



**2022**

**ANNUAL REPORT  
AND  
FINANCIAL STATEMENTS**

**35<sup>TH</sup> EDITION**





# ANNUAL REPORT AND FINANCIAL STATEMENTS FOR THE YEAR ENDED 31<sup>ST</sup> DECEMBER 2022



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### COVER PHOTO:

Aerial view of the Kariba Dam showcasing the lake and the ongoing Kariba Dam Rehabilitation works.  
Photo Credit: TLD Media

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# MESSAGE FROM THE CHAIRPERSON



**Dr. Gloria S. Magombo**  
Board Chairperson

It is my pleasure and honour to present this report on behalf of the Zambezi River Authority's Board of Directors. The year 2022 marked the third year of the COVID-19 pandemic. In that regard, the attendant restrictions and other challenges continued to constrain the execution of operational activities. I am, however, proud to indicate that the Authority's Management, under the guidance of the Board, satisfactorily executed most of the Corporate Strategy initiatives.

## Budget Performance Review

During the year under review, the Authority earned operating income of **US\$30.88 million** compared with the budget of **US\$27.87 million**. The higher than budgeted revenue was due to penalties amounting to

**US\$1.78 million** charged against Kariba Hydro Power Company (KHPC) for utilising water above the set limits.

Furthermore, the operating expenditure was **US\$13.59 million** against a budget of **US\$20.20 million**. The low budget execution was on account of challenges encountered in the harmonisation of the procurement process and savings achieved under employment costs due to the deferment of the recruitment process of employees. Consequently, a slight improvement in short-term liquidity was recorded due to slow absorption of funds. However, the medium to long term financial outlook remained critical as evidenced by the high debt owed by the Power Utilities, Zesco Limited and Zimbabwe Power Company, which increased from **US\$69.42 million** in 2021 to **US\$85.39 million** by the close of the year under review translating to a **33% increase**.

This growth in the amount of the debt owed was due to the monthly remittances to the Authority by the Power Utilities being lower than the average monthly water sales invoices. Management continued to engage the Power Utilities and the Ministries of Energy and Finance in both Contracting States with a view to ensuring that there was accelerated liquidation of the amounts owed.

The growth in trade receivables (money owed by the utilities) had a significant adverse impact on the financial outlook of the Authority. This resulted in the Authority being unable to timeously execute its budgetary requirements fully and hence adversely impacting the achievement of some of the goals set in the Corporate Strategy.

The Authority's Liquidity Ratio continued to show an exceptionally good outlook of 4.06 times, though the Acid Test Ratio of **0.24 times** or **24%**, aptly described the precarious liquidity situation the Authority was facing. In order to rectify this anomaly, the Authority continued to engage the Power Utilities and the Government of the Republic of Zimbabwe with a view to reducing outstanding amounts of trade receivables and the Ring-fenced Funds, respectively.

## Execution of the Kariba Dam Rehabilitation Project (KDRP)

By the end of December 2022, the execution of the KDRP works was at 63.7% against a target of 69.9%. The works on the Plunge Pool progressed well with the cofferdam works being completed in July 2022. This component of the KDRP had reached 74% completion by December 2022 while all other works were scheduled to be completed by the end of the second quarter of 2024. On the other hand, an execution rate of 53.4% was recorded in respect of the Spillway Refurbishment works by the end of the year. The works were expected to be completed by the first quarter of 2025.

## Implementation of the 2400mw Batoka Gorge Hydro-Electric Scheme (BGHES)

I am delighted to disclose that the preparatory studies for the development of the Batoka Gorge Hydro-Electric Scheme were completed following approvals of the Environmental and Social Impact Assessment Studies (ESIA) in December 2022 by the Zambia Environmental Management Agency (ZEMA) and the Environmental Management Agency (EMA) of Zimbabwe.

For the year ended December 2022, the Authority would like to applaud the cooperating partners for the commitment demonstrated, particularly by the African Development Bank (AfDB) and the African Union Development Agency–New Partnership for African Development, (AUDA-NEPAD) among other cooperating partners, towards the development of the BGHES during the year.

## Hydrological Outlook and Reservoir Operations at Kariba

The 2021/22 Rainfall Season officially started on 1<sup>st</sup> July 2021 and ended in April 2022. Generally, normal rainfall over most of the Kariba Catchment was recorded. This was despite the 2021/22 and 2022/2023 Regional Climate Seasonal Forecasts indicating that the region would experience normal to above normal rainfall. By 31<sup>st</sup> December 2022, 44.02 Billion Cubic Meters (BCM) gross inflow of water had been received against a forecasted 42.42 BCM. Due to the dire energy supply situation in the region in general and Zimbabwe in particular, the Authority opted not to reduce the amount of water allocated to the Power Utilities in 2022, with a view to rationalising the allocation in the first quarter of 2023 when river inflows from the upper catchment were expected to be determined.

## Lake Levels at Kariba

The year 2022 was unprecedented in that the lowest lake levels ever were recorded. In order to mitigate against such potentially calamitous occurrences in the future, the Authority was in the process of finalising a Climate Change Mitigation Plan which would assist in adapting to external forces such as the unavoidable Climate Change.

## Water Allocation and Utilisation for Power Generation at Kariba Dam

I wish to express my deep concern regarding the failure by the Power Utilities to adhere to their power generation plans. By the end of the year, both Power Utilities had exceeded their water utilisation; with the Zimbabwe Power Company having utilized significantly more than the amount of water allocated. The Board is cognizant of the implications of such excesses and commits to directly engage the Power Utilities on the matter.

## Stakeholder Engagement

The Authority appreciates the role of Stakeholder Engagement in the successful execution of its mandate. In that regard, a deliberate approach to ensure sustained positive engagement was actively executed, monitored and evaluated. External media coverage was positive, save for November and December 2022 when concerns arose regarding the drastic low water levels in the Kariba reservoir. The Authority also maintained its presence on the Authority's owned digital media channels such as the website and social media pages. The partial lifting of the COVID- 19 restrictions facilitated the recommencement of interpersonal meetings with Riparian Communities as well as high level delegations. The stakeholder engagement initiatives proved highly effective as a result of which the Authority's image remained in good standing, save for the low water levels experienced at the Kariba Dam.

## Implementation of Projects Under the Zambezi Valley Development Fund (ZVDF)

The Authority continued to undertake the implementation of ZVDF projects within the ten districts of Zambia and Zimbabwe in a bid to alleviate the plight of the communities that were displaced during the construction of the Kariba Dam. Despite the crippling effects of the COVID-19 pandemic and the precarious financial situation the Authority was facing, six projects were completed during the period under review. The Projects that were under implementation included water supply, irrigation, construction of clinics/health centres and classroom blocks, among others. The livelihood of the local people was positively impacted by these projects. By the end of the period under review, the Authority was in the process of working on handing over completed projects to the communities in both Zambia and Zimbabwe.

## Acknowledgments

I wish to acknowledge the support rendered by cooperating partners and other key stakeholders which was invaluable and indispensable. The operating environment from the time of the onset of the novel COVID-19 pandemic had been considerably volatile. However, the Authority managed to ensure that most of the goals set in the Corporate Strategy were achieved. This was due to high levels of teamwork exhibited by all key stakeholders, a spirit which I hope will continue going forward.



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**Dr. Gloria S. Magombo**

Board Chairperson

Secretary

Ministry of Energy and Power Development

Zimbabwe

A low-angle, upward-looking photograph of several modern skyscrapers with glass facades. The buildings are arranged in a circular pattern, creating a sense of height and architectural grandeur. The sky is a gradient of light blue at the top, transitioning through pink and orange to a deep red at the bottom. The overall composition is dynamic and modern.

# OUR PROFILE



# ZAMBEZI RIVER AUTHORITY PROFILE

The Zambezi River Authority was established as a body corporate on 1<sup>st</sup> 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 the Republics of Zambia and Zimbabwe.

The Authority's primary function is to operate, maintain, monitor and regulate water levels in the Kariba 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.

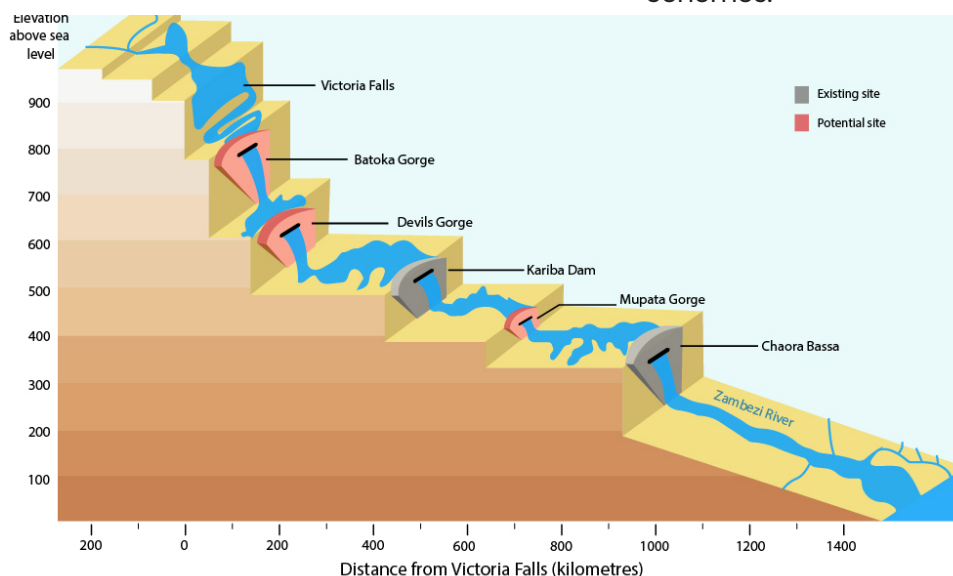
- Operation, monitoring and maintenance of the Kariba Complex.
- In consultation with the national electricity undertakings, investigate the desirability of constructing new dams on the Zambezi River and make recommendations thereon to the Council of Ministers (COM).

- To construct, operate, monitor and maintain any other dams on the Zambezi River.
- 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.
- To regulate water levels in the Kariba reservoir and any other reservoirs owned by the Authority.
- To submit development plans and programmes to the Council of Ministers (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

The image below shows the existing Hydro-Electric Power sites including the Kariba Complex as well as the envisaged ones such as the Batoka Gorge Hydro-Electric Scheme (BGHES), the Devil's Gorge and Mupata Gorge Hydro-Electric Schemes.



Existing and Potential Hydro-Electric Power Sites on the Zambezi River

**OUR MISSION**

To encapsulate safety, professionalism and respect in harnessing the water resource for socio-economic development, exhibiting integrity through honesty.

**OUR VISION**

To be the model organisation in dam and water resources management in the Zambezi River basin.

**OUR VALUES**

- In order to assist employees to internalise the core values, an acronym for the values [Safety **(S)**, Honesty **(H)**, Integrity **(I)**, Professionalism **(P)** and Respect **(Re)**] called SHIPRe was devised.
- **Safety** - Protection anchored on care, wellness, health and peace of mind.
- **Honesty** - Trust premised on accountability and transparency.
- **Integrity** - Fairness encompassing justice as well as responsibility.
- **Professionalism** - Innovation for adaptability rooted in diligence, commitment, communication and self-improvement.
- **Respect** - Love for teamwork and family with empathy.

**INTEGRATED RESULTS BASED MANAGEMENT (IRBM) ALIGNED 2020-2024 CORPORATE STRATEGIC OBJECTIVES**

1. To increase water storage volume on the Zambezi River Basin catchment under the Authority from the current 181 billion cubic metres to 182.65 billion cubic metres by 2024
2. To improve Corporate Governance and compliance from 86% to 98% by 2024.
3. To increase access to sustainable social- amenities in the Riparian Communities by US\$1.2 million by 2024.
4. To reduce the negative variance between actual and forecasted volume of water allocated for power generation from 10% to 3% by 2024.
5. To reduce resistance to change by 50% annually from a baseline to be established by December 2020.
6. To increase the Partner Satisfaction index by 10% annually from baseline to be established by December 2020.
7. To improve Client Satisfaction index from 60% to 98%.
8. To improve organisational performance by 10% annually from baseline to be established by December 2020.
9. To improve the Acid Test Ratio from 3% to 75% by 2024.
10. To increase Non-Traditional Revenue Growth from 1.5% to 2.5% of Operating Revenue by 2024.

## 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 (ZAMBEZI RIVER AUTHORITY) Acts, the Chairpersonship of COM is held alternately by the Ministers responsible for Energy in the Governments of Zambia and Zimbabwe. For the year under review, Zimbabwe held the Chairpersonship of COM.



**Hon. Zhemu Soda, MP**  
COM Chairperson  
Minister of Energy and  
Power Development  
**Zimbabwe**



**Hon. Peter Chibwe Kapala, MP**  
COM Co – Chairperson  
Minister of Energy  
**Zambia**



**Hon. Prof. Mthuli Ncube, MP**  
Minister of Finance and  
Economic Development  
**Zimbabwe**



**Hon. Dr. Situmbeko  
Musokotwane, MP**  
Minister of Finance and  
National Planning  
**Zambia**

## THE BOARD OF DIRECTORS

The Authority’s Board of Directors comprises 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 Secretaries.



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



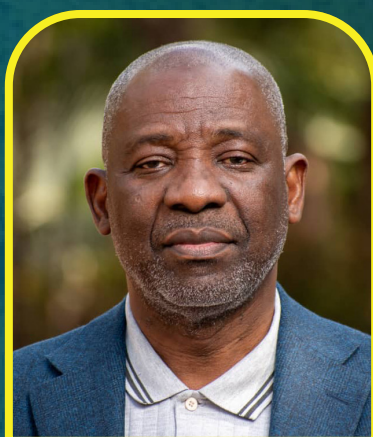
**Mr. George T. Guvamatanga**  
Secretary  
Ministry of Finance &  
Economic Development  
**Zimbabwe**



**Eng. Israel Rwodzi**  
Independent Board  
Member  
**Zimbabwe**



**Dr. Chisangano F. Zyambo**  
Board Co-Chairperson  
Permanent Secretary -  
Ministry of Energy  
**Zambia**



**Mr. Danies K. Chisenda**  
Permanent Secretary  
Ministry of Finance and  
National Planning  
**Zambia**



**Eng. Bernard Chiwala**  
Independent Board  
Member  
**Zambia**

## SUMMARY OF BOARD CHARTER

The Authority recognizes the importance of adopting and practicing good Corporate Governance in its business operations. To this end, the Authority subscribes to and actively champions the principles of sound corporate governance and always strives to ensure that the principles of fairness, transparency and accountability inform all its business decisions.

The Authority's Board of Directors ("the Board"), in terms of the Zambezi River Authority Acts Chapter 467 and 20:23 ("the ZRA Acts") of Zambia and Zimbabwe, respectively, is responsible for the policy, control and management of the Authority. The Board, in the discharge of its aforesaid statutory functions, recognizes that there is a contribution that good Governance and attendant procedures could make to the Authority particularly in enhancing the Authority's performance and efficient utilization of resources; further cementing of stakeholder relations and increasing its prospects of access to local, regional and international capital as well as hedging against reputational and investment risks. It is this recognition that motivated the Board to adopt the Board Charter as one of the Authority's several strategic interventions aimed at placing the Authority as one of the leading good Corporate Governance champions in the Water and Energy sector within the region and beyond.

The Board Charter is molded around fostering the following principles in the discharge of business operations by the Authority: Transparency; Accountability; Honesty; Integrity and Fairness. Inherent in these principles and elaborated more within the provisions of the Board Charter are good ethical conduct, avoidance of conflict of interest, corporate social responsibility as well as compliance with regulatory and statutory provisions. By the end of the period under review, Corporate Governance compliance stood at 91%, indicating that the Authority was well on course to achieving its strategic objective of attaining 98% compliance to best practice by 2024.

In a bid to further capacitate and increase effectiveness of the Board, members attended a Corporate Governance Masterclass in High Performance Boardrooms in July 2022. Recommendations from the highly educational sessions are being implemented by the Authority.

## REMUNERATION AND COMPENSATION POLICY FOR BOARD MEMBERS

The Remuneration and Compensation Policy is provided for 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 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 2022

The total remuneration and compensation availed to Board members during the year 2022 was **US\$ 170,680.00**.

## 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

This Committee has been charged with the prime responsibility of reviewing accounting systems and financial reporting to safeguard the Authority's assets; monitoring the competence with which the Budget activities are carried out and recommending 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.

In addition, 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. The Committee comprised the following members:

NAME	MEETINGS ATTENDED	NOTES
Mr. George T. Guvamatanga Secretary, Ministry of Finance & Economic Development – Zimbabwe	3/4	Represented by Proxy, Mr. P. Kunaka, in one meeting
Mr. Danies K. Chisenda Permanent Secretary, Ministry of Finance and National Planning – Zambia	1/4	Represented by Proxy, Ms. M. C Munoni, in three other meetings

### (b) Audit, Risk Management and Corporate Governance

This Committee reviews accounting systems and financial reporting to safeguard the Authority's assets, monitors the competence with which external audits are carried out and ensures that the Auditor's recommendations are given consideration.

In order to improve performance, the Board must 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. The Committee comprised the following members:

NAME	MEETINGS ATTENDED	NOTES
Eng. Israel Rwodzi Independent Board Member – Zimbabwe	4/4	None
Eng. Bernard Chiwala Independent Board Member -Zambia	4/4	None
Ms. Tariro Mhuka Independent Committee Member – Zimbabwe	4/4	None
Dr. David Kalaba Independent Committee Member – Zambia	4/4	None

During the year, the following policies and procedures were reviewed pending endorsement by Executive Management and approval by the Board: the ICT Policies and Procedures Manual and the Human Resource and Administration Policies and Procedures Manual comprising the Leave Policy; Employment Contracts and Workplace Wellness Programmes.

