and expenditure on a systematic and rational basis over the useful lives of the related assets. Other grants are recognised as deferred revenue over the periods necessary to match them with the costs for which they are intended to compensate, on a systematic basis.

Compensations for expenses or losses already incurred or for the purpose of giving immediate financial support to the Authority with no future related costs are recognised in income and expenditure in the period in which they become receivable.

(r) Income tax

The Authority is exempted from paying taxes on capital, income, or profit under Articles 17 and 19 of the Zambezi River Authority Acts, 1987 of Zambia and Zimbabwe respectively. As such no allowance is made for current or deferred taxes

(s) Comparatives

Where necessary, prior year comparatives have been reclassified in line with current year presentation.

3. Critical accounting estimates and judgements

Estimates and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. Critical estimates made include the following:

Buildings

The Authority owns land and buildings classified either as residential or commercial properties. The said properties are carried at valuation with the valuation exercise performed triannual. The valuation is conducted by professional external valuers, who apply various techniques that consider among other things:

- Location
- Value of surrounding properties
- Impact of planned investments in the area

The land and buildings were revalued in 2018 using the sales comparison approach based on recent sales of comparable properties in the area.

Notes to the annual financial statements

4 Segmental Reporting

The Authority operates in two geographical segments i.e. Zambia and Zimbabwe. An operating segment is a component of the Authority for which discrete financial information is available; engages in business activities (earns revenue, incurs expenses); and for which operating results are regularly reviewed to assess performance and to make resource allocation decisions (to the segment). The Authority currently derives its revenues from water sales to ZESCO Limited and Kariba Hydro Power Company (Pvt) Limited ("KHPC"). The Chief Executive is presented with the results of each segment for the purposes of resource allocation and assessment of the results of each segment.

Segment performance:

The operating income is based on water tariffs charged based on the water consumed in the generation of electricity as invoiced to the two utility companies, ZESCO Limited and Kariba Hydro Power Company (Pvt) Ltd. The formula used is intended to provide the Authority with sufficient revenues to carry out its mandate and not to generate profits.

Segment information is presented in respect of the Authority's business. The primary format is based on the Authority's geographical segments and then on the management and internal reporting structure. Segment results presented below are based on income and expenses directly attributable to a segment as well as those that can be allocated on a reasonable basis.

	Year ended 31 December 2019		
Amounts are Stated in ZWL'000	**Zambia**	**Zimbabwe**	**Consolidated**
Revenue	129,280	110,692	239,972
Other income	16,695	5,621	22,316
Segment income	145,975	116,313	262,288
<u>Segment costs</u>			
Board expenses	4,750	3,455	8,205
Repairs and maintenance	1,280	3,372	4,652
Staff costs	132,072	71,640	203,712
Other administration expenses	56,723	72,236	128,959
	194,825	150,703	345,528
Net Deficit	**(48,850)**	**(34,390)**	**(83,240)**

	Year ended 31 December 2019		
Amounts are Stated in ZMW'000	**Zambia**	**Zimbabwe**	**Consolidated**
Revenue	171,651	143,289	314,940
Other income	25,527	6,204	31,731
Segment income	197,178	149,493	346,671
<u>Segment costs</u>			
Board expenses	6,237	4,556	10,793
Repairs and maintenance	1,656	2,411	4,067
Staff costs	185,308	91,879	277,187
Other administration expenses	91,819	74,527	166,346
	285,020	173,373	458,393
Net Deficit	**(87,842)**	**(23,880)**	**(111,722)**

Notes to the annual financial statements

4 Segmental Reporting (continued)

	Year ended 31 December 2019		
Amounts are Stated in US$'000	**Zambia**	**Zimbabwe**	**Consolidated**
Revenue	13,011	11,140	24,151
Other income	1,680	566	2,246
Segment income	14,691	11,706	26,397
Segment costs			
Board expenses	478	348	826
Repairs and maintenance	129	339	468
Staff costs	13,292	7,210	20,502
Other administration expenses	7,163	5,814	12,977
	21,062	13,711	34,773
Net Deficit	**(6,371)**	**(2,005)**	**(8,376)**

	Year ended 31 December 2018		
Amounts are Stated in ZMW'000	**Zambia**	**Zimbabwe**	**Consolidated**
Revenue	141,513	140,191	281,704
Other income	25,269	1,961	27,230
Segment income	166,782	142,152	308,934
Segment costs			
Board expenses	6,048	3,976	10,024
Repairs and maintenance	31,267	28,754	60,021
Staff costs	71,320	39,598	110,918
Other administration expenses	12 662	7,879	20,541
	121 297	80,207	201,504
Net Surplus	**45 485**	**61 945**	**107,430**

	Year ended 31 December 2018		
Amounts are Stated in US$'000	**Zambia**	**Zimbabwe**	**Consolidated**
Revenue	12,852	12,960	25,812
Other income	2,204	413	2,617
Segment income	15,056	13,373	28,429
Segment costs			
Board expenses	542	366	908
Repairs and maintenance	3,113	2,899	6,012
Staff costs	6,643	3,712	10,355
Other administration expenses	1,105	798	1,903
	11,403	7,775	19 178
Net Surplus	**3,653**	**5,598**	**9,251**

Notes to the annual financial statements

5 Revenue from contracts with customers

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Water Sales Variable Charge	174,892	229,042	17,601	211,578	19,262
Water Sales Fixed Charge	65,080	85,898	6,550	70,126	6,550
	239,972	314,940	24,151	281,704	25,812

All the revenues of the Authority are recognised at a point in time.

a) Water sales

The Authority uses a formula for the sale of water to ZESCO Limited ('ZESCO") and Kariba Hydro Power Company (Pvt) Limited ("KHPC") which was adopted in 1998. The formula was derived to ensure the costs associated with the operations of the Authority were covered by the fees charged to ZESCO Limited and KHPC (Pvt) Limited.

The fees chargeable are contained in a tripartite Water Purchase Agreement signed between the Authority and the Utilities and are split between a fixed charge and a variable charge which is dependent on the cubic meters of water dispensed through the generators. In the year 2019, the Authority applied a 2% increment on the variable charge as per the said agreement.

b) Water allocation

During the year ended 31 December 2019, the Authority allocated a total of 34 bm³ of water to be shared equally between the Utilities for purposes of power generation. The Utilities' combined usage in the year was 36.02 bm³ resulting in overutilisation of 5.9%. Of this overutilisation KHPC (Pvt) Limited contributed 0.22 bm³ whereas, ZESCO Limited contributed 1.22 bm³ translating to 1.3% and 10.3% respectively. Accordingly, an over utilisation penalty of US$ 1.196 million was levied on ZESCO Limited. There was, however, no charge on KHPC (Pvt) Limited as the Utility did not breach the 5% threshold as detailed in (c) below.

c) Over utilisation

When there is over utilisation of water above annual base allocation, the following penalties apply;

i. Over utilisation by up to 5% of annual allocation, no penalty shall be chargeable;
ii. Over utilisation of up to 20% of annual allocation, extra volume shall be charged at a water tariff in US$/m³ x 1.5
iii. Over utilization by over 20% of annual allocation, extra volume shall be charged at a water tariff in US$/m³ x 2