The Workplace Policy; Overtime Policy; Meetings Policy; Remuneration Policy; Coronavirus Disease Workplace Management Procedures; Recruitment and Selection Policy and Procedures as well as the Employee Saving Scheme Policy and Procedures were updated during the period under review.

### (c) Technical and Projects

This 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 the 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.

#### The Committee had the following members:

NAME	MEETINGS ATTENDED	NOTES
Eng. Israel Rwodzi Independent Board Member – Zimbabwe	4/4	None
Eng. Bernard Chiwala Independent Board Member -Zambia	4/4	None
Eng. Kenneth Maswera Acting Managing Director, Zimbabwe Power Company - Zimbabwe	2/4	Represented by Proxies, Eng. Wellington Maphosa and Eng. Washington Mareya, in two meetings
Eng. Victor Mapani Managing Director, ZESCO Limited – Zambia	1/4	Represented by Proxies, Eng. Wesley Lwiindi and Eng. Justin Loongo, in three meetings

# EXECUTIVE MANAGEMENT



**Eng. Munyaradzi C. Munodawafa**  
Chief Executive



**Mr. Peter Kapinga**  
Board Secretary/  
Corporate Services Director



**Mr. Edward M. Kabwe**  
Director - Finance



**Eng. Sithembinkosi Mhlanga**  
Director  
Projects and Dam  
Management Services



**Eng. Christopher Chisense**  
Director  
Water Resources &  
Environmental  
Management



# STRATEGIC REPORTS GROUPED PER KEY RESULT AREA

## KRA 1: DAM, WATER RESOURCES AND ENVIRONMENTAL MANAGEMENT

### 1.1. Introduction

The outcomes of the Dam Management, Water Resources and Environmental Management key result area are improved water allocation accuracy and sustained integrity/safety of the Kariba Dam and reservoir. The department aims to reduce the negative variance between actual and forecasted volume of water allocated for power generation from 10% to 3% by 2024.

Forty-five billion cubic metres (45 BCM) of water was allocated for power generation for the year 2022 while actual utilisation was 47.6 BCM. This resulted in a negative variance of 6%. To mitigate against this, the Authority prescribed generation profiles for the Power Utilities to comply with. Furthermore, engagements between the Authority and the Power Utilities were undertaken through the Joint Technical Committee which comprises the Power Utilities and the Authority. This was informed by the hydrological performance and available water to avoid possible shutdown of the power stations.

During the period under review, an analysis of performance pertaining to both outcomes indicated that the Authority was on course to satisfactorily meet the targets by the end of the current Corporate Strategy period i.e., 2024.

### 1.2. Water Resources and Environmental Management

The Water Resources and Environmental Management department contributes to the attainment of the Key Result Areas 1 and 2 i.e., Dam, Water Resources and Environmental Management as well as Projects Management Services. One of its key outcomes is *improved water allocation accuracy*. During the year 2022, the Department procured and implemented the Kariba Inflow Forecasting System (a modelling tool being used for hydrological forecasting aiding in reducing forecasting variance) in January 2022. By the end of the period under review, the forecasting variance was 6% compared to the 2021 variance of 11%.

#### 1.2.1. Rainfall Performance – 2021/22 Season

The 2021/22 Rainfall Season (by World Meteorological Organisation definition) officially started on 1<sup>st</sup> July 2021 and ended on 30<sup>th</sup> June 2022. However, the rainy season ended in April 2022, recording normal rainfall over most of the Kariba Catchment. Figure 1 below shows rainfall amounts at the Authority's gauging stations across the Kariba Catchment.

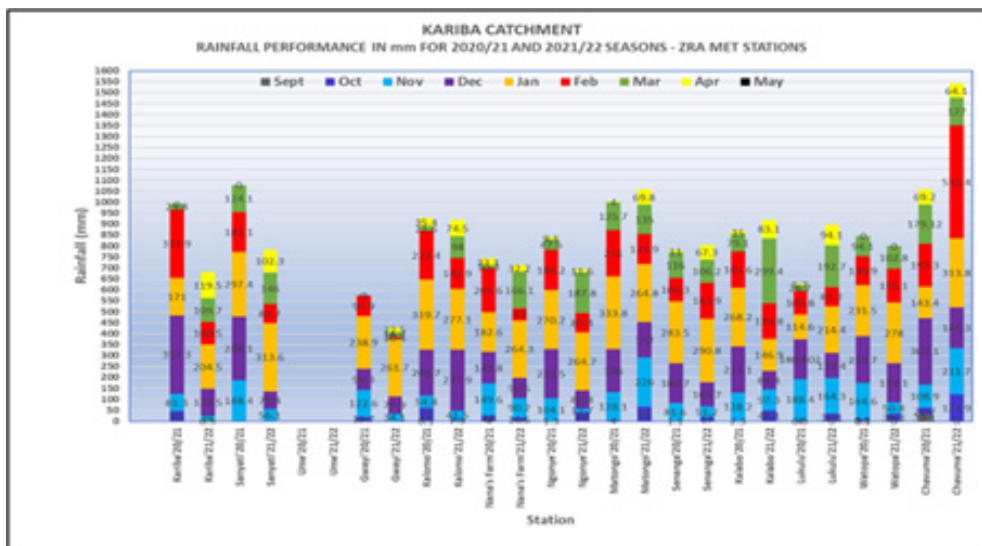


Figure 1. Rainfall Performance up to April 2022

Figure 2 presents spatial rainfall accumulation for Southern Africa from the beginning of the rainy season to 17th April 2022 as downloaded from the Climate Prediction Centre Website of the United States. The map shows that, on average, the Kariba Catchment, situated in the central part of the map, received normal rainfall (between 80% – 120% of the long-term average) for the period up to April 2022, which was confirmed by what was monitored at the Authority Stations as shown in Figure 1.

In line with the seasonal forecast released by the Twenty-Fifth Annual Southern Africa Regional Climate Outlook Forum (SARCOF-25) in August 2021, the bulk of the Southern African Development Community (SADC) region in general and the Kariba Catchment in particular, received normal rainfall (80% – 120% of 30-year mean) to slightly above-normal rainfall (120 – 150% of 30-year mean) for the period October 2021 to April 2022 (Figure 2 below).

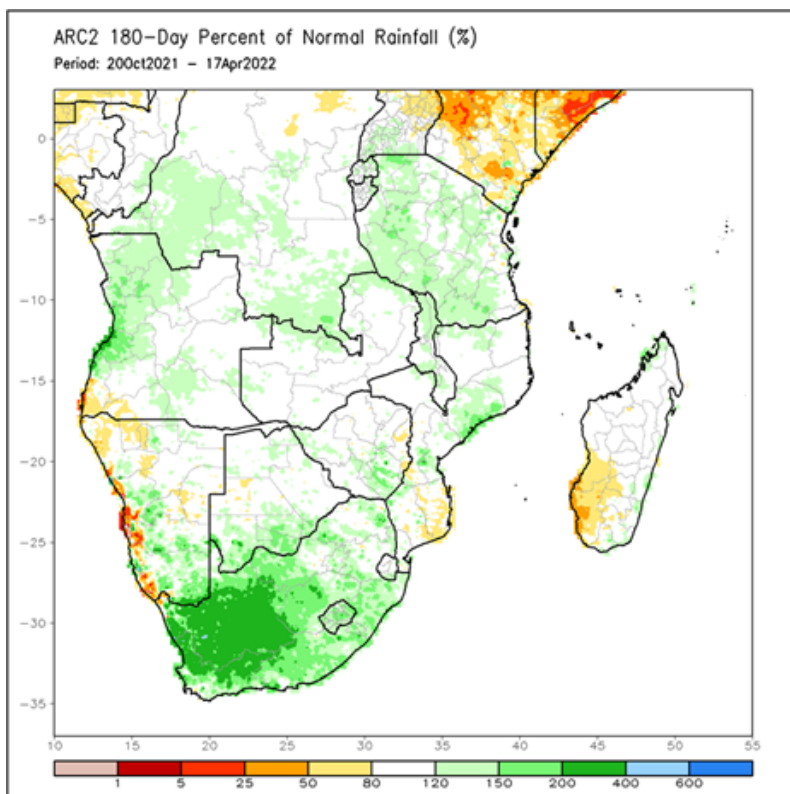


Figure 2. Total Rainfall distribution 20 October 2021 – 17 April 2022

(Source:[https://www.cpc.ncep.noaa.gov/products/international/africa\\_arc/africa\\_arc\\_180day\\_sa\\_pnorm.gif](https://www.cpc.ncep.noaa.gov/products/international/africa_arc/africa_arc_180day_sa_pnorm.gif))

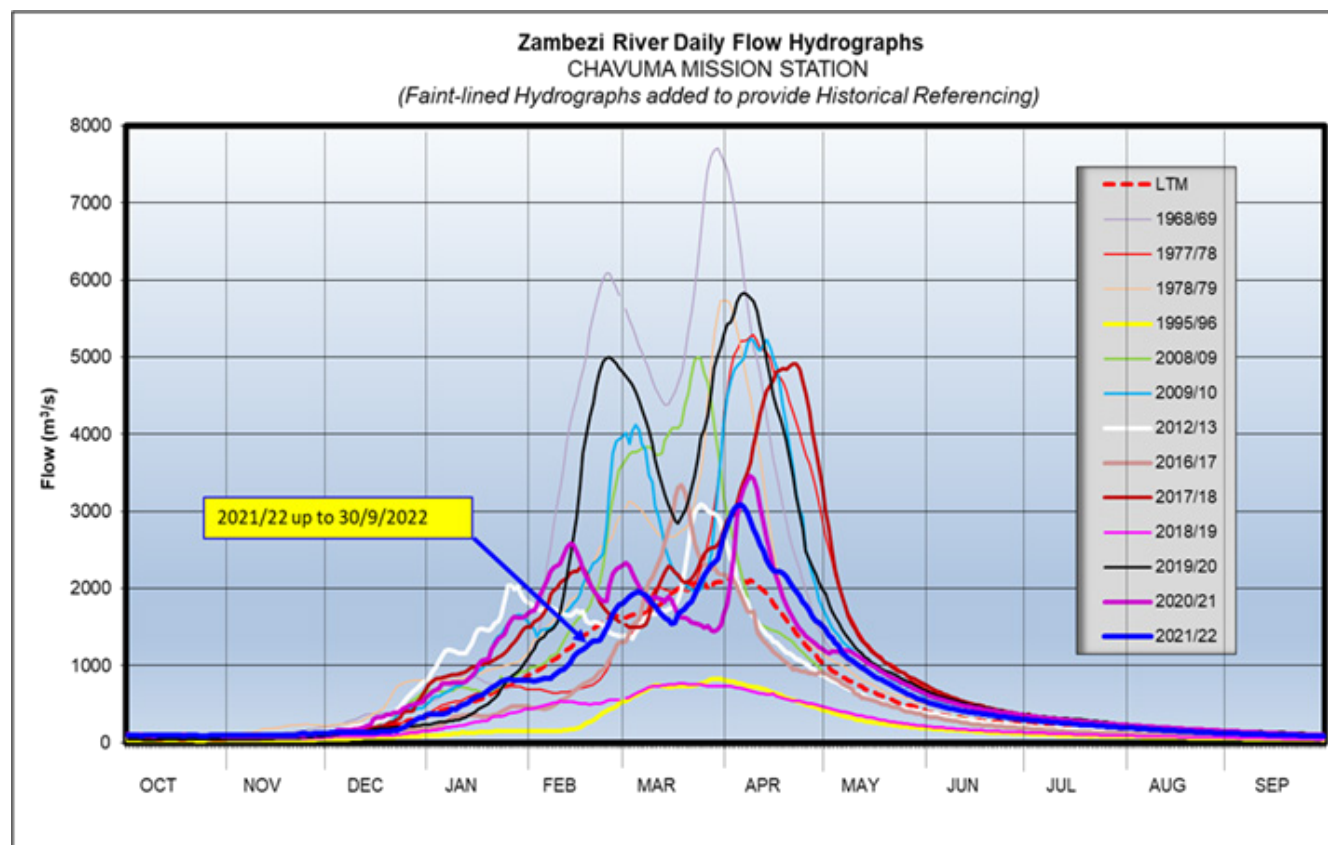
### 1.2.1.1. Regional Climate Seasonal Forecast 2021/22

The Annual meeting of regional weather experts, the Southern Africa Climate Outlook Forum (SARCOF-25) held in August 2021 and the Meteorological Departments of the Republics of Zambia and Zimbabwe predicted a normal to above normal rainfall outlook for the SADC Region during the 2021/2022 rainfall season. Similar projections were disclosed at SARCOF-26 (in August 2022) where it was indicated that the bulk of the SADC region was likely to receive normal to above-normal rainfall for most of the period October to December (OND) 2022.

In addition, rainfall guidance from the NOAA / Climate Prediction Center (CPC)'s North American Multi-Model Ensemble (NMME) suggested an increased chance for the negative Indian Ocean Dipole (IOD) phase to increase and peak during the northern hemisphere autumn (1st September to 30th November) 2022. NMME forecasts favoured a high chance for above average rainfall over the Maritime Continent, Australia, India, Southern Africa and northern South America.

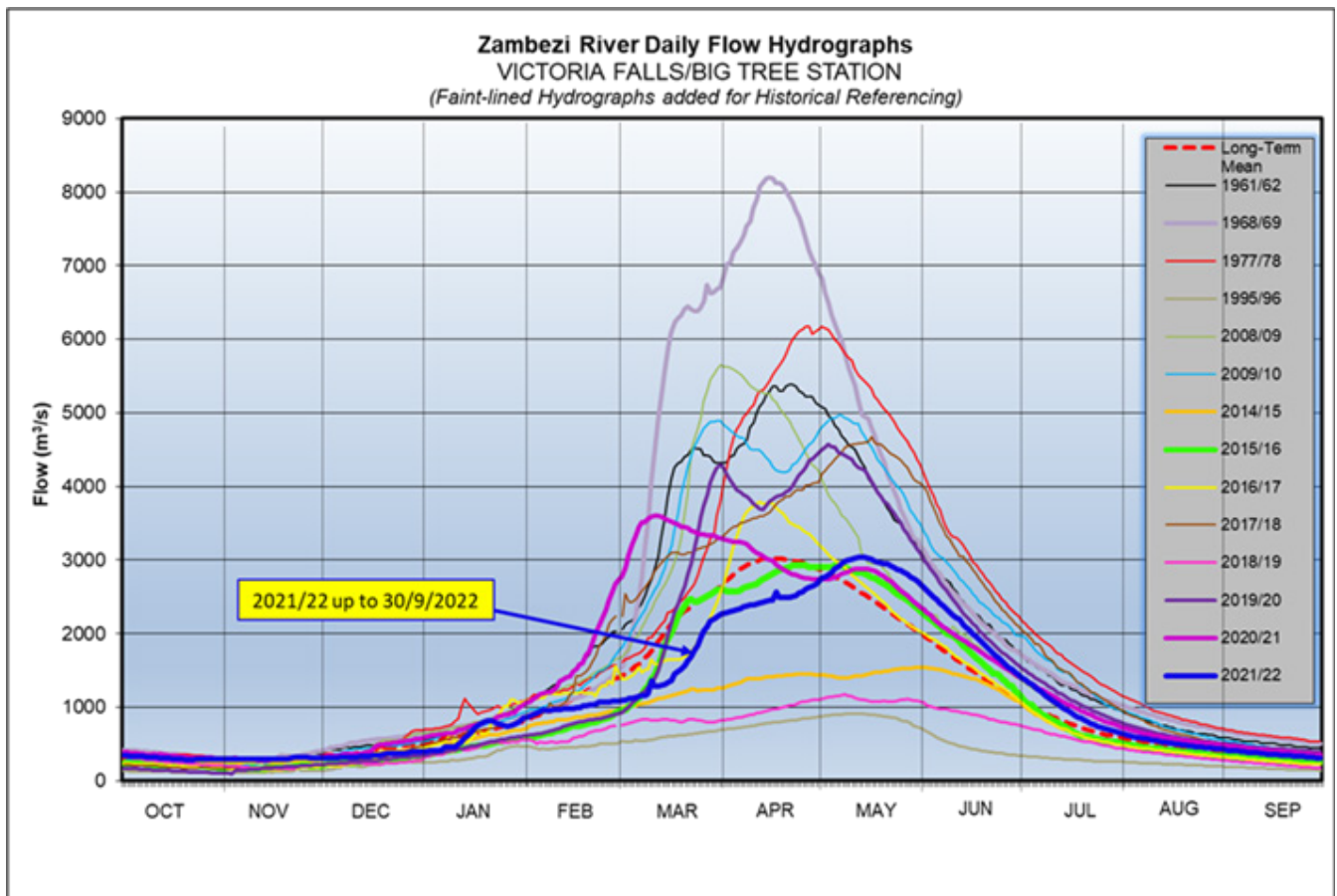
### 1.2.2. River Flows

Flows in the mainstream Zambezi River during the 2021/22 hydrological year were generally average as shown in Figures 3 and 4 as well as Tables 1 and 2.



**Figure 3. Zambezi River at Chavuma – Hydrograph Overlay**

Cumulatively, 21.50 BCM was recorded to have passed through Chavuma in 2022, which was less than the 25.46 BCM recorded in 2020/21 season but was slightly above the long-term average of 19.03 BCM.



**Figure 4. Zambezi River at Victoria Falls (Nana’s Farm) – Hydrograph Overlay**

Cumulatively, 35.03 BCM was recorded to have passed through Victoria Falls in 2022, which was less than the 43.10 BCM recorded in the 2020/21 season but was slightly above the long-term average of 34.98 BCM.

**1.2.3. Lake Levels**

The water level at the Kariba Dam rose by 0.42m from 478.35m with usable storage of 12.88 BCM (19.88% of live/usable storage) at the beginning of 2022, gaining 1.86m to peak at 480.21m on 11th June 2022, the latter being 4.71m above the Minimum Operating Level (MOL). The Lake level then receded to its lowest record at 475.60m on 30th December 2022, giving a net annual level loss of 2.75m during the year 2022.

The Lake closed the year 2022 at 475.60m on 31st December 2022, with 0.498 BCM usable storage (0.77% of live/usable storage). In comparison, the previous year (2021) closed at a higher level of 478.39m on 31st December 2021 with 13.061 BCM of usable storage, representing 20.16% of usable capacity. By 31st December 2022, inflows of 44.02 BCM had been received against a forecasted 42.42 BCM. This reflects a 4% positive variance between the forecasted and actual inflows.

Figure 5 shows lake level hydrograph-overlays for various past years in comparison with 2021/22.

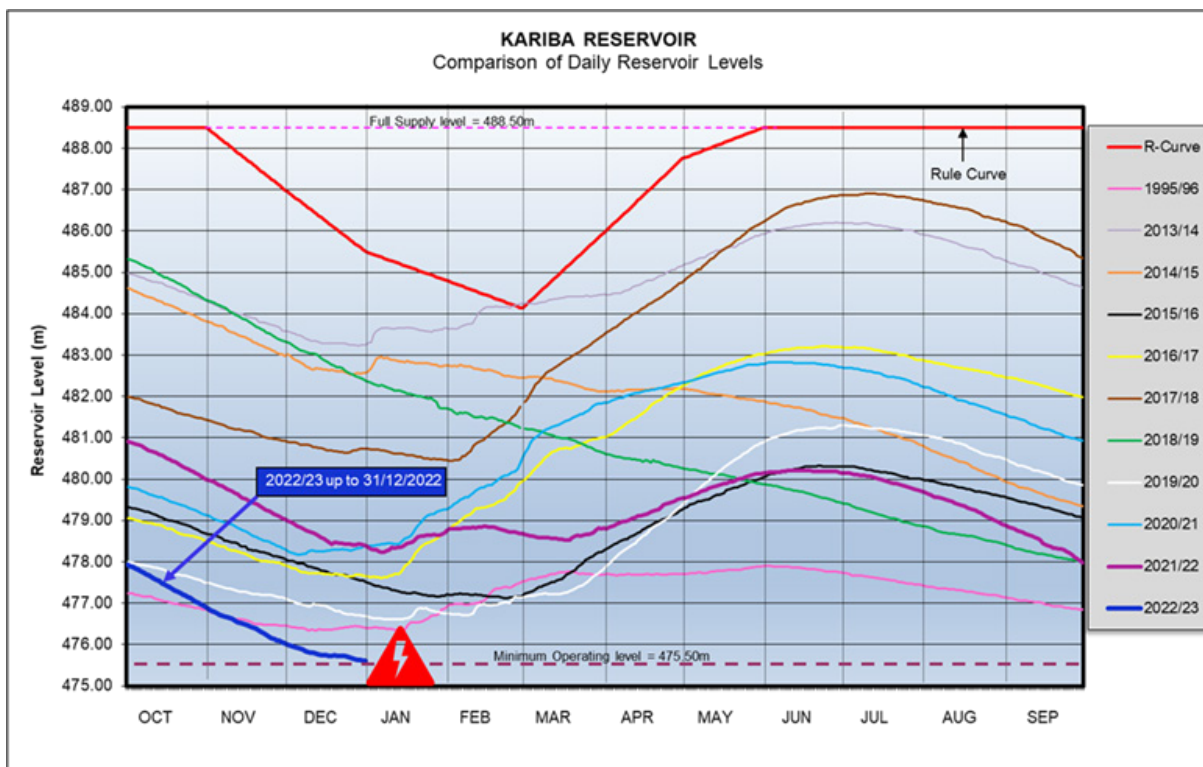


Figure 5. Lake Levels Comparison Chart Overlay

During the period under review, the Lake recorded the lowest level on record. On 31st December 2022, the lake level was 475.6m (0.1m above the minimum operating level). The reduction in the lake level was largely due to over-utilisation of allocated water by 11% by ZPC’s Kariba South Bank Power Station. Accordingly, an over-utilisation penalty of US\$1.78 million was charged on the Power Utility. Going forward, the Authority resolved to upscale the frequency of monitoring the Utilities’ adherence to the approved water utilisation schedules - increased from quarterly to weekly meetings - through the Joint Technical Committee (JTC).

### 1.2.3.1. Operation of Spillways

The spillway gates at Kariba remained closed as the levels remained below the Flood Control Rule Curve (see Figures 5 above) and there was therefore no need for spilling.

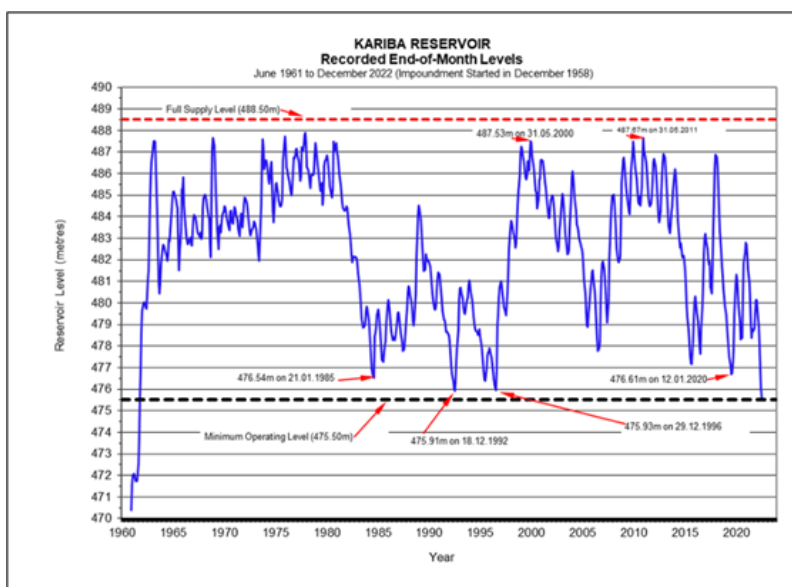


Figure 6. Recorded end of month levels

**1.2.3.1. Water Balance**

The total inflow into Lake Kariba during the calendar year 2022 was 44.02 BCM, a decrease of about 26% from the 2021 record. The Lower Catchment contribution accounted for 20% inflow volume to the Lake (compared to 28% recorded in 2021) while the rest came from the Zambezi Upper Catchment as monitored at Victoria Falls.

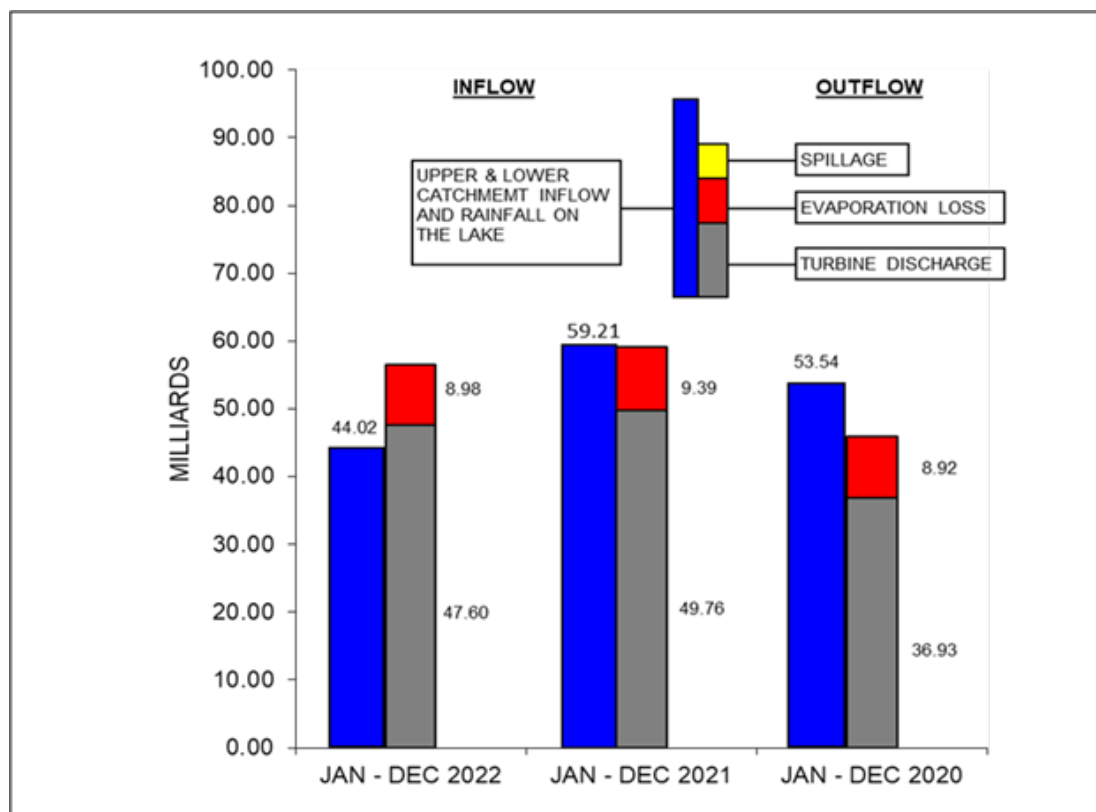
On the other hand, the total outflow from the Lake was 56.58 BCM, composed of 47.60 BCM turbine discharge and 8.98 BCM lost through evaporation. The net effect on the Reservoir was a storage decrease of 12.56 BCM which, augmented by the balance brought forward from the previous year, resulted in the Reservoir closing with a live storage of about 0.5 BCM.

Table 1 below shows the annual water balance of Lake Kariba for 2022 compared to the two preceding years. Historical water balance data is also presented graphically in Figure 12. Figure 11 presents a schematic representation of the monthly water balance dynamics for 2022.

Parameter	Description	2022	2021	2020
<b>INFLOWS</b> (Billion Cubic Meters)	From the Upper Catchment	35.07	42.83	44.87
	From the Lower Catchment	8.95	16.37	8.67
	<b>Total</b>	<b>44.02</b>	<b>59.21</b>	<b>53.54</b>
<b>OUTFLOWS</b> (Billion Cubic Meters)	Turbine Discharge	47.60	49.76	36.93
	Spillways Discharge	0	0.00	0
	Evaporation	8.98	9.39	8.92
	<b>Sub-Total</b>	<b>56.58</b>	<b>59.16</b>	<b>45.85</b>
	Storage Increase/Decrease	-12.56	0.05	7.69
	<b>Total</b>	<b>44.02</b>	<b>59.21</b>	<b>53.54</b>

**Table 1. Comparative Annual Water Balance for Lake Kariba (January - December)**

Figure 7 below graphically illustrates the details in table 1.



**Figure 7. Lake Kariba water balance comparisons over three recent years**

The figure below shows the monthly inflows; outflows and evaporation losses and water levels for the Lake during the year 2022.

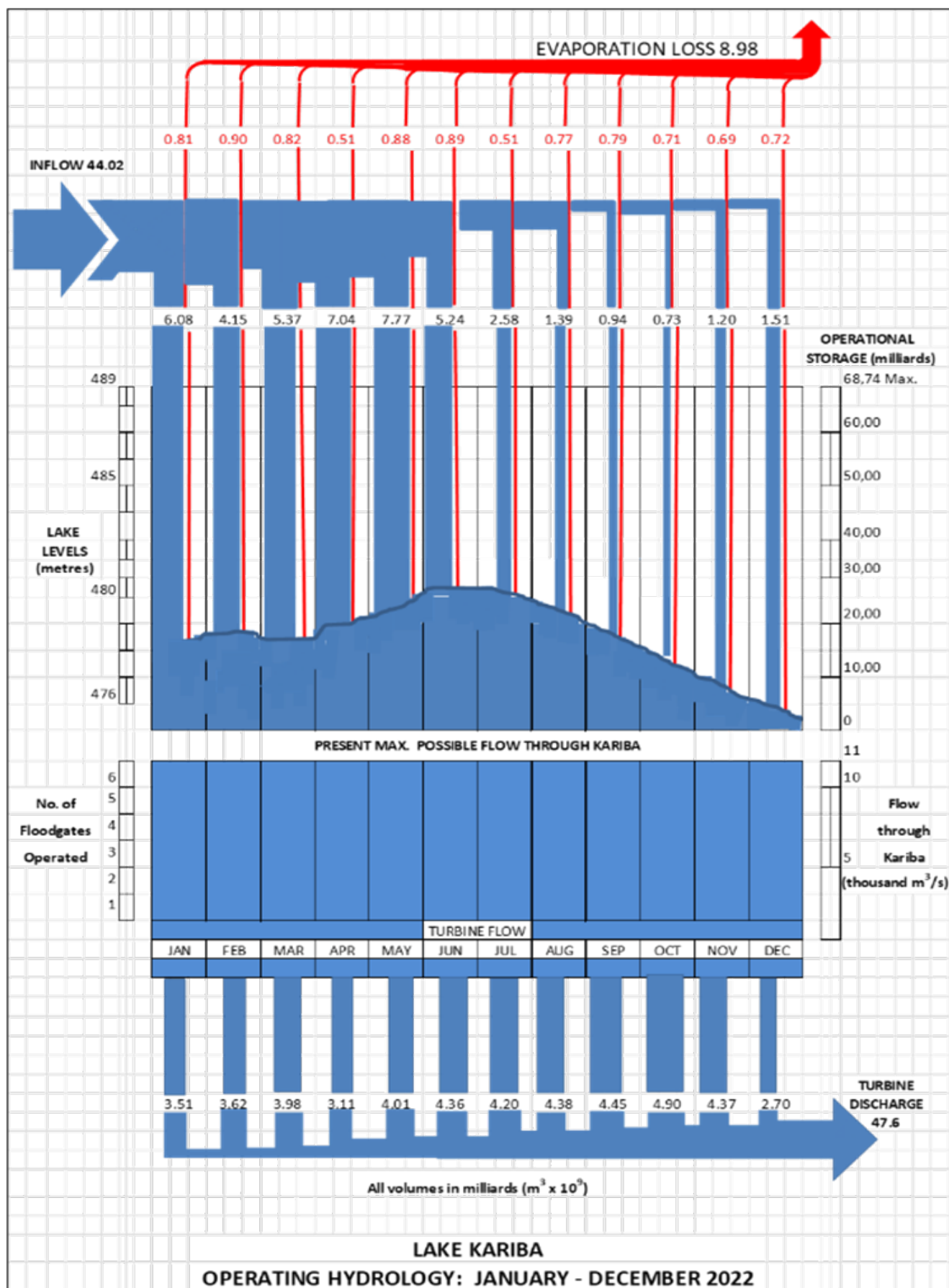
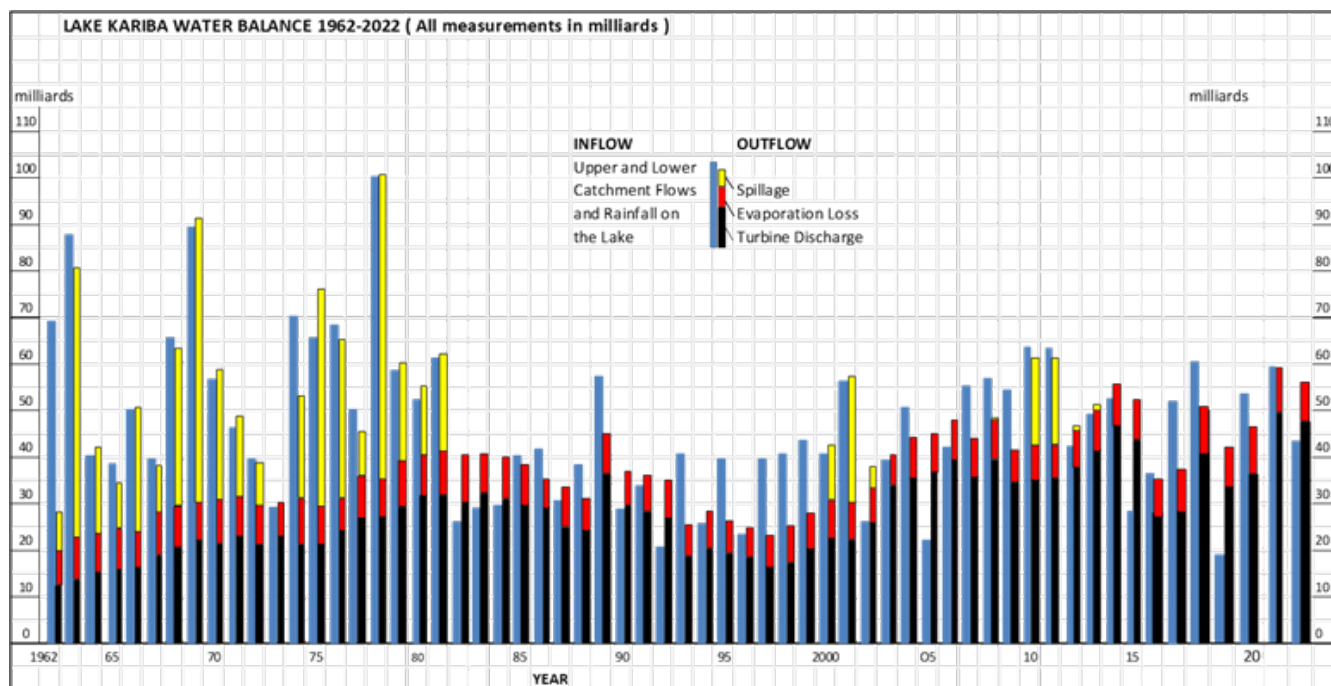


Figure 8. Schematic Representation of the Kariba Water Balance for 2022

**Figure 9 below is a comparative analysis of the Kariba water balance since 1962:**



**Figure 9. Kariba Water Balance 1962 – 2021 (All Volumes in BCM)**

The stacked bar graph above (Figure 9) shows variation of annual water balance volumes for Lake Kariba since impoundment in 1962, depicting the gross inflows on one hand and outflows on the other. The outflows are composed of turbine outflows (water used to generate power), evaporation (water lost to the atmosphere) and spillage – where applicable. The graph also shows that while spilling was undertaken every year from impoundment until the early 1980’s, the same had stopped until the early 2000’s and after 2010. The reason for the high spillage in earlier years is that the power station on the north bank was only built and commissioned in 1975. Thereafter, turbine outflows increased, though affected by the drought years of the 1980’s to the 1990’s.