6 Other income

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Rent received from investment properties	864	1,116	87	1,419	135
Profit on disposal of property, plant, and equipment	967	1,233	97	2,640	380
Miscellaneous income	263	3,426	27	344	30
Sale of data	4	6	1	2	-
Toll fees	262	345	26	410	38
Plant hire charges	2	3	-	15	1
	2,362	6,129	238	4,830	584

Notes to the annual financial statements

7 Finance income

	2019			2018	
	ZWL'000	**ZMW'000**	**US$'000**	**ZMW'000**	**US$'000**
Finance income					
Interest on overdue accounts	14,286	19,111	1,438	9,814	922
Interest on term deposits	1,883	1,249	189	5,386	496
Interest on staff housing loans	3,161	4,378	318	2,705	240
Interest on staff car loans	145	190	15	1,595	134
	19,475	24,928	1,960	19,500	1,792
Finance cost					
Exchange losses on cash and cash equivalents	(13,422)	(12,844)	(1,351)	(1,607)	(141)
Net finance income	6,053	12,084	609	17,893	1,651

8 Employee benefits expense

Salaries and wages	71,581	95,499	7,204	86,386	8090
Pension	5,871	7,709	591	7,620	714
Gratuity	3,828	4,992	385	4,233	397
Retrenchment costs	112,876	156,124	11,360	-	-
Other employment costs	9,556	12,863	962	12,678	1,153
	203,712	277,187	20,502	110,917	10,354

Notes to the annual financial statements

9 Property, plant, and equipment

	Kariba Dam Complex	Land and buildings	Motor vehicles & Furniture & fittings	Capital work in progress	Total
As at 1 January 2018	**ZWL'000**	**ZWL'000**	**ZWL'000**	**ZWL'000**	**ZWL'000**
Cost or valuation	101,152	9,533	9,101	48,350	168,136
Accumulated depreciation	(19,671)	(1,166)	(6,334)	-	(27,171)
Net book amount	81,481	8,367	2,767	48,350	140,965
Year ended 31 December 2018					
Opening net book amount	81,481	8,367	2,767	48,350	140,965
Additions	-	-	535	4,187	4,722
Transfers from WIP	-	39	-	(39)	-
Scrapping/Disposal	-	(251)	(3)	-	(254)
Depreciation write off	-	-	(26)	-	(26)
Revaluation Loss	-	(1,136)	-	-	(1,136)
Elimination of Depreciation on revaluation	-	637	-	1	638
Depreciation charge	(2,545)	(239)	(742)	-	(3,526)
Closing net book amount	78,936	7,417	2,531	52,499	141,383
At 31 December 2018					
Cost or valuation	101,152	7,417	9,615	52,499	170,683
Accumulated depreciation	(22,216)	-	(7,084)	-	(29,300)
Net book amount	78,936	7,417	2,531	52,499	141,383
Year ended 31 December 2019					
Opening net book amount	78,936	7,417	2,531	52,499	141,383
Additions	-	-	4,095	183,467	187,562
Transfers from WIP	-	164	3,267	(3,431)	-
Scrapping/Disposal	-	-	(117)	-	(117)
Depreciation write - off			974		974
Effects of foreign exchange difference	1,263,444	119,104	39,584	985,008	2,407,140
Depreciation charge	(25,301)	(2,029)	(10,295)	-	(37,625)
Closing net book amount	1,317,079	124,656	40,039	1,217,543	2,699,317
At 31 December 2019					
Cost or valuation	101,152	7,581	12,875	232,535	354,143
Accumulated depreciation	(47,517)	(2,029)	(12,420)	-	(61,966)
Effects of foreign exchange difference	1,263,444	119,104	39,584	985,008	2,407,140
Net book amount	1,317,079	124,656	40,039	1,217,543	2,699,317

Notes to the annual financial statements

9 Property, plant, and equipment (continued)

	Kariba Dam Complex	Land and buildings	Motor vehicles, Furniture & fittings	Capital work in progress	Total
	ZMW'000	ZMW'000	ZMW'000	ZMW'000	ZMW'000
At 1 January 2018					
Cost or valuation	1,120,763	104,775	100,349	492,143	1,818,030
Accumulated depreciation	(211,969)	(12,107)	(68,263)	-	(292,339)
Effects of foreign exchange difference	(104,827)	(10,112)	(4,763)	(15,081)	(134,783)
Net book amount	803,967	82,556	27,323	477,062	1,390,908
Year ended 31 December 2018					
Opening net book amount	803,967	82,556	27,323	477,062	1,390,908
Additions	-	-	6,447	50,499	56,946
Transfers from WIP	-	469	-	(469)	-
Scrapping/Disposal – cost	-	(3,024)	(27)	-	(3,051)
Disposal – accumulated Depreciation	-		(315)	-	(315)
Elimination of depreciation at revaluation	-	7,581		-	7,581
Revaluation loss	-	(13,599)		-	(13,599)
Depreciation charge	(22,049)	(2,883)	(7,996)	-	(32,928)
Effects of foreign exchange differences	170,010	18,347	5,094	106,015	299,466
Closing net book amount	951,928	89,447	30,526	633,107	1,705,008
At 31 December 2018					
Cost or valuation	1,120,763	79,254	106,545	542,173	1,848,735
Accumulated depreciation	(242,661)	1,960	(77,302)	-	(318,003)
Effects of foreign Exchange differences	73,826	8,233	1,283	90,934	174,276
Net book amount	951,928	89,447	30,526	633,107	1,705,008
At 31 December 2019					
Opening net book amount	951,928	89,447	30,526	633,107	1,705,008
Additions	-	-	5,372	240,696	246,068
Transfers from WIP	-	215	4,286	(4,501)	-
Scrapping/Disposal	-	-	(154)	-	(154)
Depreciation write-off			1,278		1,278
Effects of foreign exchange difference	149,957	14,148	4,687	118,621	287,413
Depreciation charge	(33,194)	(2,663)	(13,507)		(49,364)
Net book amount	1,068,691	101,147	32,488	987,923	2,190,249
At 31 December 2019					
Cost or valuation	1,120,763	81,429	110,822	778,368	2,091,382
Accumulated depreciation	(275,855)	(2,663)	(84,304)	-	(362,822)
Effects of foreign Exchange differences	223,783	22,381	5,970	209,555	461,689
Net book amount	1,068,691	101,147	32,488	987,923	2,190,249