**1.2.4. Water Usage for Power Generation at Kariba**

Water usage for power generation at Kariba is monitored and reported daily through the Daily Hydrological Bulletin that is circulated internally as well as to the two Utilities, Zesco Limited and ZPC.

A total of 45 Billion Cubic Meters (BCM) of water for power generation at Kariba was allocated for the calendar year 2022 shared equally between the two Utilities. This water allocation was to provide for a combined average generation output of the order of 1,100MW or 550MW for each Utility.

As of 31st December 2022, the Utilities had cumulatively utilized 47.60 BCM, which translated to 106% of their combined annual allocation. Kariba North Bank Power Station utilized 22.60 BCM, which represents almost 1% utilization above its 22.50 BCM annual water allocation while Kariba South Bank Power Station utilized 25.00 BCM, which represents 11% utilization above its 22.50 BCM annual water allocation.

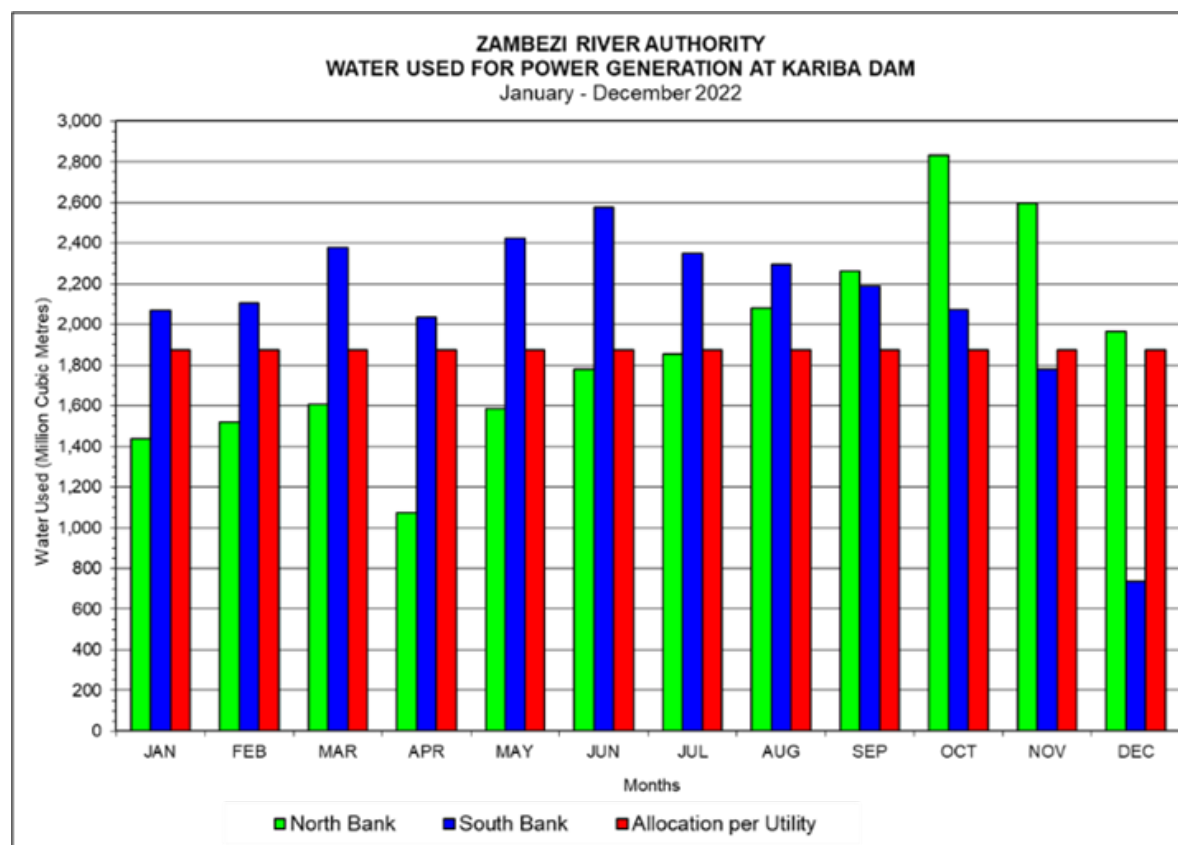
The water utilization statistics by the two Utilities at Kariba are elaborated in Table 2 and displayed graphically in Figure 10.



Month	Kariba North			Kariba South			Cumulative Allocation for Kariba Complex (MCM)	Cumulative Water Used at Kariba Complex (MCM)	% of Allocation
	Water Allocated (MCM)	Actual Used (MCM)	% of Allocation	Water Allocated (MCM)	Actual Used (MCM)	% of Allocation			
JAN	1,875.00	1,438.55	77	1,875.00	2,068.43	110	3,750.00	3,506.98	94
FEB	1,875.00	1,519.49	81	1,875.00	2,104.28	112	7,500.00	7,130.74	95
MAR	1,875.00	1,606.36	86	1,875.00	2,377.05	127	11,250.00	11,114.15	99
APR	1,875.00	1,072.60	57	1,875.00	2,035.18	109	15,000.00	14,221.93	95
MAY	1,875.00	1,586.01	85	1,875.00	2,421.78	129	18,750.00	18,229.73	97
JUN	1,875.00	1,781.78	95	1,875.00	2,578.06	137	22,500.00	22,589.56	100
JUL	1,875.00	1,854.35	99	1,875.00	2,347.44	125	26,250.00	26,791.36	102
AUG	1,875.00	2,080.30	111	1,875.00	2,297.13	123	30,000.00	31,168.79	104
SEP	1,875.00	2,262.02	121	1,875.00	2,188.34	117	33,750.00	35,619.15	106
OCT	1,875.00	2,830.01	151	1,875.00	2,072.74	111	37,500.00	40,521.90	108
NOV	1,875.00	2,595.62	138	1,875.00	1,777.82	95	41,250.00	44,895.34	109
DEC	1,875.00	1,966.62	105	1,875.00	734.42	39	45,000.00	47,596.38	106
<b>Total:</b>	<b>22,500.00</b>	<b>22,593.71</b>	<b>100.42</b>	<b>22,500.00</b>	<b>25,002.67</b>	<b>111.12</b>	<b>45,000.00</b>	<b>47,596.38</b>	<b>105.77</b>

MCM = Million Cubic Metres

**Table 2: Summary of Water Used for Power Generation at Kariba Complex in Million Cubic Meters (MCM) January – December 2022**



**Figure 10. Water Utilization for Power Generation operations at Kariba in 2022**

The impact of the over-utilization of the annual allocation of water for power generation in 2022 by ZPC operated Kariba South Power Station was a 0.85m excessive drawdown in Lake Level from the projected (preferred) 476.45m (4.26 BCM or 6.57% usable storage) to the actual closing level of 475.60m (0.498 BCM or 0.77% usable storage) on 31st December 2022.

**1.2.5. Joint Operation Technical Committee (JOTC)**

The Zambezi River is a transboundary water resource that spans across Southern Africa, creating a national boundary point of reference for the following riparian states: Angola; Botswana; Namibia; Zambia; Zimbabwe and Mozambique. Established in 2011, the JOTC is an international cooperation platform within the Southern Africa Development Community (SADC) comprising water management institutions and dam operators in Mozambique (Hydro Caborra Basa and ARA-CENTRO.IP); Zimbabwe (ZPC and Zimbabwe National Water Authority); Zambia (ZESCO Limited and Water Resources Management Authority) as well the Zambezi River Authority.

**The objectives of JOTC are:**

- a) To exchange real-time hydro-meteorological and environmental data
- b) To share reservoir operation schedules
- c) To share expertise and experiences in the development and implementation of hydrological databases and models for reservoir operations and water resource management
- d) To share expertise and experience in dam safety and water resources monitoring aspects

The JOTC met in September 2022 in Maputo, Mozambique and discussed operational matters that included the following:

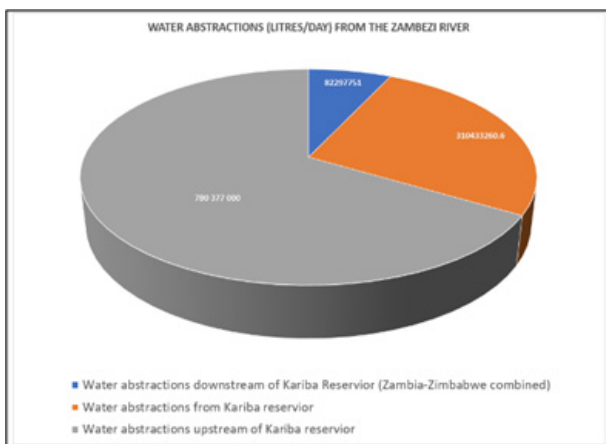
- a) Zambezi river basin hydrological performance and its impact on the water resource management for hydropower
- b) Dam Synchronization and Operations
- c) Digital tools for Dam operators in the Zambezi River Basin
- d) Status of Projects implemented by JOTC member institutions on the Zambezi River Basin.

**1.2.6. Water abstraction data**

The Authority also implemented the water abstraction monitoring exercise in the Kariba catchment stretching from Kazungula to Luangwa/Kanyemba from April to December 2022. The exercise was aimed at establishing the quantities of water that stakeholders around the lake and catchment rivers consume for purposes other than power generation.

It was established that about 2% of water was being abstracted from the Kariba catchment by the non-hydro power users.

Field surveys regarding updating of the water Usage abstraction registers were undertaken during the year 2022. The figure below is a summary of the data collected from both the Zambian and Zimbabwean sides of the Zambezi River.



**Figure 11 Water abstraction in liters**

**1.2.7. Environmental Monitoring Programme Implemented**

The Water Resources and Environmental Management Department undertakes hydrological and environmental monitoring and management at various stations. Figure 12 below is a map of the Zambezi River Basin showing the location of the Authority’s water quality sampling stations. The stations marked red and yellow are sampled four times a year while those marked green are sampled 12 times a year.



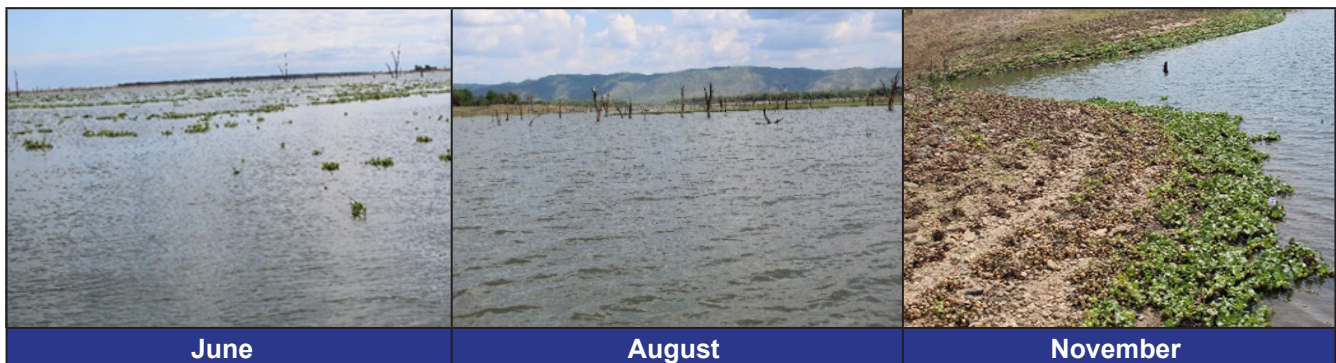
**Figure 12. Location of the Authority’s Water Quality Sampling Sites in the Zambezi Basin**



**Figure 13. above highlights the sub-basin of importance – the Kariba Eastern Basin (Basin 5), being at the downstream of the Lake. It shows some selected points that are sampled during the monthly Environmental Monitoring Programme.**

### 1.2.7.1. Water Hyacinth (*Eichhornia crassipes*) Monitoring

Water Hyacinth (*Eichhornia crassipes*) monitoring on Lake Kariba's Eastern Basin was conducted throughout the year 2022. Weed mats were observed at Gatche Gatche in the second and third quarters of 2022. Localised weed mats along the water shores were also observed at University Lake Kariba Research Station (ULKRS) Crocodile Farm; Andora Harbour; Nyaodza and Charara sampling stations. Due to low water levels recorded during the fourth quarter, most of the weeds were stranded along the shoreline of the lake and traces of it driven by wind current were observed near Kariba North Bank and South Bank Power Station intake areas. The weed near the power station water intake areas was removed by physical means. The following pictures show the state of the weed at Gatche Gatche, one of the hotspot sites for the selected months of 2022.



**Figure 14. Water Hyacinth (*Eichhornia crassipes*)**

The morphological monitoring of the Water Hyacinth was only done through physical observations by assessing the characteristic physical damage on the leaves caused by the weevils of *Neochetina Bruchi* (*N.bruchi*) species. The biological activities were observed signifying continued presence of the bio-control agents. To date, the same has proved largely effective in controlling the invasive weed species. Studies have shown that the weevils prefer the water hyacinth plant and therefore do not pose a threat to agricultural and horticultural crops such as groundnuts and tomatoes that are prevalent in the riparian communities.

### 1.2.7.2. Water Quality Data Collection and Processing

The Environmental Monitoring Programme implemented comprised monthly, quarterly and semi-annual sampling of Lake Kariba waters, the Zambezi River and its tributaries. The water quality data was generated through in-situ measurements and laboratory analyses. This included parameters such as temperature; pH; electrical conductivity; dissolved oxygen; alkalinity; total suspended solids; total dissolved substances; turbidity; total phosphorus; total chlorophyll; total nitrogen; nitrate; nitrite; secchi depth; alkalinity and faecal coliforms.

The sampling of heavy metals and trace elements across the Lake Kariba waters was undertaken with the water samples collected being also analysed for physico-chemical and bio-monitoring and herbicides/pesticides parameters. Activity execution was hamstrung by lack of resources to analyse water quality data QR parameters. Consequently, the same was outsourced to companies outside the Contracting States. The analysing laboratories were Alfred H. Knight for the heavy metals and trace elements and Zambia Bureau of Standards (ZABS) for the herbicides/pesticides/insecticide. The Authority was in the process of equipping the Environmental Laboratory and capacitating employees to enable analysis of heavy metals and pesticides/herbicides in-house.

### 1.2.7.3. 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 in the Lake was done to find out which parameters of the lake area met the specified quality standards for the different water uses specified in the Authority's Water Quality Guidelines. The spatial results were used in relating nutrient concentrations in the lake with Water Hyacinth (*Eichhornia Crassipes*) proliferation. Water Hyacinth is prominent in areas with high concentrations of nutrients (nitrates and phosphates). High concentrations of nutrients were found in the Lake Kariba Eastern Basin; Binga Harbour; Sinazongwe and Mlibizi, which were also areas prone to water hyacinth. The quarterly Upper/Lower Zambezi Catchment Environmental Monitoring Programme was undertaken in 2022 with selected parameters analysed including temperature; pH; pesticides/herbicides and heavy/trace elements and total chlorophyll. The water quality results obtained from both in-situ measurements and the Authority's Environmental Laboratory analyses indicated a healthy aquatic ecosystem of the waters in Lake Kariba; the Zambezi River and its tributaries as most parameters were within the requirements of the Authority's Water Quality Guidelines for Livestock Watering; Irrigation and Aquatic Life.

#### **1.2.7.4. Environmental and Social Impact Assessment/ Project Brief/Prospectus**

The Authority reviewed and provided comments on proposed developments that may impact on the Authority's jurisdiction to the environmental regulators being Environmental Management Agency of Zimbabwe (EMA) and Zambia Environmental Management Agency (ZEMA).

Some of the ESIA/EPBs documents were reviewed in respect of which comments were provided are as follows:

- a) Environmental Project Brief for the Arctic Peak Suppliers' Aquaculture Project on Lake Kariba at Banana Bay by Arctic Peak Suppliers Limited.
- b) ESIA for the proposed Fish Farm project at Chilongo Bay in Chilongo village of Siavonga district by Mika Meats Limited.
- c) ESIA disclosure meeting for proposed operation of a Fish Farm in Namafulo area of Sinazongwe District by Mwekela Fisheries Limited.
- d) Development of a Bush Camp in the Chiawa Game Management Area for commercial and non-commercial campsite in Kafue District by Village Fig River Camp Limited.
- e) The Environmental and Social impact Statement (ESIS) for the Kazungula Water Supply and Basic Sanitation Project by Southern Water and Sanitation Company.
- f) Holiday Resort Development in Chiawa Game on Sub "b" of lot 22032/m in Kafue District by Dr. George Sande Tembo.
- g) Development of the Safari Guide Training Facility in Chiawa Game Management Area of Kafue District by Bedrock Africa.

The Authority will continue engaging the two Environmental Regulators to ensure environmental management actions listed in the submitted documents by developers for supporting sustainable management of water resources are implemented.