Notes to the annual financial statements

9 Property, plant, and equipment (continued)

	Kariba Dam Complex	Land and buildings	Motor vehicles & Furniture & fittings	Capital work in progress	Total
As at 1 January 2018	**US$'000**	**US$'000**	**US$'000**	**US$'000**	**US$'000**
Cost or valuation	101,152	9,533	9,101	48,350	168,136
Accumulated depreciation	(19,671)	(1,166)	(6,334)	-	(27,171)
Net book amount	81,481	8,367	2,767	48,350	140,965
Year ended 31 December 2018					
Opening net book amount	81,481	8,367	2,767	48,350	140,965
Additions	-	-	535	4,187	4,722
Transfers from WIP	-	39	-	(39)	-
Scrapping/Disposal – cost	-	(251)	(3)	-	(254)
Scrapping /Disposal – Accumulated Depreciation	-	-	(26)	-	(26)
Revaluation Gain/(Loss)	-	(1,136)	-	-	(1,136)
Elimination of Depreciation on revaluation	-	637	-	1	638
Depreciation charge	(2,545)	(239)	(742)	-	(3,526)
Closing net book amount	78,936	7,417	2,531	52,499	141,383
At 31 December 2018					
Cost or valuation	101,152	7,417	9,615	52,499	170,683
Accumulated depreciation	(22,216)	-	(7,084)	-	(29,300)
Net book amount	78,936	7,417	2,531	52,499	141,383
Year ended 31 December 2019					
Opening net book amount	78,936	7,417	2,531	52,499	141,383
Additions	-	-	412	18,464	18,876
Transfers from WIP	-	17	329	(346)	-
Scrapping/Disposal – cost	-	-	(12)	-	(12)
Depreciation write-off	-	-	98	-	98
Depreciation charge	(2,546)	(204)	(1,036)	-	(3,786)
Closing net book amount	76,390	7,230	2,322	70,617	156,559
At 31 December 2019					
Cost or valuation	101,152	7,434	9,944	70,617	189,147
Accumulated depreciation	(24,762)	(204)	(7,622)	-	(32,588)
Net book amount	76,390	7,230	2,322	70,617	156,559

Construction work in progress relates to Expenditure on the Batoka Hydroelectric Scheme project, the Kariba Dam rehabilitation project, ICT network overall and Kariba Dam information offices.

Notes to the annual financial statements

9 Property, plant, and equipment (continued)

The Authorities' head office building and residential properties were revalued as at 31 December 2018 by respective Government Valuation Department independent professionally qualified valuers, who hold recognised relevant professional qualifications and have recent experience in the locations and segments of the properties valued. Valuations were based on Open Market Value approach based on current prices of similar properties. The key inputs under this approach are the price per square metre from current year sales of comparable lots of property in the area (location and size). It is the Authority's accounting policy to revalue properties after every three years

If land and buildings were stated on the historical cost basis, the amounts would be as follows:

		2019		2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Cost	91,812	74,497	5,325	64,217	5,325
Accumulated depreciation	(6,845)	(5,554)	(397)	(3,197)	(265)
	84,967	68,943	4,928	61,020	5,060

10 Investment property

	ZWL'000	ZMW'000	US$'000
At 1 January 2018			
Cost	1,581	15,727	1,581
Accumulated depreciation	(114)	(1,138)	(114)
Effects of foreign exchange differences	-	(114)	-
Net book amount	1,467	14,475	1,467
Year ended 31 December 2018			
Opening net book amount	1,467	14,475	1,467
Depreciation charge	(39)	(476)	(39)
Effects of foreign exchange differences	-	3,216	-
Net book amount	1,428	17,215	1,428
Year ended 31 December 2018			
Cost	1,581	15,727	1,581
Accumulated depreciation	(153)	(1,614)	(153)
Effects of foreign exchange differences	-	3,102	-
Net book amount	1,428	17,215	1,428
Year ended 31 December 2019			
Opening net book amount	1,428	17,215	1,428
Depreciation charge	(391)	(513)	(39)
Effects of foreign exchange differences	22,914	2,732	-
Closing net book amount	23,951	19,434	1,389
At 31 December 2019			
Cost	1,581	15,727	1,581
Accumulated depreciation	(544)	(2,127)	(192)
Effects of foreign exchange differences	22,914	5,834	-
Net book amount	**23,951**	**19,434**	**1,389**

The investment property is carried at cost because their fair values cannot be reliably determined on a continuing basis. Comparable market transactions are infrequent and alternative reliable estimates of fair value are unreliable. This is due to the location of the investment properties.

Notes to the annual financial statements

11 Long term investments

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
At start of year	892	10,755	892	8,507	862
Interest earned	93	121	9	482	40
Interest redeemed	(93)	(121)	(9)	(108)	(10)
Effects of exchange rates	14,489	1,724	-	1,874	-
Gross carrying amount	15,381	12,479	892	10,755	892
Less impairment provision	(14,449)	(11,723)	(838)	(1,344)	(112)
At end of year	932	756	54	9,411	780

The long-term investments are held with the Commercial Bank of Zimbabwe (CBZ) with an average tenor of 10 years and yielding a return of 5% per annum. The investments were impaired following the change of currency in Zimbabwe enacted through Statutory Instrument (SI)Number 33 of 2019. The SI deemed that for accounting and other purposes all assets and liabilities that were valued in US$ immediately before 22 of February 2019 were to be valued in RTGS Dollars at a rate of 1:1. On 24th June 2019 the Government of the Republic of Zimbabwe introduced the Zimbabwe Dollar ("ZWL") to whose reference, Bond notes and the RTGS Dollar would conform, as the sole legal tender. The ZWL is tradable on the inter-bank market and closed at ZWL 17.24 at the end of the year 2019 implying that in US$ terms that CBZ investment had lost US$ 838 of its value.

12 Inventory

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Consumable stores	2,321	1,888	135	2,362	196

Inventory comprises stock of consumables and other items held for use in the business.

13 Financial assets at fair value through profit or loss

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
At start of the year	1,420	17,123	1,420	8,585	870
Additions	660	866	66	7,996	505
Fair value gain	479	674	48	541	45
Withdrawals	(14,938)	(19,428)	(1,490)	-	-
Effect of exchange rate differences	13,140	1,382	-	1	-
	761	617	44	17,123	1,420

The investment in Madison Asset Management Company (MAMCO) Limited is a short-term investment for gratuity for employees. The Authority drew down all its principle investment to meet gratuity obligations that were paid in the year. The return earned in 2019 was US$48,196 representing approximately 5% compared to US$53,982 which translated to 3% earned in 2018. The balance on the investment represents investment return yet to be remitted to the Authority by MAMCO.

On 2 February 2020 the Securities and Exchange Commission (SEC) took over operations of MAMCO in order to assure the investing public of the safety of their funds. The Authority will be engaging the interim managers to ascertain the way forward. Given the SEC's action Management's assessment is that, the funds are recoverable but, can only ascertain the timing after engaging the interim managers appointed to conduct an assessment of the asset liability matching gap MAMCO.

Notes to the annual financial statements

14 Trade and other receivables

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
ZESCO Limited	455,942	369,955	26,444	228,456	18,944
Kariba Hydro Power Company (KHPC)	135,262	109,753	7,845	(1,352)	(112)
Trade receivables	591,204	479,708	34,289	227,104	18,832
Less: Provision for impairment losses	(119,804)	(97,210)	(6,949)	(25,704)	(2,132)
	471,400	382,498	27,340	201,400	16,700
Prepayments	244,928	198,737	14,206	103,943	8,619
Rental debtors	3,103	2,517	180	3,386	281
Sundry receivables	4,943	4,011	287	3,485	289
Staff debtors	22,014	17,862	1,277	13,985	1,160
	274,988	223,127	15,950	124,799	10,349
	746,388	605,625	43,290	326,199	27,049
Less: Long-term receivables					
Staff housing loans	7,816	6,342	453	6,802	564
Staff car loans	2,189	1,776	127	1,136	94
	10,005	8,118	580	7,938	658
	736,383	597,507	42,710	318,261	26,391

(i) *Classification as trade and other receivables*

Trade receivables are amounts due from Utilities for water sales arising in the ordinary course of business. Trade and other receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. If collection of the amounts is expected in one year or less, they are classified as current assets. If not, they are presented as non-current assets. Trade receivables are generally due for settlement within 45 days and therefore are all classified as current. The Authority's other accounting policies for trade and other receivables are outlined below:

(ii) Other receivables

These amounts generally arise from transactions outside the usual operating activities of the Authority. Interest is not charged on these amounts and neither is collateral normally obtained.

(iii) *Staff debtors*

These relates to car and housing loans which carry interest rates of 6% and 10% per annum respectively. As at year end, these have been fair valued using the market related interest rates for similar loans.

(iv) *Fair values of trade and other receivables*

Due to the short-term nature of the current receivables, their carrying amount is considered to be the same as their fair value.

Notes to the annual financial statements

15 Cash and cash equivalents

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Cash at bank and in hand	11,195	9,080	649	17,964	1,490
Short term investments	2,793	2,270	162	5,533	458
	13,988	11,350	811	23,497	1,948

In the statement of cash flows, cash and cash equivalents include cash in hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less.

Cash flow information: Net debt reconciliation

Amendments to IAS 7; Effective 1 January 2017, now requires entities to explain changes in their liabilities arising from financing activities. This includes changes arising from cash flows (e.g. drawdowns and repayments of borrowings) and on cash changes such as acquisitions, disposals, accretion of interest and unrealised exchange differences. Below is the tabular presentation of the movements in the Authority's net debt movement reconciliation. In the year under review, US$ 3,713,616 was drawn from the International Development Association ("IDA"), World Bank US$ 75 million loan facility while US$ 4,539,738 was drawn from the African Development Bank Group AFDB facility for US$ 39 million.

		2019			2018	
		ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Cash and cash equivalents		352,581	286,088	20,449	316,109	26,212
Liquid Investments		-	-	-	17,123	1,420
Reclassified to restricted cash	16	(338,593)	(274,738)	(19,638)	(292,612)	(24,264)
Borrowings –repayable within one year	17	(185,590)	(150,589)	(10,764)	(27,665)	(2,294)
Borrowings repayable after 1 year		-	-	-	-	-
Net debt		(170,602)	(139,239)	(9,953)	12,955	1,074
Cash and liquid investments		13,988	11,350	811	40,620	3,368
Gross debt – fixed interest rates		(185,590)	(150,589)	(10,764)	-	-
Net debt		(171,602)	(139,239)	(9,953)	40,620	3,368

ZMW'000	**Cash and cash equivalent**	**Liquid investments**	**Borrowings within 1 year**	**Borrowings after 1 year**
Net debt as at 1 January 2018	155,268	8,585	(21,165)	-
Cash flows	126,341	6,090	(14,462)	-
Redemptions	-	-	12,662	-
Restricted cash	(292,612)	-	(555)	-
Foreign exchange adjustments	34,950	1,907	555	- -
Other non - cash movements	-	541	(4,703)	-
Net debt as at 31 December 2018	23,947	17,123	(27,688)	
Cash flows	(75,126)	866	(115,464)	-
Redemptions	-	(19,428)	(3,017)	-
Foreign exchange adjustments	62,529	1,382	(4,440)	-
Other non - cash movements	-	674	-	-
Restricted investment	-	(617)	-	-
Net debt as at 31 December 2019	11,350	-	(150,589)	-

Notes to the annual financial statements

15 Cash and cash equivalents (continued)

ZWL'000	Cash and cash equivalent	Liquid investments	Borrowings within 1 year	Borrowings after 1 year
Net debt as at 1 January 2018	15,736	870	(2,145)	-
Cash flows	10,476	505	(1,199)	-
Restricted cash	(24,264)	-	(46)	-
Redemptions	-	-	1,096	-
Other noncash movements	-	45	-	-
Net debt as at 31 December 2018	1,948	1,420	(2,294)	-
Cash flows	(11,298)	660	(82,009)	-
Redemptions	-	(14,938)	(2,143)	-
Foreign exchange adjustments	23,338	13,140	(99,144)	-
Other non - cash movements	-	479	-	
Restricted investment	-	(761)	-	-
Net debt as at 31 December 2019	13,988	-	(185,590)	-

US$'000	Cash and cash equivalent	Liquid investments	Borrowings within 1 year	Borrowings after 1 year
Net debt as at 1 January 2018	15,736	870	(2,145)	-
Cash flows	10,476	505	(1,199)	-
Redemptions	-	-	(46)	-
Restricted cash	(24,264)	-	1,096	-
Other noncash movements	-	45	-	-
Net debt at 31 December 2018	1,948	1,420	(2,294)	-
Cash flows	(1,137)	66	(8,254)	-
Redemptions	-	(1,490)	(216)	-
Other non cash movements	-	48	-	-
Restricted investment	-	(44)	-	-
Net debt at 31 December 2019	811	-	(10,764)	

Liquid investments comprise current investments that are held at fair value through profit or loss.

16 Restricted cash

		2019		2018	
	ZWL'000	**ZMW'000**	**US$'000**	**ZMW'000**	**US$'000**
Restricted cash	338,593	274,738	19,638	292,612	24,264

Restricted cash refers to cash balances held in Zimbabwean banks. The funds are treated as Restricted funds due to the Authority's inability to readily access United States Dollar to be applied to activities such as servicing of loan obligations and foreign currency denominated obligations to contractors working on the various projects currently underway. In 2019, the Authority was only able to access US$ 3,000,000 against the said funds.

Notes to the annual financial statements

17 Borrowings

	2019			2018	
Government of the Republic of Zambia	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
At start of year	2,294	27,665	2,294	21,165	2,145
Draw downs					
-World Bank IDA	36,900	51,953	3,714	11,756	975
-AFDB Loan	45,109	63,511	4,540	2,705	224
Interest charged	2,143	3,017	216	553	46
Repayment	-	-	-	(13,217)	(1,096)
Effects of exchange differences	99,144	4,443	-	4,703	-
At end of year	185,590	150,589	10,764	27,665	2,294

World Bank IDA

In February 2015, the International Development Association ("IDA") made available to the Government of the Republic of Zambia ("GRZ") a credit facility worth US$75,000,000 for the rehabilitation of the Kariba Dam. In August 2015, the GRZ agreed to on-lend the proceeds of the credit to the Authority. The interest rates applicable are at 2% per annum on withdrawn amounts with a repayment period of 30 years, including a grace period of 2 years on repayment of the principal. In the year under review, the Authority drew US$ 3,713,616.

US$ 1,073,914 was paid directly to Stucky; the consultant engaged to provide Technical and Supervisory services to the KDRP and, US$ 420,311 was paid directly to the panel of experts engaged on the same Project. US$ 2,219,391 was paid to the Consortium of General Electric – France and Freyssinet International who on 24 May 2019 were awarded the contract to rehabilitate the Spillway at a total cost of US$ 53,684,000.