#### **1.2.7.5. Plans to address Climate Change: Floating Solar PV Project**

The Authority convened meetings on Floating Solar PV Project preparatory stages with the collaboration of Worldwide Fund for Nature (WWF) as well as engagements with the Swedfund (a Swedish funding agency). As a way forward, the Floating Solar PV Project Concept Note was developed internally to guide the implementation of floating solar along the water storage infrastructure of the Authority. In addition, a Climate Change Mitigation Policy was developed. These concepts are discussed in further detail under the Projects Management Services section.

### 1.3. Dam Safety Management Programme

Dam safety consists of management of the health of dams primarily for protection of people living downstream of dams, property, essential services and the environment. With a key outcome being that of ensuring Integrity/Safety of Kariba Dam and Reservoir, the programme encompasses undertaking of activities and processes of data collection, analysis, dam maintenance and inspections and the review of risks to minimise the likelihood of uncontrolled release of water to as low as practicably reasonable levels. Various surveillance and monitoring (S&M) and operations and maintenance (O&M) activities were carried out as per the Standing Operating Procedures (SOP). The activities that were carried out during the year include the raising of floodgates no. 2 and 3, south bank slope management by stone pitching and the refurbishment of lighting circuits in galleries and adits. Based on results of dam safety data treatment and analysis processes, the observed behaviour of the dam remained satisfactory during the year.

A “high risk” priority was maintained for the dam during the year 2022 as shown in Fig. 15, indicating that there was no change on the overall condition of the dam. This was consistent with the state of the dam since commencement of the Kariba Dam Rehabilitation Project (KDRP) comprising two project components; plunge pool reshaping and spillway refurbishment. A significant improvement in serviceability of both the plunge pool and the spillway hydro-electromechanical equipment of floodgates was expected at completion of the project.

Risk	Severity	Likelihood	Speed of Onset	Ability to Mitigate	Risk Priority	Change of risk priority from last quarter
<b>Dam Safety</b> <i>Risk of a dam safety incident</i>	High	Low	Fast	Moderate	High	Dam Safety risk remained stable.

Figure 15. Kariba Dam safety risk profile

The risk profile is indexed based on the severity of harm to public safety, the environment and property and level of interruption to essential services should dam failure occur from poor implementation of the dam safety programme. While the profile acknowledges that the KDRP works will significantly restore serviceability of the dam, the assessment recognises that progression of dam failure risks would be quick, leaving an inadequate amount of time to take reasonable measures to reverse the situation.

#### 1.3.1. Dam Surveillance and Monitoring

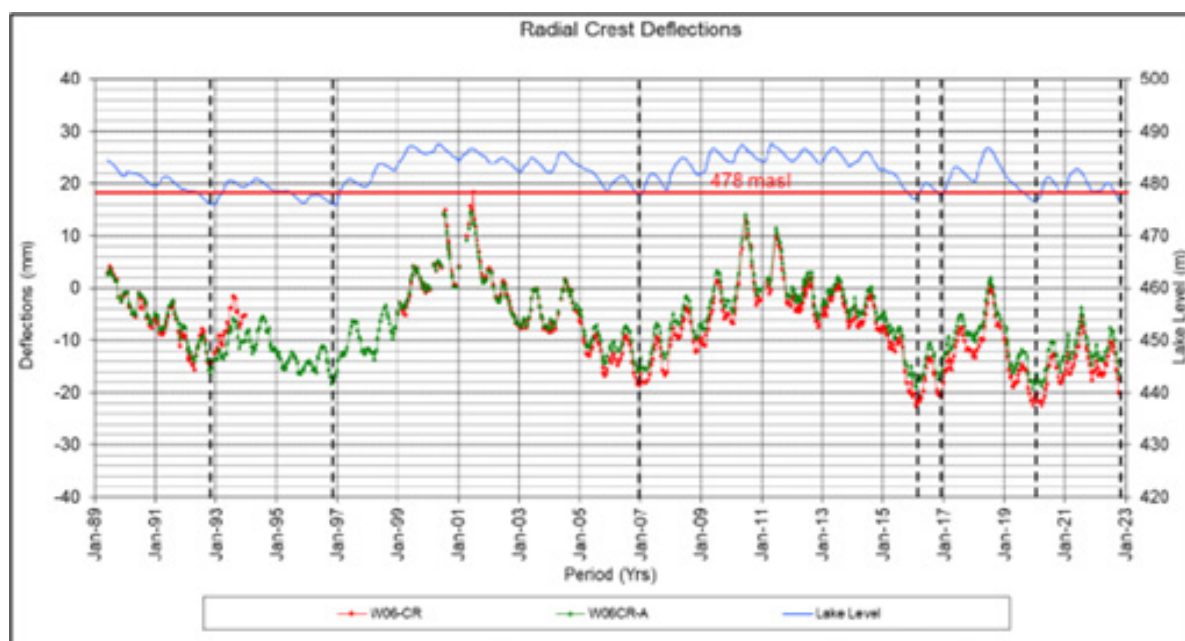
The objective of the implementation of dam safety activities and processes was to identify anomalous behaviour early and before they developed into dam failure risks. The collection, treatment and analysis of data was carried out in accordance with the SOP. Statistical analyses of data from dam monitoring instruments of pendulums, precision levelling and geodetic measurements were performed by CONDOR software. The results showed normal behaviour of the dam that was consistent with known responses of dams under similar conditions of low reservoir water level and air temperatures that prevailed during the year.

Two earthquakes were recorded during the year within the southern zone from the dam wall in an area that started experiencing increased seismicity after the construction and impoundment of Lake Kariba. In both incidences, the resultant ground accelerations were mild and of no dam safety concerns.

### a) Historical Dam Behaviour

An accelerated rate of crest deflections was recorded at the dam from mid-September under a corresponding increased rate of reservoir water level drawdown per day. Several analyses were performed to identify the source of this behaviour. It was established with certainty that the deflections were not related to the ongoing dewatering of the plunge pool and hence that they were not a dam safety concern.

The behaviour of the dam was analysed starting by identifying periods when similar water levels were recorded. Seven periods were selected between 1989 and 2022 as shown in Fig. 16 when the water level dropped below 478 m above sea level (masl). The rate of crest deflections per meter drop in the reservoir water level was measured from pendulum W06 located near the centre of the dam and compared to establish normality of the dam behaviour for each of the selected periods.



**Figure 16. Historical variations and crest deflections at pendulum W06-Crest when the reservoir water level dropped below 478 masl.**

From the analysis, it was established that the rate of lake water drawdown that prevailed after September 2022 was historically high at 1.10 m per month compared to the highest previously recorded rate of maximum 0.7 m/month. It was also observed that the rate of crest deflections of 4.50 mm/month recorded during the same period was comparable to a rate of 4.50 mm/month that was recorded in 2006 or 4.2 mm/month in 2016 when the water level dropped below 478 masl. This confirmed that the accelerated deflections at the crest of the dam that was observed from mid-September were in response to the increased rate of reservoir water level drawdown and were not related to the dewatering of the plunge pool under the KDRP.

The deflections that were recorded at the crest of the dam were analysed and compared with results from other pendulums and mini-geodetic surveys of the station P434/T434 that is located on the upstream section of pier no. 2. Both measurements showed a high degree of correlation, confirming the accelerated deflections at the crest of the dam towards the upstream. This is attributable to alkali silica reaction (ASR) effects that become more pronounced when the dam becomes less constrained due to the decreased hydrostatic load at low reservoir water levels.

## b) Dam Pendulum Measurements.

Data was collected from pendulums installed at various locations and analysed throughout the year in accordance with the SOP. From June 2022, the frequency of data collection and analysis from selected pendulums was increased to twice daily for the purpose of early detection of anomalous behaviour during the plunge pool dewatering works. Regardless of the accelerated rates of crest deflection that were recorded from September, the results in Fig. 17 showed normal behavior of the dam that was consistent with historical records under similar conditions of low water levels and air temperatures.

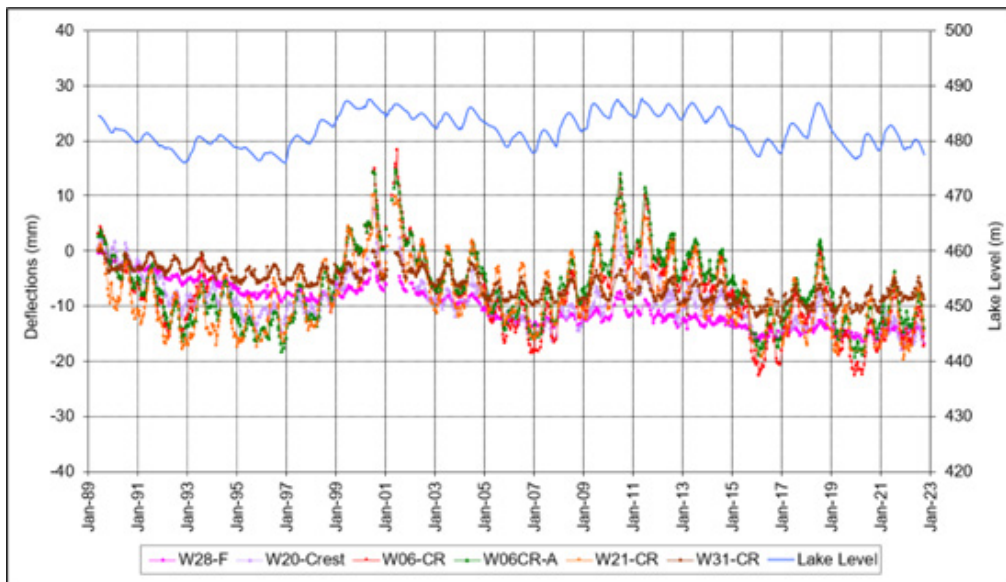


Figure 17. Displacements at the crest of the dam measured from pendulums.

## c) P434/T434 Crest Deflections

Analyses of results of data from target P434/T434 in Fig. 18 showed that the long-term rate of swelling in the concrete due to ASR was decreasing. This finding was consistent with the observations made after comparing records from other instruments that included precision levelling, geodetic surveys and pendulum measurements between the periods soon after the filling of the reservoir and the post-2000 period. It was established that effects of the irreversible dam-deflection caused by the swelling of the concrete due to ASR decreased from approximately 2.20 mm/year during the first few years after impounding the reservoir to about 0.94 mm/year from the year 2000.

The rate of swelling in the concrete across the different zones between the foundation and crest of the dam was also analysed over the last decade since 2010. It was observed that the rate of swelling in the concrete body of the dam was highest between gallery F and the crest of the dam where it was higher than 20  $\mu\text{m}/\text{m}/\text{year}$ . This reduces to about 4.0  $\mu\text{m}/\text{m}/\text{year}$  on average between below gallery B and into the foundation of the dam. This confirms that the rate of swelling is not only slowing down but also that the less constrained upper region of the dam experiences the highest rate of swelling in the concrete.



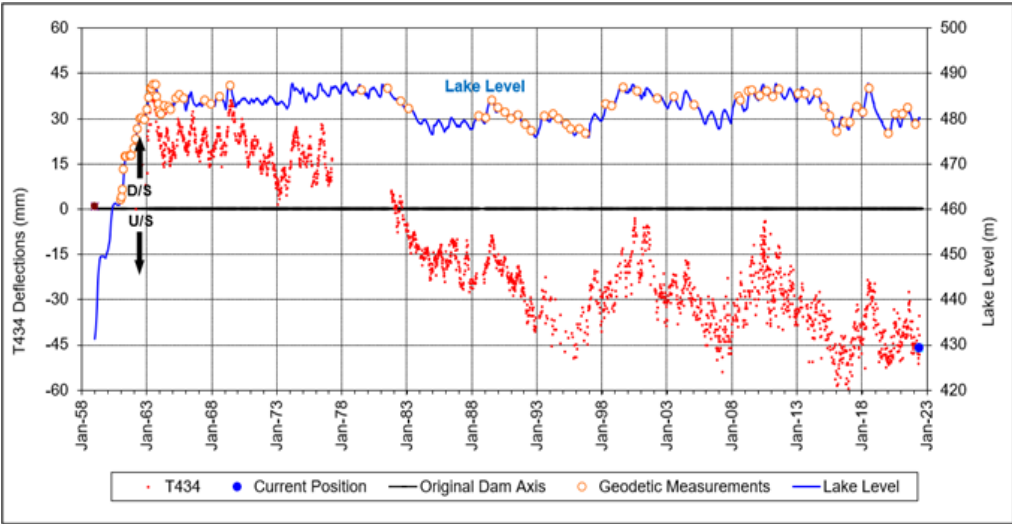


Figure 18. Crest deflections measured from Target P434/T434

d) Earthquakes

Two earthquakes occurred in May and August 2022 between Binga and Mlibizi and south of the Bumi Hills Resort respectively as shown in Fig. 19.



Figure 19. Earthquake intensity map of the August incident.

The southern region started experiencing increased seismicity after the filling of the reservoir. The magnitude M4.6 and M4.3 incidences that occurred on 24th May and 2nd August 2022 had their epicentres about 225 km between Binga and Mlibizi and 50 km near the Bumi Hills Resort, respectively. In both incidences, the ground accelerations that were generated were very mild and of no dam safety concern.

### 1.3.2. Dam Maintenance

The effectiveness of the dam safety management programme depends on the level of compliance with the maintenance requirements of key installations such as electro-mechanical equipment of the spillway floodgates and implementation of inspection recommendations. The servicing and testing of floodgates under full load, however, remained constrained during the year due to the ongoing KDRP works. The testing of floodgates under full load involves releasing water into the plunge pool, an operation that was not possible to undertake as this would have impacted both the plunge pool reshaping and spillway refurbishment works.

The risks associated with the maintenance and testing of floodgates during the plunge pool reshaping and spillway refurbishment works were analysed in detail in the 2020 Five-Yearly Inspection report and during the probable failure modes analysis (PFMA) workshop of the KDRP in January 2022. It is generally accepted that there are risks related to failure to operate the spillway floodgates during emergencies. Notwithstanding the limitations around testing of floodgates on full load during the rehabilitation works, the Authority successfully opened three floodgates after dewatering the sluices by pumping water back to the reservoir instead of releasing it into the plunge pool.

#### e) Maintenance of floodgates

Three floodgates were successfully raised in November 2021 (gate no. 6); May 2022 (gate no. 2) and November 2022 (gate no. 3) for the implementation of addendum no. 1 works. These were primarily focused on civil maintenance works and crack repairs within the sluices including the replacement of missing deflector plates. Implementation of the civil repairs was completed for sluice no. 6 by the end of December 2022.

Other activities that were carried out during the year related to the SOP and Five-Yearly recommended works. To accelerate execution of the works and account for disruptions occasioned by the COVID-19 pandemic since March 2020, casual employees were recruited in August 2022. Accordingly, the following activities were carried out during the year:

- i. General cleaning including removal of calcite in dam galleries, shafts and adits and surface protection of the south bank slope by stone pitching.
- ii. Fabrication and installation of lock-out-tag-out (LOTO) system for the floodgates to address risks of mis-operation of the spillway facility during the execution of the KDRP works.
- iii. Replacement of TELEMAC type reading tables with Huggenberger types and the automation of selected dam pendulums and piezometers.
- iv. Inspection of civil works carried out in sluice no. 2 and 6 under the additional works incorporated in addendum no. 1 of the spillway refurbishment project component.

Figures 20 and 21 show the maintenance of floodgate no. 3 and the newly installed handrails and refurbished lighting circuits in one of the south banks underground adit 1392.



**Figure 20. Maintenance works in preparation of raising floodgate no. 3.**

#### **f) Five-Yearly Inspection Recommended Works**

In addition to undertaking the SOP prescribed works of cleaning dam galleries, adits and shafts, surface water management on the south bank slope, handrails were installed along steep slopes and lighting circuits refurbished in adits as shown in Fig. 21.



**Figure 21. Refurbished lighting circuits and fittings in Adit 1392 and new handrails on the north bank access to gallery F.**

The SOP prescribed maintenance works are repetitive. Further, while they are ongoing, most of the works are carried out after the rainy season such as removal of overgrowth and resealing of the south bank as shown in Fig. 22.



**Figure 22. The south bank slope and plunge pool. The insert shows the typical surface protection repairs of the surface by stone pitching.**

#### 1.4. Conclusion

The Authority continued to implement the dam safety management programme activities of dam monitoring and surveillance, inspections, operations and maintenance as per the SOP and Five-Yearly Inspection recommendations. The analyses of data from various instruments together with visual inspections showed no abnormal behaviour of the dam that remained within known displacements and hydraulic conditions regardless of the accelerated deflections that were observed at the crest of the dam at low reservoir water level conditions from September 2022. In summary, based on the records of activities and processes that were carried out during the year, the behaviour of Kariba Dam remained satisfactory as expected.

The relevant sections of the Department achieved 90% while the hydrological and telemetry works programmes conducted were at 90%. The target is to reach 100% by the end of the corporate strategic period in 2024.

Despite the achievements recorded in the areas highlighted above, the Department faced several challenges. COVID-19 affected planned activities such as water quality monitoring programmes due to restrictions on travel. In mitigation, all employees were encouraged to be vaccinated. By the end of the year, 78% of the KDRP Staff had been vaccinated against COVID-19 and were now able to travel out and carry out field activities with minimal risks of infection.