African Development Bank Group AFDB

The Authority also has a credit facility from the AFDB through the GRZ dated February 2015, amounting to US$ 39,000,000 for the rehabilitation of the Kariba Dam. The interest rates applicable are at 2% per annum, on withdrawn amounts. The Authority commenced making principal repayments on the facility in 2017, following a 2 years grace period.

In the year under review US$ 4,539,738 was drawn from this facility and applied towards advance payments to the Consortium of General Electric – France and Freyssinet International engaged on the Spillway Rehabilitation.

Breach of the terms of loans agreement

The Authority has a 30-year subsidiary loan agreement dated 20 August 2015 with the Government of the Republic of Zambia for a loan amount of US$ 144 million to finance the Kariba Dam Rehabilitation Project. According to schedule 1 of this subsidiary loan agreement, the Authority is required to make repayments biannually on 1 March and 1 September. The Authority has in the current financial year defaulted on loan repayments totalling US$ 8,920,000 having paid only US$ 2,000,000. The amount in default is made up of current year repayments of US$ 5,947,000 (principal of US$ 3,800,000 and interest of US$ 2,147,000) and 2018 principal arrears of US$ 2,973,000. On 1 March 2020 US$ 2,945,000 will fall due (principal of US$ 1,900,000 and interest of US$ 1,0450,000), bringing the total amount outstanding to US$ 11,865,000. This is in contravention of section 3.04(ii) of Article III of the subsidiary loan agreement which states that repayments should not be delayed by more than 30 days from due date and failure of which the Government of Zambia has the right to cancel the loan agreement in accordance with Section 5.03 of Article V of the subsidiary loan agreement. The Authority has engaged both the Zambian and Zimbabwean Governments highlighting the challenges in settlement of the said obligation due to delayed payments from ZESCO Limited and failure to access the United States Dollars in Zimbabwe. The Council of Ministers has elected to resolve the Authority's liquidity challenges to enable it to settle its obligation to the Zambian Government.

Notes to the annual financial statements

18 Trade and other payables

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Trade creditors	88,058	71,451	5,107	77	6
Accruals	180,658	146,587	10,478	89,428	7,415
ZVDF Zambia	4,434	3,598	257	1,105	92
Sundry creditors	34	28	2	27	2
Statutory liabilities	17,121	13,892	993	3,502	290
Employee benefits	171,184	138,901	9,929	44,727	3,710
	461,489	374,457	26,766	138,865	11,515

The carrying amounts of trade and other payables are considered to be the same as their fair values, due to their short-term nature.

19 Capital Grants

The Authority has one grant facility for the Batoka Gorge Hydro - Electric Scheme (BGHES) and three grants financing the Kariba Dam Rehabilitation Project (KDRP) and they are briefly described below:

a) Batoka Gorge Hydro - Electric Scheme (BGHES)

The International Development Association (IDA) of the World Bank acting as administrator of the Co-operation in International Waters in Africa Trust Fund (CIWA) provided a grant of US$6,000,000 to be drawn down on direct payment requests as well as reimbursements. The objective of the Project is to advance the preparation of the Batoka Gorge Hydro –electric Scheme and strengthen cooperation development within the Zambezi River Basin.

Funds from this grant have been applied towards the updating of engineering feasibility studies, environment impact assessment studies and the finance, legal and transaction advisory contracts on the Batoka Hydro Electric Scheme. In the year 2019 US$ 846,359 was disbursed towards engineering feasibility studies.

The CIWA grant has since expired and the balance that was held in the designated account totalling US$ 146,159 was transferred back to the World Bank.

(b) Kariba Dam Rehabilitation Project (KDRP)

The Authority has three grant facilities for the KDRP as below:

i. **Swedish International Development Agency Trust Fund (SIDA) -** The International Development Association acting as administrator of the Swedish International Development Agency (SIDA) Trust Fund provided a grant of a maximum of US$25,000,000 to finance the rehabilitation of the Kariba Dam. The grant is to be accessed through direct payment requests as well as requests for reimbursements. In the financial year 2019, US$ 4,272,226 was accessed from this facility and US$ 1,444,266 was applied towards Dam Break Analysis and Lidar Survey works while US$ 2,827,960 was paid as advance payment to the Consortium of General Electric- France and Freyssinet International.

ii. **African Development Bank (AFDB) –** On 20 February 2015, the AFDB availed a grant facility through the two contracting states i.e. Zambia and Zimbabwe for the financing of specific foreign payments on the Kariba Dam Rehabilitation project under the Transitional Support Facility (TSF). In 2019, the Authority drew a total of US$ 1,119,893 and applied US$ 645,798 towards technical supervision and US$ 474,095 applied to advance payments for the spillway rehabilitation.

Notes to the annual financial statements

19 Capital Grants (Continued

iii. **European Union (EU)** – The EU through the European Development Fund Bridging Facility has given the Authority through the Government Republic of Zambia (GRZ) a grant of up to EUR 74,000,000 towards the rehabilitation of the Plunge Pool at the Kariba Dam. During the year ended 31 December 2019, US$ 2,192,421 was disbursed through direct payments under this facility to Razelbec, the contractor engaged on the Plunge pool.

(c) Movements in grants

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
Movements in deferred capital grant					
At start of year	361	4,354	361	4,934	500
Received during the year:					
International Development Association (CIWA)	4,823	6,328	485	-	-
Transferred to capital grants	(8,406)	(11,028	(846)	(1,676)	(139)
Effects of foreign currency exchange differences	3,222	346	-	1,096	-
At end of year	-	-	-	4,354	361

Movements in capital grants

	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
At start of year	31,018	374,063	31,018	287,494	29,137
Received during the year					
African Development Bank	11,128	14,599	1,120	3,409	283
European Union	22,162	29,075	2,230	7,264	602
Swedish International Development Agency (Sida)	42,451	55,693	4,272	4,535	376
CIWA - World Bank	8,410	11,034	846	5,801	481
Transferred from deferred grants	-	-	-	1,676	139
Effects of exchange Differences	565,631	67,944	-	63,884	-
At end of year	680,800	552,408	39,486	374,063	31,018

(d) Amortisation of Grants

All the projects currently being funded by grants are yet to be completed and are still being carried in work in progress and as such not being amortised to income yet.

Notes to the annual financial statements

20 Financial instruments by category

	2019			2018	
	ZWL'000	**ZMW'000**	**US$'000**	**ZMW'000**	**US$'000**
Financial assets at amortised cost					
Trade and other receivables (excluding pre-payments)	501,460	406,888	29,084	222,256	18,430
Cash and cash equivalents	13,988	11,350	811	23,497	1,948
Restricted cash	338,593	274,738	19,638	292,612	24,264
Long term investments	932	756	54	9,411	780
	854,973	693,732	49,587	547,776	45,422
Financial assets at fair value through profit or loss	761	617	44	17,123	1,420
Other Financial liabilities at amortised cost					
Financial liabilities					
Borrowings	185,590	150,589	10,764	27,665	2,294
Trade and other payables (excluding statutory liabilities)	444,368	360,566	25,773	135,362	11,225
	629,958	511,155	36,537	163,027	13,519

21 Financial risk management objectives and policies

The Authority's activities expose it to a variety of financial risks: market risk (including foreign exchange risk and interest rate risk), credit risk and liquidity risk. The Authority's overall risk management programme focuses on the assessment of the liquidity positions of key customers and the unpredictability of financial markets and seeks to minimise potential adverse effects on its financial performance and position.

Financial risk management is carried out by the finance department under policies approved by the Board of Directors. The policies are imbedded in the overall enterprise risk management policy of the Authority.

Market risk

(i) Foreign exchange risk

The Authority primarily generates its revenue in United States Dollar but does from time to time meet some of its obligations in Zambian Kwacha, the Zimbabwe Dollar and, other major convertible currencies through payments for goods and services needed for the day to day operations. Foreign exchange risk arises when future recognised assets or liabilities are denominated in a currency that is not the entity's functional currency. Management's policy to manage foreign exchange risk is to hold foreign currency bank accounts which act as a natural hedge for meeting foreign currency denominated expenses.

At 31 December 2019, if the either the Zambian Kwacha or the Zimbabwe Dollar had weakened/strengthened by 4% against the United States Dollar with all other variables held constant, operating deficit and accumulated reserves for the Authority would have been ZMW 0.468 million (US$0.0321 million (2018: ZMW 0.427 million US$0.037 million) and ZWL 0.578 million (US$0.0467 million) higher or lower than the 2019 result.

Notes to the financial statements

21 Financial risk management objectives and policies (continued)

ii) Interest rate risk

The Authority's interest rate risk arises from long-term borrowings contracted for the Kariba dam rehabilitation project. Borrowings issued at concessional fixed interest rates, but with a clause for default penalties expose the Authority's to cash flow interest rate risk. Management manages this risk by ensuring sufficient liquidity to meet loan obligations when they fall due. As at 31 December 2019, an increase/decrease of 200 (2018: 200) basis points on US$ did not have a material impact on the operating deficit and accumulated reserves.

Credit risk

Credit risk arises from cash and cash equivalents and deposits with banks and financial institutions, as well as credit exposure to customers, including outstanding receivables.

Risk management

The Authority assesses the credit quality of each customer, taking into account its financial position, past experience, and other factors. Individual risk limits are set based on internal or external ratings in accordance with limits set by the Board. The utilisation of credit limits is regularly monitored. The compliance with credit limits by customers is regularly monitored by line management.

For cash and cash equivalent balances, the Authority's exposure and credit ratings of counterparties are regularly monitored, and the aggregate value of transactions spread amongst approved financial institutions. The Authority actively seeks to limit the amount of credit exposure to any one financial institution and credit exposure is controlled by counterparty limits that are reviewed and approved by the Treasury. For banks and financial institutions, only independently rated parties with a minimum rating of 'A' for International and regional banks with a local presence are accepted.

The Authority has significant concentrations of credit risk as it has two main customers which are ZESCO Limited and KHPC. The continued increase in the receivables balances with the Utilities is a clear indication that the credit risk is now at the fore of the financial risks that the Authority has struggled to bring under control. This has had spill over effects on the liquidity situation that has deteriorated as a consequence.

Impairment of financial assets

The Authority's financial assets that are subject to the expected credit loss model are trade and other receivables and Long term investments. Cash and cash equivalents is also subject to impairment requirements of IFRS 9 but the identified impairment loss was immaterial.

The Authority applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all the trade receivables and long term investments. To measure the expected credit losses, trade receivables and long term investments have been grouped based on shared credit risk characteristics and days past due.

The expected loss rates are based on the payment profiles of collections over a period of 36 months before 31 December 2019 or 1 January 2019 respectively and the corresponding historical credit losses experienced within this period. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customers to settle the receivables.

On that basis, the loss allowance as at 31 December 2019 was determined as follows for trade and other receivables and long term investments:

Notes to the financial statements

21 Financial risk management objectives and policies (continued)

Year ended 31 December 2019	Current	More than 45 days	More than 45 days but less than90 days	More than 90 days	Total
ZWL'000					
Expected loss rate Trade receivables		0.1330	0.1794	0.2085	
Gross carrying amount trade		68,367	36,993	485,844	591,204
Loss allowance trade receivables		**9,092**	**6,637**	**101,298**	**117,027**
Expected loss rate other receivables		0.44	0.45	0.94	
Other receivables		155	282	2,747	3,184
Loss allowance other receivables		**68**	**127**	**2,582**	**2,777**
Total Loss allowance		**9,160**	**6,764**	**103,880**	**119,804**

Year ended 31 December 2019	Current	More than 45 days	More than 45 days but less than90 days	More than 90 days	Total
ZMW'000					
Expected loss rate trade receivables		0.1330	0.1794	0.2085	
Gross carrying amount trade		55,472	30,016	394,220	479,708
Loss allowance trade receivables		**7,378**	**5,385**	**82,195**	**94,958**
Expected loss rate other receivables		0.44	0.45	0.94	
Other receivables		126	231	2,227	2,584
Loss allowance other receivables		**55**	**104**	**2,093**	**2,252**
Total Loss allowance		**7,433**	**5,489**	**84,288**	**97,210**

Notes to the financial statements

21 Financial risk management objectives and policies (continued)

Year ended 31 December 2019 (US$'000)	Current	More than 45 days	More than 45 days but less than90 days	More than 90 days	Total
Expected loss rate trade receivables		0.1330	0.1794	0.2085	
Gross carrying amount trade		3,966	2,145	28,178	34,289
Loss allowance trade receivables		**527**	**385**	**5,875**	**6,787**
Expected loss rate other receivables		0.44	0.45	0.94	
Other receivables		9	16	160	185
Loss allowance other receivables		**4**	**7**	**151**	**162**
Total Loss allowance		**531**	**392**	**6,026**	**6,949**

Year ended 31 December 2018 (ZMW'000)	Current	More than 45 days	More than 45 days but less than90 days	More than 90 days	Total
Trade receivables					
Expected loss rate (%)		0.1063	0.1080	0.1090	
Gross carrying amount trade	19,544	19,247	17,934	171,731	228,456
Loss allowance		2,046	1,937	18,719	22,702
Other receivables					
Expected loss rate (%)		0.42	0.44	0.91	
Gross carrying amount		66	109	3,218	3,389
Loss allowance		28	48	2,928	3,004
Total loss allowance –trade and other receivables		2,074	1,985	21,647	25,706

Long term investment	
Expected loss rate (%)	0.125
Gross carrying amount	10,755
Loss allowance	1,344

Notes to the annual financial statements

21 Financial risk management objectives and policies (continued)

Year ended 31 December 2018	Current	More than 45 days	More than 45 days but less than90 days	More than 90 days	Total
(US$'000)					
Trade receivables					
Expected loss rate (%)		0.1063	0.1080	0.1090	
Gross carrying amount	1,621	1,596	1,487	14,240	18,944
Loss allowance		170	161	1,552	1,882
Other receivables					
Expected loss rate (%)		0.42	0.44	0.91	
Gross carrying amount		5	9	266	280
Loss allowance		2	4	242	248
Total loss allowance –trade and other receivables		172	165	1,794	2,131
Long term investments					
Expected loss rate (%)					0.1250
Gross carrying amount					892
Loss allowance					112

The closing allowances for the trade and other receivables and long-term investments as at 31 December 2019 reconcile to the opening loss allowance as follows:

	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
31 December – calculated under IFRS 9	2,242	27,049	2,242	2,152	217
Amounts restated through opening retained earnings	-	-	-	21,919	2,221
Opening loss allowance as at 1 January 2018 under IFRS 9	-	-	-	24,071	2,438
Receivables write - off	(994)	(1,304)	(100)	-	-
Impairment loss allowance recognised in profit or loss during the year	47,762	62,664	4,807	(2,358)	(196)
Effect of exchange differences	70,794	8,801	-	5,336	-
As at 31 December	119,804	97,210	6,949	27,049	2,242

Trade receivables are written off when there is no reasonable expectation of recovery. Indicators that there is no reasonable expectation of recovery include, amongst others, the failure of a debtor to engage in a repayment plan with the Authority, and a failure to make contractual payments for a period of greater than 120 days past due. Impairment losses on trade receivables are presented as net impairment losses within operating profit. Subsequent recoveries of amounts previously written off are credited against the same line item.