## KRA 2: PROJECT MANAGEMENT SERVICES

### 2.1 Introduction

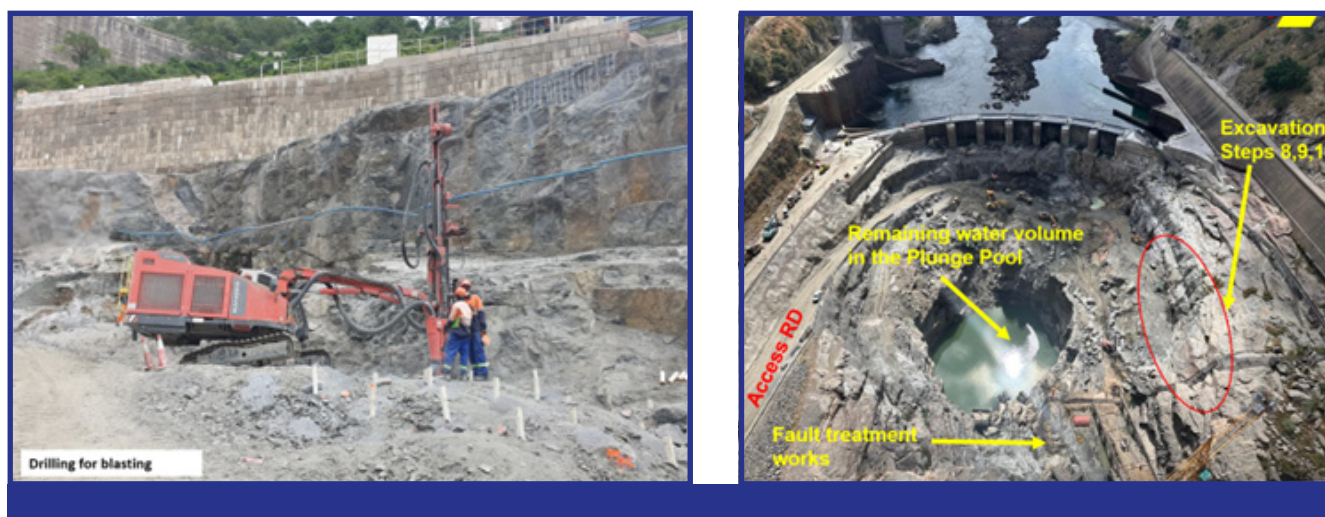
The Project Management Services key result area is about increasing water storage volume on the Zambezi River Basin section that falls under the jurisdiction of the Authority. During the year 2022, the Authority focused on conducting engineering feasibility studies; procuring Project Developers and contractors as necessary for the various projects that would facilitate successful execution of its mandate.

### 2.2. Dam Rehabilitation Project (KDRP)

The Authority continued with the implementation of the Kariba Dam Rehabilitation Project with key milestones being achieved during the reporting period. The overall project progress was recorded as 63.7 % by December 2022 against a target of 69.9%. The works on the Plunge Pool progressed with the cofferdam works being completed in July 2022. This component of the KDRP had reached 74% completion by December 2022 while all works were scheduled to be completed by the second quarter of 2024, assuming there would be no need for spilling which would necessitate temporary suspension of works. On the other hand, the Spillway Refurbishment works had recorded an execution rate of 53.4% by the end of the year and were expected to be completed by the end of the first quarter of 2025.

#### 2.2.1. Plunge Pool Reshaping Works

The Plunge Pool Reshaping works progressed with the cofferdam works being completed in July 2022. Following completion of the cofferdam works, dewatering of the Plunge Pool commenced and this was followed by controlled blasting and excavation works which would continue in 2023. The Fault zone treatment works also commenced and were expected to progress into 2023. Overall, the project reached 74% completion by December 2022. The works were scheduled to be completed by the end of the first quarter of 2025.



**Figure 23: Works at the Plunge Pool**

#### 2.2.2. Spillway Refurbishment works

Works progressed during the reporting period with hydro demolition works being completed in sluices 2 and 6. This followed the successful installation of the stop logs and needle cofferdam, respectively. In a bid to expedite the works and take advantage of the low water levels, hydro demolition above water was completed in sluices 1; 4 and 5. Cofferdam installation in sluice 3 was completed and the sluice was dewatered while hydro demolition works were ongoing. The installation of the sill and

the first sets of Built In Parts (BIPs) in the grooves was successfully done while concreting was also successfully undertaken behind the BIPs. More BIPs were being installed and aligned in Sluices 2 and 6.

On the other hand, the offsite manufacturing of the emergency gate and the gantry crane, required for the project were progressing well in China and South Africa, respectively. The overall progress by the end of the year was recorded as 53%. The works were also expected to be completed by the first quarter of 2025.



Figure 24. works at the spillway gates viewed from the upstream side (lake)

### 2.2.2. Institutional support

Various activities and consultancies aimed at strengthening the capacity of the Authority to undertake the works progressed well during the year. The Zambezi Valley Development Fund (ZVDF) performance assessment consultancy; Gender Based Violence Mapping; Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) consultancies, among other consultancies, were completed during the reporting year. Furthermore, the Technical Services and Construction Supervision consultancy and the various individual contracts with the Panel of Experts remained effective.

Project financing was also successfully restructured to allow for additional indicators such as engagement of 20 young female professionals under the Science, Technology, Engineering and Mathematics (STEM) programme. By the end of the year, the Authority had progressed with the recruitment of the candidates who were expected to commence work by the end of the second quarter of 2023.

## 2.3. Batoka Gorge Hydro-Electric Scheme Project

### 2.3.1 Preparatory Studies

The preparatory studies for the development of the 2 400Mw Batoka Gorge Hydro-Electric Scheme were completed following approvals in respect of the Environmental and Social Impact Assessment Studies (ESIA) by Zambia Environmental Management Agency (ZEMA) and the Environmental Management Agency (EMA) of Zimbabwe in December 2022. The updating of the Engineering Feasibility Studies was completed in 2019. However, further discussions were ongoing with the African Development Bank regarding additional comments raised in the ESIA reports post approval by the Environmental Regulatory Agencies. By the close of the period under review, an action plan had been agreed upon to address the African Development Bank's comments commencing 2023.

### 2.3.2. Procurement of a Project Developer

Following the Council of Ministers resolution to competitively retender the project at its 39th meeting held in December 2021, discussions were ongoing with various stakeholders to operationalize the resolution. The Authority held consultative discussions with the African Development Bank; African Legal Support Facility; African Union Development Agency – New Partnership for African Development and the Southern African Power Pool, among others, to strategise on the optimal road map for the development of the project. The implementation of the agreed road map was expected to commence in 2023.

## 2.4. Devil's Gorge Hydro-Electric Scheme

The Authority commenced the recruitment process of a consultant to undertake the prefeasibility studies of the 1240Mw scheme, which is located just at the tail-end of the Kariba reservoir (near Mapatizya and Mlibizi on the Zambian and Zimbabwean sides of the lake, respectively). The works were expected to commence in 2023.

Bush clearing works on the temporary access road to the Devil's Gorge site from the Zambian side were completed. The site is now accessible, though extensive works on the road will only commence in 2023. Similar scope was being planned for the access road on the Zimbabwean side.



**Figure 25. Bush clearing of access road leading to the Devil's Gorge site**

## 2.5. Diversification of Sources of Energy

The Authority continued engaging cooperating partners in the development of the floating solar project on the Kariba Reservoir. The Concept Note which will guide the development was drafted and approved internally. The Authority, in 2023, with support of its partners will commence pre-feasibility studies to assess the viability and bankability of the project.

## 2.6. Execution of Projects under the Zambezi Valley Development Fund (ZVDF)

The Authority continued with the implementation of ZVDF projects in the ten districts of Zambia and Zimbabwe. Projects under implementation ranged from water supply and irrigation, construction of clinics and schools, among others. The livelihood of the local people was positively impacted by these projects. The Authority was working on handing over six completed projects in both Zambia and Zimbabwe during the year 2023. The following are the highlights of the status of the projects that were executed during the year 2022.

Country	Project Location	Project Description	Status	Project Cost
Zambia	Lusitu Water Supply Scheme in Chirundu	Rehabilitation of the Lusitu Water Reticulation System	This project had been ongoing for the past four years and was implemented in five phases. Phase 5 works were completed in 2022 and handed over.	US\$161,134
	Sinafala School Project in Gwembe	Construction of a 1x2 science laboratory and a 1x3 Classroom block at Sinafala School	The project was completed as per scope and handed over to the school administration for use	US\$47,326
	Nkandazovu School Project in Kalomo	Construction of two staff houses	The project was at 95% complete.	US\$66,631
	Chiyabi Clinic in Sinazongwe	Construction of a clinic at Chiyabi	The project was at 80% level of completion.	US\$30,000
	Njabalombe Clinic in Zimba	Construction of a health post at Njabalombe	The project was completed	US\$129,000
	Manchamvwa School Project in Siavonga	Construction of two, 1x2 classroom blocks at Manchamvwa Inland Primary School	The project was completed and handed over	US\$56,816
Zimbabwe	Ntivule School Block at Binga	Construction of a 1x2 classroom block at Ntivule Primary School	The project was on-going. Construction of the superstructure was at 97% complete.	US\$68,815
	Chisipiti Primary School in Hurungwe	Construction of a 1x2 Classroom block at Chisipiti Primary School	The project was completed as per scope. The project was handed over to the community through the Local Authority and was in use and now awaits official commissioning.	US\$29,215
	Simuchembu Clinic Staff Houses	Construction of one staff house at Simchembu Clinic	The project was completed as per scope and handed over to the clinic administration through the Local Authority while waiting for official handover.	US\$27,079

Table 4. ZVDF Projects expenditure





**Figure 26. A newly installed gate valve and suction line at Pambazana Booster Station in Chirundu**



**Figure 27. The OPD department under construction at Njabalombe clinic site**



**Figure 28. Admission ward under construction at Njabalombe Clinic site**



**Figure 29. A 1x2 classroom block under construction at Ntivule Primary School**

**2.7. Conclusion**

The Authority continued with the implementation of various projects across the ten benefiting districts of Zambia and Zimbabwe. Several projects both in Zambia and Zimbabwe were scheduled for handover in 2023 following completion of works.



**Figure 30. A staff house constructed at Simchembu Clinic**

### KRA 3: CORPORATE SUPPORT SERVICES

#### 3.1. Introduction

The Corporate Support Services key result area (KRA) focuses on availing administrative support to the Authority. The corporate units that feed into this KRA include Human Resource and Administration; Public Relations and Communications; Information and Communications Technology; Procurement; Internal Audit and Legal Services.

#### 3.2. Human Resource and Administration

The unit's key outcome is to ensure improved organisational performance. The Authority continued to experience harmonious Employee-Employer relations across its entire network during the year 2022. Just like any other undertaking, the Authority operates in a highly volatile and uncertain environment. Hence, there is a need to capacitate employees for them to drive change in the organization. In that regard, a training programme for 35 Change Agents was successfully held during the period under review. Plans were underway for a refresher course in 2023. Initiatives emanating from the knowledge and skills garnered from the training programme will be rolled out during the year 2023 and beyond.

##### 3.2.1 Employee Establishment

The employee complement as of 31st December 2022 was 156 against the approved establishment of 183 positions.

##### 3.2.2. Employee Separation

The Authority bade farewell to seven (7) employees who left the employ of the Authority through various modes of separation. Further details are in appendix 1 attached hereto. It is with great sadness that we report the demise of one of the Authority's employees, Eng. Kozanai Gurukumba, who departed after serving the Authority for an unbroken period of thirty-one (31) years. May his dear departed soul rest in eternal peace.

Details regarding the summary of the opening and closing numbers of employees; employee engagements and separations; are attached hereto as appendices 2-6.

##### 3.2.2. Performance Management System

The Authority commenced the implementation of the Integrated Results Based Management (IRBM) System on 3rd March 2022 following the engagement of the Office of the President and Cabinet, Public Sector Reforms and Performance Management Department (OPC, PSRPMD) of the Republic of Zimbabwe as Consultants to spearhead the development and implementation of the IRBM System in the Authority. The implementation process was undertaken in two (2) phases. The Authority successfully concluded the implementation process of Phase One of the IRBM System comprising the following:

- (a) Integrated Development Planning (IDP)
- (b) Results Based Budgeting (RBB)
- (c) Results Based Personnel Performance System (RBPPS)

Phase two of the implementation process was expected to commence during the first quarter of 2023. This phase would cover the following:

- (a) Compilation and testing all the monitoring tools highlighted in the Monitoring & Evaluation (M&E) Results Frameworks at the Corporate level and under each Programme, Sub-programme and as part of tracking performance as provided for in the individual Personnel Performance Work Plans and Appraisal Forms.
- (b) Testing and collecting performance monitoring data/information from the data sources and triangulating the same through the “means of verification” given in the M&E Results Frameworks.
- (c) Building capacity of Authority employees in performance planning, performance monitoring, performance tracking or monitoring and individual performance tracking using the Performance Results Management System (PReMaS) and the Executive Performance Appraisal System (EPAS).
- (d) Generating performance monitoring and individual performance reports for all levels of employees in the Authority. The Reports will be produced both manually and system generated.

### 3.2.3. Employee Welfare and Wellness Programmes

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

- (a) Improved employee satisfaction.
- (b) Improved employee productivity.
- (c) Mitigate occupational health and safety risks.
- (d) Reduce costs associated with absenteeism; and
- (e) Improved employee organizational culture.

In that regard, the Authority undertook the following initiatives:

**(a) HIV/AIDS** – The Authority continued to support employees by facilitating the provision of counselling services and medical support. Employees who had disclosed their HIV/AIDS status continued to receive food packs and nutritional supplements monthly.

The Workplace HIV/AIDS Scheme Annual Work Plan for the year 2022 was adequately implemented.

**(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, new members of the Occupational Health and Safety Committee during the year 2021 were appointed following the expiry of the tenure of office in respect of the previous members and hence they continued to perform the functions during the year 2022.

The Occupational Health and Safety Annual Work Plan was adequately implemented.

**(c) Social Sports** – The Authority values the health and vitality of its employees. This is exemplified by one of the Authority’s core values of Safety. In that regard, during the period under review, the Authority facilitated the employees’ participation in social football, golf, gym and athletics as follows:

#### Social Football

The Social Soccer Club committee organised both local and out of station social games with other social clubs in Kariba and Siavonga (local), Chinhoyi in Zimbabwe and Livingstone in Zambia (out of station).

#### Golf

Employees at Head Office participated in golf tournaments held on the Copperbelt (Kitwe and Ndola). Further, they also participated in tournaments held locally in Lusaka.

### Provision of Gym facilities

Employees at both the Head Office and Kariba station utilized gym 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 had limited space, plans to expand the same were underway.

### Athletics

Authority employees participated in the Intercompany Relay in Lusaka, Zambia where the Authority was awarded a trophy for scooping third position in the 400 metres Relay during the Econet Vic Falls Marathon in Victoria Falls, Zimbabwe and Kariba Lake Harvest Marathon in Kariba, Zimbabwe.

### 3.3. Partner and Client Relationship Management and Corporate Visibility Programmes

The Authority acknowledges that sustained positive stakeholder engagement is cardinal in ensuring that it satisfactorily executes its mandate. By the close of the year under review, bids from research consultancy service providers had been evaluated. As such, a Partner and Client Satisfaction Baseline Survey would be commissioned in 2023 to determine the success of various stakeholder engagement initiatives. It is envisaged that the results of this baseline survey will facilitate the development of a Partner and Client Relationship Framework during the fourth quarter of 2023.

#### 3.3.1 Development of Client Service Charter

In order to improve relations with Clients, a draft Client Service Charter was developed during the period under review. The final Charter was scheduled to be reviewed by key stakeholders in 2023 before adoption.

#### 3.3.2. Stakeholder Engagements

The lifting of the COVID-19 induced restrictions facilitated the commencement of various physical stakeholder engagement events that had been put on hold earlier in the year. High level engagements included a High-Level visit to BGHES by the Zambian Minister of Energy; KDRP tour by the Southern Province Minister, tours by the Swedish Delegation; the Finance and Energy Ministers for Zambia and Zimbabwe and the Financiers. The Board toured the BGHES site and paid a courtesy call on Chief Shana of Jambezi area in Zimbabwe.

The Authority also continued to actively engage the displaced Riparian Communities. A ground-breaking ceremony for the Matua Mini Hospital in Simamba Chiefdom in Siavonga, Zambia was held under the auspices of the Zambezi Valley Development Fund (ZVDF) in December 2022. According to the Ministry of Health, the hospital will cater for about 12,000 villagers.

In addition, the Authority Management paid courtesy calls on the Four Chiefs from Zimbabwe (Chiefs Mola, Negande, Nebiri and Msambakaruma), who were also invited to visit the KDRP site for them to understand progress at the project to-date. Some Authority employees also attended various traditional events in the displaced communities e.g., Lwiindi-Gonde Ceremony which was commemorated in the Simamba chiefdom; Zambangulwe Ceremony in Chief Chipepo's Chiefdom (Zambia) and the Gowa Ceremony held in the respective Chiefdoms, i.e., Chief Moola, Chief Musambakaruma, Chief Nebiri and Chief Negande (Zimbabwe).

The Authority made its inaugural appearance at the Zambia International Trade Fair in Ndola as well as the Lusaka Agricultural show where visitors to its stand from all levels of society had the opportunity to engage in interpersonal communication to gain clarity on the Authority's mandate and operations.

### 3.3.3. External Media Coverage

Media coverage was generally positive, save for the month of November and December when concerns arose regarding drastic low water levels, the lowest ever recorded at the Kariba reservoir. In total, 254 articles about or referencing the Authority were published, 78 of which were in December due to the heightened interest in low water levels. Negative information resulted in misinformation due to failure to understand the technical complexities relating to dam infrastructure and water reservoir management. Engagements with media personnel and other stakeholders would continue in order to ensure that coverage was objective and based on factual information.

As was the case in 2021, coverage was mainly with regard to the ongoing Kariba Dam Rehabilitation Project (KDRP) works; water levels at Kariba Dam and the planned development of the Batoka Gorge Hydro-Electric Scheme (BGHES).

### 3.3.4. Owned Media

#### (a) Social Media

The Authority continued to engage with its online followers via its Social Media channels, primarily Facebook.

Engagement on social media reached a record high in December 2022 where post engagement reached 233%. In the same month, over 481 000 people read content disseminated through the Authority's Facebook page. Informative videos proved to be the most preferred by audiences as they aptly assisted them to understand technical aspects of the Authority.

#### (b) Website

The Authority's website continued to serve as another key information dissemination channel. Hydrology content (lake levels and river flows) were of particular interest to most visitors. Concerns were raised about the effect of climate change on the sustainability of hydro-power generation sources. An informative video on conjunctive operations of dams (discussed further under the Water Resources and Environmental Management section) would be produced in 2023 to assist stakeholders to understand how the concept is key in mitigating the negative effects on climate change on river flows and reservoir levels.

#### (c) Press Statements

Thirteen press statements were released during the year. These were key in ensuring that stakeholders were continually apprised of developments regarding projects which were being undertaken by the Authority.

### 3.4. ICT Infrastructure And Governance Framework

In the contemporary business environment, business continuity also hinges on a robust ICT backbone infrastructure. To this end, the development of ICT Policies and Procedures aligned to the COBIT Framework commenced during the period under review. Terms of reference were developed and were undergoing review by the relevant sections of the Authority.

Considerable progress was recorded regarding the implementation of Integrated Service Platforms (E-Channels). By 31st December, a tender had been awarded for Gauging Station connectivity while an interface development between ZICB, CBZ, Standard Chartered and First Capital Banks was underway.

**KRA 4: FINANCIAL RESOURCES, MOBILISATION AND ACCOUNTABILITY****4.1. Introduction**

The Financial Resources, Mobilisation and Accountability Key Result Area (KRA) relates to the management of the Authority's finances. Of note is the focus on improving the Authority's financial performance by reducing trade receivables and identifying non-traditional revenue sources.

**4.2 Budget Performance Review**

The Authority achieved an operating income of US\$30.88 million compared with the budget of US\$27.87 million, giving rise to a favourable variance of 11%. This was largely due to over-utilisation of water by Kariba Hydro Power Company (KHPC) which resulted in a penalty amounting to US\$1.78 million being charged against the Utility.

Furthermore, the operating expenditure was US\$13.59 million against a budget of US\$20.20 million resulting in a favourable variance of 33%. The foregoing represented a budget performance of 67%. This low budget execution during the year was on account of lagging procurement due to the COVID-19 pandemic and other factors.

Despite the slight improvement in the short-term liquidity parameters arising from the slow absorption of funds inflow in the procurement activities, the medium to long term outlook remained critical as evidenced by the high indebtedness by the Utilities to the Authority that continued to subsist. The trade receivables grew from US\$69.42 million the previous year to US\$85.39 million, representing a growth of 23%. These significant trade receivable balances represented more than three times the annual average water sales. The growth in the trade receivables was due to the monthly remittances by the Utilities to the Authority being lower than the average monthly water sales invoices.

Further, there were some inflows from the restricted cash in Zimbabwe, hence reducing the balance to US\$10.2 million, representing 19% decrease over the previous year. Therefore, the trade receivables and restricted funds amounted to US\$95.59 million at the end of the year. The growth in trade receivables had a significant impact on the financial standing of the Authority to the extent that it was unable to timeously execute its budgetary requirements fully, thus adversely impacting the achievement of the Corporate Strategy objectives.

The Authority's Liquidity Ratio continued to show a particularly good outlook of 4.06 times of current assets which could cover current liabilities. However, when the inaccessible funds from Zimbabwe were removed, the resultant Acid Test Ratio, showed a paltry 0.24 times or only about 24%. This well described the precarious liquidity situation the Authority was facing. In order to rectify this unenviable situation, the Authority continued to engage the two Power Utilities and the Zimbabwean Government with a view to reducing the outstanding trade receivables and the restricted funds.

## APPENDIX I – SUMMARY OF THE OPENING AND CLOSING NUMBERS OF EMPLOYEES

Details of the employee complement for the period under review were as indicated below:

Details	Numbers
Opening number of employees as of 1 <sup>st</sup> January 2022	151
Engagements	22
Separations	17
Closing number of employees as of 31 <sup>st</sup> December 2022	<b>156</b>

## APPENDIX II – SUMMARY OF EMPLOYEE ENGAGEMENTS AND SEPARATIONS

The details of employee engagements and separations during the period under review and for the year 2021 were as indicated below:

Engagements/Separations	2022	2021
Engagements	<b>22</b>	<b>7</b>
Deaths	<b>1</b>	<b>1</b>
Retirement/Medical Discharge	<b>4</b>	<b>3</b>
Resignation	<b>7</b>	<b>5</b>
Dismissal	<b>0</b>	<b>0</b>
Expiry of Employment Contracts	<b>5</b>	<b>1</b>
Retrenchment	<b>0</b>	<b>0</b>

## APPENDIX III – DETAILS OF EMPLOYEE ENGAGEMENTS

The following employees were engaged during the period under review:

No	Name of Employee	Job Title	Grade	Department	Sex	Date of Engagement
1	Mrs. Lorraine Mavurere	Accounts Assistant	ZRA 7	Finance	Female	2 <sup>nd</sup> January 2022
2	Eng. Charles Chibvura	Senior Manager – Dam Management Services	ZRA 3	Projects and Dam Management Services	Male	13 <sup>th</sup> January 2022
3	Eng. Relent Ncube	Scheduling and Planning Engineer	ZRA 4	Projects and Dam Management Services	Female	1 <sup>st</sup> February 2022
4	Mr. Isaac Mwanza	Messenger	ZRA 11	Corporate Services	Male	1 <sup>st</sup> March 2022
5	Mr. Thomas Mwenge	Messenger	ZRA 11	Corporate Services	Male	1 <sup>st</sup> March 2022
6	Ms. Caroline Nyemba	Accounts Assistant (K)	ZRA 7	Finance	Female	1 <sup>st</sup> April 2022

7	Mr. Austin Chisambi	Accounts Clerk	ZRA 8	Finance	Male	18 <sup>th</sup> May 2022
8	Ms. Chipo C. Mwale	Procurement Assistant (L)	ZRA 7	Corporate Services	Female	15 <sup>th</sup> June 2022
9	Ms. Pamela Zulu	Stores Attendant	ZRA 10	Finance	Female	28 <sup>th</sup> June 2022
10	Mrs. Patience Takavarasha	Human Resource and Administration Officer	ZRA 5	Corporate Services	Female	4 <sup>th</sup> July 2022
11	Eng. Kwanga Miyanza	Safety, Health and Environmental Officer – Batoka Gorge Hydro-Electric Scheme	ZRA 5	Projects and Dam Management Services	Male	18 <sup>th</sup> July 2022
12	Eng. Christopher Chisense	Director – Water Resources and Environmental Management	ZRA 2	Water Resources and Environmental Management	Male	1 <sup>st</sup> September 2022
13	Mr. Edward M. Kabwe	Director – Finance	ZRA 2	Finance	Male	1 <sup>st</sup> September 2022
14	Eng. Munyaradzi C. Munodawafa	Chief Executive	ZRA 1	Executive Office	Male	1 <sup>st</sup> October 2022
15	Eng. Sudden D. Mukuwe	Contracts Engineer	ZRA 4	Projects and Dam Management Services	Male	3 <sup>rd</sup> October 2022
16	Mr. Andrew Mwenya	Artisan Mechanical	ZRA 7	Projects and Dam Management Services	Male	10 <sup>th</sup> October 2022
17	Mr. Cliff Mafirakureva	Dam Maintenance Civil Foreperson	ZRA 6	Projects and Dam Management Services	Male	1 <sup>st</sup> November 2022
18	Eng. Patrick Sipatela	Project Manager – Batoka Gorge Hydro-Electric Scheme	ZRA 4	Projects and Dam Management Services	Male	1 <sup>st</sup> November 2022
19	Mr. Obedience Matengaifa	Draughtsperson	ZRA 6	Projects and Dam Management Services	Male	1 <sup>st</sup> November 2022
20	Mr. Assis Hungwe	Electrical Assistant	ZRA 9	Projects and Dam Management Services	Male	7 <sup>th</sup> November 2022
21	Eng. Rumbizai Chidzenga	Dam Safety Monitoring Officer	ZRA 5	Projects and Dam Management Services	Female	7 <sup>th</sup> November 2022
22	Eng. Maimba Chansa	Dam Safety Monitoring Engineer	ZRA 4	Projects and Dam Management Services	Male	9 <sup>th</sup> November 2022



**APPENDIX IV – DETAILS OF EMPLOYEE SEPARATIONS**

The following employees separated from the employ of the Authority and were re-engaged:

No	Name	Previous position	New Position	Department	Mode of Separation	Date of Separation
1	Mrs. Lorraine Mavurere	Accounts Clerk	Accounts Assistant – Payroll	Finance	Resignation	1 <sup>st</sup> January 2022
2	Eng. Charles Chibvura	Dam Safety Monitoring Engineer	Senior Manager – Dam Management Services	Projects and Dam Management Services	Resignation	12 <sup>th</sup> January 2022
3	Eng. Relent Ncube	Projects Planning Officer – Batoka Gorge Hydro-Electric Scheme	Scheduling and Planning Engineer	Projects and Dam Management Services	Resignation	1 <sup>st</sup> February 2022
4	Ms. Pamela Zulu	General Worker	Stores Attendant	Projects and Dam Management Services	Resignation	28 <sup>th</sup> June 2022
5	Eng. Christopher Chisense	Director – Water Resources and Environmental Management	Director – Water Resources and Environmental Management	Water Resources and Environmental Management	End of Employment Contract	31 <sup>st</sup> August 2022
6	Mr. Edward M. Kabwe	Director – Finance	Director – Finance	Finance	End of Employment Contract	31 <sup>st</sup> August 2022
7	Eng. Munyaradzi C. Munodawafa	Chief Executive	Chief Executive	Executive Office	End of Employment Contract	30 <sup>th</sup> September 2022
8	Eng. Sudden D. Mukuwe	Contracts Engineer	Contracts Engineer	Projects and Dam Management Services	End of Employment Contract	1 <sup>st</sup> October 2022
9	Eng. Patrick Sipatela	Designs Engineer	Project Manager – Batoka Gorge Hydro-Electric Scheme	Projects and Dam Management Services	Resignation	31 <sup>st</sup> October 2022
10	Mr. Peter Kapinga	Board Secretary / Corporate Services Director	Board Secretary / Corporate Services Director	Corporate Services	End of Employment Contract	31 <sup>st</sup> December 2022

## APPENDIX V – DETAILS OF EMPLOYEES WHO LEFT THE EMPLOY OF THE AUTHORITY

No	Name	Previous position	Department	Mode of Separation	Date of Separation
1	Mr. James Ngwarati	Stores Attendant	Finance	Normal Retirement	1 <sup>st</sup> January 2021
2	Mr. Philip Munyaradzi	Human Resource and Administration Officer	Corporate Services	Normal Retirement	10 <sup>th</sup> January 2021
3	Ms. Clara Nyamandi	Procurement Officer	Corporate Services	Resignation	29 <sup>th</sup> August 2022
4	Mr. Bramwell Bakasa	Driver	Corporate Services	Normal Retirement	25 <sup>th</sup> November 2022
5	Eng. Kozanai Gurukumba	Project Manager- KDRP- Plunge Pool	Projects and Dam Management Services	Death	3 <sup>rd</sup> December 2022
6	Ms. Emelda Katungu	Messenger	Corporate Services	Resignation	7 <sup>th</sup> December 2022
7	Mr. Temson Tamanyika	Dam Safety Monitoring Attendant	Projects and Dam Management Services	Normal Retirement	25 <sup>th</sup> December 2022

## APPENDIX VI – DETAILS OF IN-HOUSE TRAINING PROGRAMMES

No	Description of In-house Training Programme	Number of Participants
1	Preparation for Retirement	20
2	Change Management for Change Agents	35
3	Basic Occupational Health and Safety	16
4	Recruitment and Selection Interviewing Techniques	25
5	Corporate Governance	26
6	Change Management for all employees	132
7	Employer/Employee Relationship	15
8	Risk Management	10
9	HIV/AIDS	66

The background features a stack of spiral-bound notebooks with blue and red covers. A green ballpoint pen lies diagonally across a grid pattern overlaid with various numbers. The overall color scheme is dominated by red and blue.

# FINANCIAL REPORT

Zambezi River Authority  
 Director's report  
 For the year ended 31 December 2022

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The Directors submit their report together with the audited annual financial statements for the year ended 31 December 2022, which disclose the state of affairs and financial performance of Zambezi River Authority ("the Authority").

### **Establishment and Functions**

The Zambezi River 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. The Authority 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; and
  - (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 for 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.

Zambezi River Authority  
Director's Report  
For the year ended 31 December 2022

### 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					
	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Revenue	10,976,792	496,534	29,101	2,725,291	610,155	30,128
Surplus for the year	2,700,552	122,185	7,161	2,144,686	480,166	23,710

The surplus for the year has been added to the revenue reserve.

### Property, plant, and equipment

The Authority purchased property, plant and equipment amounting to US\$ 27.58 million, ZMW 470.62 million, ZWL 10,403.83 million (2021 US\$ 29.07 million, ZMW 588.66 million, ZWL 2,629.26 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\$ 7.71 million, ZMW 131.55 million, ZWL 2,908.24 million (2021: US\$ 8.18 million, ZMW 165.58 million, ZWL 739.59 million). The average number of employees was as follows:

Month	Number of Employees	Month	Number of Employees
January	151	July	156
February	149	August	156
March	151	September	155
April	153	October	156
May	154	November	161
June	155	December	160

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 annual financial statements.

Zambezi River Authority  
Director's Report  
For the year ended 31 December 2022

### Gifts and donations

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

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Donations and sponsorships	109,768	4,965	291	30,475	6,823	337

### Restructured 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 (GRZ) for a principal loan amount of US\$ 114 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. Due to liquidity challenges, the Authority defaulted on its repayments on the loan facility for four consecutive years resulting in arrears of US\$ 19,786,000 at the end of 31 December 2020. The Authority held discussions with the Ministry of Finance and National Planning (MoFNP) to restructure the terms of the loan agreement taking into account the liquidity position of the Authority. The Government of the Republic of Zambia (GRZ) in consultation with the primary lenders i.e. the World Bank (IDA) and the African Development Bank (ADF) agreed to restructure the terms of the on lending agreement between the GRZ and the Authority. Key among the changes effected in the Credit Agreements were; reduction of interest rate from 2% to 1.25%, basing the bi annual principal and interest payments on the actual amount drawn on the facility as opposed to the allotted amount of US\$ 114 million and granting of a two year grace period on the payment of principal with the first payment due on 1 March 2024. The Authority and the MoFNP successfully signed the Restructured Credit Agreements on 1 April 2022 under the aforementioned terms. At the said date, the balance of the loans drawn and outstanding under IDA facility was US\$ 7,128,157, whereas the balance on the AFDB loan was US\$ 6,153,062.

In period under review a total of US\$ 521,689 in loan interest was paid to the MoFNP.

### 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 Hydrological, Credit, Liquidity, and Dam safety risks. In the period under review the Audit, Corporate Governance and Risk Management Committee held four (4) meetings as scheduled.

## **Risk management and control (continued)**

### **(a) Operational risk**

Operational risk in this instance is 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 to 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 deterioration of the receivable collection days on its balances outstanding from the Utilities has raised credit risk due to the effect on liquidity that has materialised itself in the Authority's failure to meet its obligations as and when they fall due, leading to the loan restructuring initiative.
- (i) 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 in Note 21 to the annual 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 in 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.

Zambezi River Authority  
 Director's Report  
 For the year ended 31 December 2022

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## Risk management and control (continued)

### (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
Hon. Soda Zhemu	Chairperson
Hon. Peter C Kapala	Co-Chairperson
Hon. Prof. Mthuli Ncube MP	Member
Hon. Situmbeko Musokotwane	Member

#### (b) Board of Directors

Name	Title
Dr. Gloria S. Magombo	Chairperson
Francesca C. Ziyambo	Co - Chairperson
Mr George T Guvamatanga	Member
Mr. Denies Chisenda	Member
Engineer. Israel Rwodzi	Member
Engineer. Benard Chiwala	Member

#### (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. Sithembinkhosi Z. Mhlanga	Director – Projects & Dam Safety
Engineer. Christopher Chisense	Director – Water Resources & Environmental Management



Zambezi River Authority  
Director's Report  
For the year ended 31 December 2022

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**Auditor**

The Auditor, PricewaterhouseCoopers, has indicated its willingness to continue in office and resolution for its reappointment will be proposed at the next Council of Ministers Meeting.

**On behalf of the Board:**

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**Board Secretary**

27/06/23

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**Date**

Zambezi River Authority  
Statement of Directors' responsibilities  
For the year ended 31 December 2022

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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.




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**Chairperson**

27/06/23

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**Date**




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**Co-Chairperson**

27/06/23

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**Date**



## Independent auditor's report

To the Shareholders of Zambezi River Authority

### Report on the audit of the annual financial statements

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#### Our opinion

In our opinion, the annual financial statements give a true and fair view of the financial position of Zambezi River Authority (the "Authority") as at 31 December 2022, 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 Acts No.17 and 19.

#### What we have audited

Zambezi River Authority's annual financial statements are set out on pages 58 to 100 and comprise:

- the statement of financial position as at 31 December 2022;
- the statement of income and expenditure and other comprehensive income for the year then ended;
- the statement of changes in reserves 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 and other explanatory information..

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#### 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.

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#### 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.



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

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### Other information (continued)

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.

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### Responsibilities of the Directors for the annual financial statements

The Directors are responsible for the preparation of 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 Acts No. 17 and 19 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.