Staff debtors are ordinarily not expected to pose a significant recovery risk as they are usually recovered through the payroll. In the unlikely event of loss, the impairment provisioning will follow the same procedures applied to trade and other debtors

Notes to the annual financial statements

21 Financial risk management objectives and policies (continued)

Liquidity risk

Liquidity risk is the risk that the Authority will not be able to meet its financial obligations as they fall due. Prudent liquidity risk management includes maintaining sufficient cash balances, and the availability of funding from an adequate amount of committed credit facilities.

The table below analyses the Authority's financial liabilities that will be settled on a net basis into relevant maturity groupings based on the remaining period at the reporting date to the contractual maturity date. The amounts disclosed in the table below are the contractual undiscounted cash flows.

	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years	Total
	ZWL'000	ZWL'000	ZWL'000	ZWL'000	ZWL'000
At 31 December 2019:					
- Borrowings	101,225	202,520	390,488	1,747,936	2,442,169
- trade and other payables	263,711	180,658	-	-	444,369
	364,936	383,178	390,488	1,747,936	2,886,538
At 31 December 2018:					
- Borrowings	5,947	11,818	23,028	100,775	141,568
- trade and other payables	10,985	240	-	-	11,225
	16,932	12,058	23,028	100,775	152,793

	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years	Total
	ZMW'000	ZMW'000	ZMW'000	ZMW'000	ZMW'000
At 31 December 2019:					
- Borrowings	82,135	164,327	316,846	1,418,292	1,981,600
- trade and other payables	213,977	146,587	-	-	360,564
	296,112	310,914	316,846	1,418,292	2,342,164
At 31 December 2018:					
- Borrowings	71,718	142,519	277,706	1,215,296	1,707,239
- trade and other payables	160,137	2,897	-	-	163,034
	231,855	145,416	277,706	1,215,296	1,870,273

21 **Financial risk management objectives and policies (continued** *Liquidity risk*

(continued)

	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years	Total
	US$'000	US$'000	US$'000	US$'000	US$'000
At 31 December 2019:					
- Borrowings	5,871	11,746	22,648	104,315	144,580
- trade and other payables	15,295	10,478	-	-	25,773
	21,166	22,224	22,648	104,315	170,353
At 31 December 2018					
- Borrowings	5,947	11,818	23,028	100,775	141,568
- trade and other payables	10,985	240	-	-	11,225
	16,932	12,058	23,028	100,775	152,793

(d) Fair value estimation

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value of financial assets and liabilities traded in active markets (such as publicly traded equity) are based on quoted market prices at the close of trading on the reporting date.

The carrying amounts of all financial assets and liabilities at the reporting date approximate their fair values. The following table presents the Authority s' assets that are measured at fair value:

	Level 1	Level 2	Level 3	Total
Year ended 31 December 2019	**ZMW'000**	**ZMW'000**	**ZMW'000**	**ZMW'000**
Assets				
Financial assets				
Financial assets at fair value through profit or loss	617	-	-	617
Non-financial assets				
Buildings	-	-	101,147	101,147
	617	-	101,147	101,764
Year ended 31 December 2018				
Assets				
Financial assets				
Financial assets at fair value through profit or loss	17,123	-	-	17,123
Non-financial assets				
Buildings	-	-	89,441	89,441
	17,123	-	89,441	106,564

Notes to the annual financial statements

21 Financial risk management objectives and policies (Continued)

Year ended 31 December 2019	Level 1 ZWL'000	Level 2 ZWL'000	Level 3 ZWL'000	Total ZWL'000
Assets				
Financial assets				
Financial assets at fair value through profit or loss	761	-	-	761
Non-financial assets				
Buildings	-	-	124,656	124,656
	761	-	124,656	125,417
Year ended 31 December 2018				
Assets				
Financial assets				
Financial assets at fair value through profit or loss	1420	-	-	1420
Non-financial assets				
Buildings	-	-	7,417	7,417
	1420	-	7,417	8,837

Year ended 31 December 2019	Level 1 US'000	Level 2 US'000	Level 3 US'000	Total US'000
Assets				
Financial assets				
Financial assets at fair value through profit or loss	44	-	-	44
Non-financial assets				
Buildings	-	-	7,238	7,238
	44	-	7,238	7,282
Year ended 31 December 2018				
Assets				
Financial assets				
Financial assets at fair value through profit or loss	1,420	-	-	1,420
Non-financial assets				
Buildings	-	-	7,417	7,417
	1,420	-	7,417	8,837

The different level of fair value measurement hierarchy is described as follows:
•Quoted prices(unadjusted) in active markets for identical assets (level 1)
•Inputs other than quoted shares included in level 1 that are observable for the asset, either directly (that is, as prices) or indirectly (that is, derived from prices) (level 2)
•Inputs for the assets that are not based on observable market data (that is, unobservable data) (level 3)

All fair value measurements disclosed are recurring fair value measurements, required for the purposes of measuring the Authority's assets at fair value. During the year no transfers were made amongst the different levels.

Notes to the annual financial statements

22 Capital management

The Authority's objectives when managing capital are to safeguard the Authority's ability to continue as a going concern. Adequacy of the capital of the Authority is maintained by the Authority on a regular basis. As and when required the Authority will through the respective Ministries responsible for Finance, source for funding in the form of loans and grants.

23 Contingent liabilities

The Authority has some cases in the courts of law, most of which have already been decided in the Authority's favour and are only back in the courts on appeal by the plaintiffs. No contingent liabilities have been provided for as management believe that these are remote.

24 Related party transactions

The Authority was constituted by the *Zambezi River Authority Acts 1987* of Zambia and Zimbabwe and, is a common enterprise between the Governments of the Republics of Zambia and Zimbabwe. Control of the entity is on a 50/50 basis with decisions being made by consensus.

Oversight of the Authority is vested in the Council of Ministers (CoM). Internal supervision of its management and control of the affairs of the Authority, however, is vested in the Board and the key executive officers.

The Authority is key management is made up of the Executive Management which includes the Chief Executive and four Directors.

The following transactions were carried out with related parties:

	2019			2018	
Directors compensation	**ZWL'000**	**ZMW'000**	**US$'000**	**ZMW'000**	**US$'000**
Director's fees and allowances	2,527	3,315	254	8,154	768
Other expenses	3,397	4,457	342	13,907	1,309
	5,924	7,772	596	22,061	2,077
Key Management compensation					
Salaries and other benefits	7,510	9,853	756	14,966	1,241
Pension contribution	2,628	3,448	265	3,871	321
	10,138	13,301	1,021	18,837	1,562
Loans to Key Management					
At start of year	98	1,185	98	2,894	240
Additions	-	-	-	140	12
Repayments	(288)	(1,031)	(87)	(1,849)	(154)
At end of year	190	154	11	1,185	98
Amounts Advanced and amounts owed to ZVDF					
ZVDF Receivable	2,559	2,076	148	2,203	183
ZVDF Payable	(4,434)	(3,598)	(257)	(2,001)	(166)
Net position at year end	(1,875)	(1,522)	(109)	202	17

Zambezi Valley Development Fund (ZVDF) is a trust established as a corporate social arm to mitigate the legacy effects on the communities that were displaced during the construction of the Kariba Dam. Zambezi River Authority operates as a secretariat to the ZVDF and together with the power Utilities pays 1% of its water sales revenue in support of the operations of ZVDF.

Notes to the annual financial statements

24 Related party transactions (Continued)

Water sales revenue

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
ZESCO	129,280	171,651	13,011	141,513	12,852
KHPC	110,692	143,289	11,140	140,191	12,960
	239,972	314,940	24,151	281,704	25,812

Outstanding receivable balances from Water sales

	2019			2018	
	ZWL'000	ZMW'000	US$'000	ZMW'000	US$'000
ZESCO	455,942	369,955	26,444	228,456	18,944
KHPC	135,262	109,753	7,845	(1,352)	(112)
	591,204	479,708	34,289	227,104	18,832

Appendix I - Statement of Capital Expenditure Compared to Budget

Year ended 31 December 2019	Spent	Budget	Balance
	ZMW'000	ZMW'000	ZMW'000
Kariba Dam Structure	-	14,270	14,270
CWIP- Kariba Rehabilitation	212,305	634,656	422,351
CWIP- Batoka HES	28,877	220,721	191,844
Devil's Gorge	-	17,278	17,278
Land & Buildings	-	7,667	7,667
Furniture, Fittings, Plant & Equip.	658	17,918	17,260
Motor Vehicles	1,649	16,155	14,506
ICT Infrastructure	2,579	39,875	37,296
	246,068	968,540	722,472

Year ended 31 December 2019	Spent	Budget	Balance
	ZWL'000	ZWL'000	ZWL'000
Kariba Dam Structure	-	17,586	17,586
CWIP- Kariba Rehabilitation	161,826	782,165	620,339
CWIP- Batoka HES	22,011	272,022	250,011
Devil's Gorge	-	21,293	21,293
Land & Buildings	-	9,448	9,448
Furniture, Fittings, Plant & Equip.	501	22,083	21,582
Motor Vehicles	1,257	19,909	18,652
ICT Infrastructure	1,967	49,143	47,176
	187,562	1,193,649	1,006,087

Appendix I - Statement of Capital Expenditure Compared to Budget (Continued)

Year ended 31 December 2019	Spent	Budget	Balance
	US$'000	US$'000	US$'000
Kariba Dam Structure		1,020	1,020
CWIP- Kariba Rehabilitation	16,114	45,365	29,251
CWIP- Batoka HES	2,215	15,777	13,562
Devil's Gorge	-	1,235	1,235
Land & Buildings	-	548	548
Furniture, Fittings, Plant & Equip.	150	1,281	1,131
Motor Vehicles	126	1,155	1,029
ICT Infrastructure	271	2,850	2,579
	18,876	69,231	50,355

The budget was approved by the Council of Ministers on 7 December 2018

Chairperson

PricewaterhouseCoopers,
Chartered Accountants

Co-Chairperson

Charity Mulenga
Partner signing on behalf of firm

Auditors Certificate

In accordance with Article 15(6)6 of the Zambezi River Authority Act 1987, we certify that the comparative statement shown above is correct.

Appendix II - Grant Funding Application Analysis - Batoka Gorge Hydro Electric Scheme

As at 31 December 2018	Engineering Feasibility Studies	Environmental and Social Impact Consultancy	Financial Legal and Transaction Advisory Consultancy	Total
	US$'000	US$'000	US$'000	US$'000
Cash Receipts:				
International Development Association Trust Fund- Cooperation in International Waters in Africa (CIWA) grant	481	-	-	481
Total Financing	2,617	832	1,351	4,800
As at 31 December 2019				
Cash Receipts:				
International Development Association Trust Fund- CIWA Grant	846	-	-	846
Cumulative total	3,463	832	1,351	5,646

Zambezi River Authority
Appendices
For the year ended 31 December 2019

Appendix III Kariba Dam Rehabilitation KDRP Project (KDRP) Funding Source and Application Analysis

Kariba Dam Rehabilitation								
December 2019	**Institutional Supprt**		**Dam Break & Other studies**			**Plunge Pool Reshaping Contract**	**Spillway Rehabilitation**	**KDRP Total**
	Panel of Experts (PoE)	Technical Services & Supervisory Consultancy	Environmental & Social Impact Assessment	Dam Break	LIDAR Survey			
	US$'000	**US$'000**	**US$'000**	**US$'000**	**US$'000**	**US$'000**		**US$'000**
Disbursements for the Year (2019)								
International Development Association Loan (55630)) - Loan	420	1,075	-	-	-	-	2,219	**3,714**
Swedish International Fund Grant - Grant (TF19029)	-	-	-	1,023	421	-	2,828	**4,272**
The Africa Development Fund (ADF Loan)	-	-	-	-	-	-	4,540	**4,540**
The Africa Development Fund (ADF Grant)	-	561	-	-	-	-	474	**1,035**
The Africa Development Fund (TSF Grant)	-	85	-	-	-	-	-	**85**
European Union Funding (ZM/FED/031-570) - Grant	-	-	-	-	-	2,231	-	**2,231**
Total Disbursements for the Year 2019	**420**	**1,721**	**-**	**1,023**	**421**	**2,231**	**10,061**	**15,877**
December 2019								
Cumulative Disbursements								
International Development Association Loan (55630)) - Loan	1,691	2,400	377	147	-	-	2,219	**6,834**
Swedish International Fund - Grant (TF19029)	-	-	-	845	2,778	-	2,828	**6,451**
The Africa Development Fund (ADF Loan) 2100150032548	-	224	-	-	-	-	4,540	**4,764**
The Africa Development Fund (ADF Grant) 2100155029116	-	561	-	-	-	-	474	**1,035**
The Africa Development Fund (TSF Grant)	-	1,896	-	-	-	-		**1,896**
European Union Funding (ZM/FED/031-570) - Grant	-	-	-	-	-	24,282		**24,282**
Cumulative Total Disbursements 2019	**1,691**	**5,081**	**377**	**992**	**2,778**	**24,282**	**10,061**	**45,262**

Notes

ANNUAL REPORT

Printech Ltd, ☎ 211 229590 / 229406