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### 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.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Directors.



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

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

- 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 Company'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 Acts No. 17 and 19 require that in carrying out our audit we consider whether the Authority has kept proper accounting records and other records and other registers required by these Acts.

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

PricewaterhouseCoopers  
Chartered Accountants  
Lusaka

29/06/2023

**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 2022

**Statement of income and expenditure and other comprehensive income**  
**Year ended 31 December**

	Notes	2022			2021		
		ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Revenue	4	10,976,792	496,534	29,101	2,725,291	610,155	30,128
Other income	5	717,805	32,470	1,903	1,117,822	250,265	12,358
Fair value gain on financial assets through profit or loss	13	51,013	2,308	135	1,575	353	17
Impairment of financial assets	21	(1,747,645)	(79,055)	(4,633)	(788,279)	(176,485)	(8,714)
Depreciation property, plant and equipment	8	(1,465,193)	(66,278)	(3,885)	(345,692)	(77,395)	(3,822)
Depreciation investment property	9	(14,859)	(672)	(39)	(3,563)	(798)	(39)
Amortisation of intangible assets	10	(89,411)	(4,045)	(237)	(5,921)	(1,326)	(65)
Employee benefit expense	7	(2,908,243)	(131,553)	(7,710)	(739,588)	(165,583)	(8,176)
Governance costs		(280,807)	(12,702)	(744)	(40,622)	(9,095)	(449)
Administration and travel costs		(1,606,105)	(72,652)	(4,258)	(160,163)	(35,858)	(1,771)
Other operating expenses		(331,554)	(14,973)	(877)	(71,797)	(16,075)	(794)
<b>Results from operating activities</b>		<b>3,303,793</b>	<b>149,382</b>	<b>8,756</b>	<b>1,689,063</b>	<b>378,158</b>	<b>18,673</b>
Finance income	6	1,386,693	62,727	3,675	620,414	138,902	6,859
Finance costs	6	(1,987,934)	(89,924)	(5,270)	(164,791)	(36,894)	(1,822)
		(601,241)	(27,197)	(1,595)	455,623	102,008	5,037
<b>Surplus for the year</b>		<b>2,701,552</b>	<b>122,185</b>	<b>7,161</b>	<b>2,144,686</b>	<b>480,166</b>	<b>23,710</b>
<b>Other comprehensive income for the year</b>							
Items that will be subsequently reclassified to profit or loss:							
Exchange differences on translation		102,780,917	247,969	-	4,548,546	(768,112)	-
Net Revaluation Gain		-	-	-	222,274	33,386	1,996
<b>Total other comprehensive income for the year</b>		<b>102,780,917</b>	<b>247,969</b>	<b>-</b>	<b>4,770,820</b>	<b>(734,726)</b>	<b>1,996</b>

Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

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<b>Total comprehensive income for the year</b>	<b><u>105,481,469</u></b>	<b><u>370,154</u></b>	<b><u>7,161</u></b>	<b><u>6,915,506</u></b>	<b><u>(254,560)</u></b>	<b><u>25,706</u></b>
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The notes on pages 66 to 100 are an integral part of these annual financial statements.

Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

**Statement of financial position**

As at 31 December

Non - current assets	Notes	2022			2021		
		ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Property, plant and equipment	8	151,287,808	3,980,953	219,821	21,844,712	3,281,187	196,126
Investment property	9	875,421	23,036	1,272	146,065	21,939	1,311
Intangible assets	10	507,452	13,353	737	108,527	16,301	974
Long term investments	11	2,053,687	54,040	2,984	357	54	3
Other receivables	14	26,495,389	697,194	38,499	3,411,549	512,425	30,629
		<u>181,219,757</u>	<u>4,768,576</u>	<u>263,313</u>	<u>25,511,210</u>	<u>3,831,906</u>	<u>229,043</u>
<b>Current assets</b>							
Inventory	12	79,852	2,101	116	15,064	2,263	135
Financial assets at fair value through profit or loss	13	548,673	14,438	797	47,893	13,166	787
Trade and other receivables	14	23,185,185	610,089	33,687	4,860,083	729,998	43,634
Cash and cash equivalents	15	5,465,445	143,817	7,941	118,589	17,812	1,065
Restricted cash	16	-	-	-	83,405	12,528	749
		<u>29,279,155</u>	<u>770,445</u>	<u>42,541</u>	<u>5,125,034</u>	<u>775,767</u>	<u>46,370</u>
<b>Total assets</b>		<u>210,498,912</u>	<u>5,539,021</u>	<u>305,854</u>	<u>30,636,244</u>	<u>4,607,673</u>	<u>275,413</u>
<b>Funds and Liabilities</b>							
Revaluation reserve		51,239,267	1,348,299	74,450	8,568,602	1,287,028	76,930
Translation reserve		66,456,827	675,391		8,053,601	533,611	-
Revenue reserve		7,153,037	1,261,562	106,955	2,745,459	1,094,459	97,314
		<u>124,849,131</u>	<u>3,285,252</u>	<u>181,405</u>	<u>19,367,662</u>	<u>2,915,098</u>	<u>174,244</u>
<b>Non - current liabilities and grants</b>							
Borrowings	17	19,725,508	519,052	28,661	2,419,390	363,399	21,721
Capital grants	19	61,692,716	1,623,368	89,639	7,865,885	1,181,478	70,620
		<u>81,418,224</u>	<u>2,142,420</u>	<u>118,300</u>	<u>10,285,275</u>	<u>1,544,877</u>	<u>92,341</u>
<b>Current liabilities</b>							
Trade and other payables	18	4,231,557	111,349	6,149	983,307	147,698	8,828
		<u>4,231,557</u>	<u>111,349</u>	<u>6,149</u>	<u>983,307</u>	<u>147,698</u>	<u>8,828</u>
<b>Total funds and liabilities</b>		<u>210,498,912</u>	<u>5,539,021</u>	<u>305,854</u>	<u>30,636,244</u>	<u>4,607,673</u>	<u>275,413</u>



Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

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The annual financial statements on pages 58 to 100 were approved for issue by the Board of Directors on  
27th June 2023 and signed on its behalf by:



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**Chairperson**



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**Co - Chairperson**

The notes on pages 66 to 100 are an integral part of these annual financial statements.

Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

**Statement of changes in reserves (ZWL)**

	Revaluation reserves	Translation reserve	Revenue reserve	Total Reserves
	ZWL'000	ZWL'000	ZWL'000	ZWL'000
<b>Balance at 1 January 2021</b>	6,489,724	5,637,922	324,510	12,452,156
Surplus for the year	-	-	2,144,686	2,144,686
<u>Other comprehensive income for the year</u>				
Revaluation Surplus	222,274	-	-	222,274
Exchange differences on translation	2,132,867	2,415,679	-	4,548,546
Total comprehensive income for the year	2,355,141	2,415,679	2,144,686	6,915,506
Amortisation of revaluation reserve	(276,263)	-	276,263	-
	2,078,878	2,415,679	2,420,949	6,915,506
<b>Balance at 1 January 2022</b>	8,568,602	8,053,601	2,745,459	19,367,662
Surplus for the year	-	-	2,700,552	2,700,552
<u>Other comprehensive income for the year</u>				
Exchange differences on translation	44,377,691	58,403,226	-	102,780,917
Total comprehensive income for the year	44,377,691	58,403,226	2,700,552	105,481,469
Amortisation of revaluation reserve	(1,707,026)	-	1,707,026	-
	42,670,665	58,403,226	4,407,578	105,481,469
<b>Balance at 31 December 2022</b>	51,239,267	66,456,827	7,153,037	124,849,131

**Statement of changes in reserves (ZMW)**

	Revaluation reserve	Translation reserve	Revenue reserve	Total reserves
	ZMW'000	ZMW'000	ZMW'000	ZMW'000
<b>Balance at 1 January 2021</b>	1,651,939	944,921	572,798	3,169,658
Surplus for the year	-	-	480,166	480,166
<u>Other comprehensive income for the year</u>				
Revaluation Surplus	33,386	-	-	33,386
Exchange differences on translation	(356,802)	(411,310)	-	(768,112)
<u>Total comprehensive income for the year</u>	(323,416)	(411,310)	480,166	(254,560)
Amortisation of revaluation reserve	(41,495)	-	41,495	-
	(364,911)	(411,310)	521,661	(254,560)
<b>Balance at 1 January 2022</b>	1,287,028	533,611	1,094,459	2,915,098
Surplus for the year	-	-	122,185	122,185
<u>Other comprehensive income for the year</u>				
Exchange differences on translation	106,189	141,780	-	247,969
<u>Total comprehensive income for the year</u>	106,189	141,780	122,185	370,154
Amortisation of revaluation reserve	(44,918)	-	44,918	-
	61,271	141,780	167,103	370,154
<b>Balance at 31 December 2022</b>	1,348,299	675,391	1,261,562	3,285,252

The notes on pages 66 to 100 are an integral part of these annual financial statements.

Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

**Statement of changes in reserves (US\$)**

	<b>Revaluation reserves US\$'000</b>	<b>Revenue reserve US\$'000</b>	<b>Total Reserves US\$'000</b>
<b>Balance at 1 January 2021</b>	77,414	71,124	148,538
Surplus for the year		23,710	23,710
<u>Other comprehensive income for the year</u>			
Revaluation Surplus	1,996	-	1,996
Total comprehensive income for the year	1,996	23,710	25,706
Amortisation of revaluation reserve	(2,480)	2,480	-
	(484)	26,190	25,706
<b>Balance at 1 January 2022</b>	76,930	97,314	174,244
Surplus for the year	-	7,161	7,161
<u>Other comprehensive income for the year</u>	-	-	-
Total comprehensive income for the year	-	7,161	7,161
Amortisation of revaluation reserve	(2,480)	2,480	-
	(2,480)	9,641	7,161
<b>Balance at 31 December 2022</b>	74,450	106,955	181,405

The notes on pages 66 to 100 are an integral part of these annual financial statements.

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**Statement of cash flows**

	Year ended 31 December					
	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
<b>Cash inflow from operating activities</b>						
Operating results	2,700,552	122,185	7,161	2,144,686	480,166	23,710
Depreciation on property, plant and equipment	1,465,193	66,278	3,885	345,692	77,395	3,822
Depreciation on investment property	14,859	672	39	3,563	798	39
Amortisation	89,411	4,045	237	5,921	1,326	65
(Gain) on disposal of assets	(4,767)	(216)	(13)	(16,973)	(3,800)	(188)
Interest received	(868,844)	(39,302)	(2,303)	(66,846)	(14,966)	(739)
Fair value gain on financial assets through profit and loss (Increase)/decrease in trade and other receivables	(51,013)	(2,308)	(135)	(1,575)	(353)	(17)
Restricted cash	(41,408,942)	(64,860)	2,077	(2,501,780)	202,106	(6,124)
(Increase)/decrease in Inventories	(64,788)	161	19	(3,441)	696	4
Net unrealised exchange gains	(517,850)	(23,425)	(1,373)	(388,777)	(87,042)	(4,298)
Increase/(decrease) in accounts payables	3,248,250	(36,349)	(2,679)	(1,919,351)	(591,173)	(25,796)
<b>Cash generated from operations</b>	<b>(35,397,939)</b>	<b>26,881</b>	<b>6,915</b>	<b>(1,081,750)</b>	<b>409,127</b>	<b>6,436</b>
Interest received	868,844	39,302	2,303	66,846	14,966	739
<b>Net cash (outflow)/inflow from operating activities</b>	<b>(34,529,095)</b>	<b>66,183</b>	<b>9,218</b>	<b>(1,014,904)</b>	<b>424,093</b>	<b>7,175</b>
<b>Investing activities</b>						
Purchase of property plant and equipment	(10,403,833)	(470,618)	(27,581)	(2,629,260)	(588,655)	(29,066)
Purchase of intangible assets	-	-	-	(115,707)	(17,380)	(1,039)
Proceeds from disposal of property plant and equipment	5,281	239	14	26,137	5,852	289
Proceeds from financial assets at fair value through profit and loss	203,687	9,214	540	4,861	1,088	54
Payments to purchase assets at fair value through profit and loss	(156,514)	(7,080)	(415)	(41,869)	(9,374)	(464)

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Proceeds from redemption of long term investments	272	61	3	789	176	8
<b>Net cash outflow from investing activities</b>	<b>(10,351,107)</b>	<b>(468,184)</b>	<b>(27,439)</b>	<b>(2,755,049)</b>	<b>(608,293)</b>	<b>(30,218)</b>
<b>Financing activities</b>						
Revenue grants received	13,089,475	344,433	19,019	1,817,667	364,088	20,094
Proceeds from long-Term loans	2,966,980	134,211	7,866	709,669	158,885	7,846
Loan repayment	(196,781)	(8,901)	(522)	(72,366)	(16,202)	(800)
<b>Net cash inflow from financing</b>	<b>15,859,674</b>	<b>469,743</b>	<b>26,363</b>	<b>2,454,970</b>	<b>506,771</b>	<b>27,140</b>
Changes in cash and cash equivalent	(29,020,528)	67,742	8,142	(1,314,983)	322,571	4,097
Effects of changes in exchange rates on cash held in foreign currencies	34,367,384	58,263	(1,266)	1,349,817	(326,079)	(4,032)
Cash and cash equivalents at start of year	118,589	17,812	1,065	83,755	21,320	1,000
<b>Cash and cash equivalents at end of year</b>	<b>5,465,445</b>	<b>143,817</b>	<b>7,941</b>	<b>118,589</b>	<b>17,812</b>	<b>1,065</b>

The notes on pages 66 to 100 are an integral part of these annual financial statements.

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## 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 annual 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 US; Zimbabwean 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 2022 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 Accounting Standards Board (IASB), which were effective for the from 1 January 2022.

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) IAS 37 Onerous Contracts—Cost of Fulfilling a Contract
- (ii) IAS 16 Property, Plant and Equipment: Proceeds before Intended Use
- (iii) Amendment to IFRS 3, ‘Business combinations’: Asset or liability in a business combination clarity.
- (iii) Annual Improvements to IFRS Standards 2018-2020 Cycle

## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

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

##### (i) New and amended standards adopted by the Authority (continued)

#### IAS 37 Onerous Contracts—Cost of Fulfilling a Contract

The amendment clarifies which costs an entity includes in assessing whether a contract will be loss-making. This assessment is made by considering unavoidable costs, which are the lower of the net cost of exiting the contract and the costs to fulfil the contract. The amendment clarifies the meaning of ‘costs to fulfil a contract’. Under the amendment, costs to fulfil a contract include incremental costs and the allocation of other costs that relate directly to fulfilling the contract.

The amendment did not have any significant impact on the Authority’s annual financial statements for the period under review.

#### Amendments to IAS 16 Property, Plant and Equipment: Proceeds before Intended Use

The amendment to IAS 16 prohibits an entity from deducting from the cost of an item of PPE any proceeds received from selling items produced while the entity is preparing the asset for its intended use (for example, the proceeds from selling samples produced when testing a machine to see if it is functioning properly). The proceeds from selling such items, together with the costs of producing them, are recognised in profit or loss.

The amendment did not have any significant impact on the Authority’s financial statements for the period under review.

#### Amendment to IFRS 3, ‘Business combinations’ Asset or liability in a business combination clarity

The Board has updated IFRS 3, ‘Business combinations’, to refer to the 2018 Conceptual Framework for Financial Reporting, in order to determine what constitutes an asset or a liability in a business combination.

In addition, the Board added a new exception in IFRS 3 for liabilities and contingent liabilities. The exception specifies that, for some types of liabilities and contingent liabilities, an entity applying IFRS 3 should instead refer to IAS 37, ‘Provisions, Contingent Liabilities and Contingent Assets’, or IFRIC 21, ‘Levies’, rather than the 2018 Conceptual Framework.

The Board has also clarified that the acquirer should not recognise contingent assets, as defined in IAS 37, at the acquisition date.

##### (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 2022 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.

#### Amendment to IAS 1, ‘Presentation of Financial Statements’ on Classification of Liabilities as Current or Non-current

The amendment clarifies that liabilities are classified as either current or non-current, depending on the rights that exist at the end of the reporting period. A number of requirements are required to be met in conjunction with this amendment to this assessment. Entities must disclose separately the amounts of proceeds and costs relating to items produced that are not an output of the entity’s ordinary activities.

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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

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

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

#### **Narrow scope amendments to IAS 1 ‘Presentation of Financial Statements’, Practice statement 2 and IAS 8 ‘Accounting Policies, Changes in Accounting Estimates and Errors’**

The amendments aim to improve accounting policy disclosures and to help users of the financial statements to distinguish changes in accounting policies from changes in accounting estimates.

#### **Amendments to IAS 12, Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction**

The amendments require companies to recognise deferred tax on transactions that, on initial recognition give rise to equal amounts of taxable and deductible temporary differences.

#### **Annual Improvements to IFRS Standards 2018-2020 Cycle**

These amendments include minor changes to:

- IFRS 1, ‘First time adoption of IFRS’ has been amended for a subsidiary that becomes a first-time adopter after its parent. The subsidiary may elect to measure cumulative translation differences for foreign operations using the amounts reported by the parent at the date of the parent’s transition to IFRS.
- IFRS 9, ‘Financial Instruments’ has been amended to include only those costs or fees paid between the borrower and the lender in the calculation of “the 10% test” for derecognition of a financial liability. Fees paid to third parties are excluded from this calculation.
- IFRS 16, ‘Leases’, amendment to the Illustrative Example 13 that accompanies IFRS 16 to remove the illustration of payments from the lessor relating to leasehold improvements. The amendment intends to remove any potential confusion about the treatment of lease incentives.

#### **c) Foreign currency translation**

(i) *Functional and presentation currency*

The Authority as a bi national institution has operations in both Zambia and Zimbabwe and the presentation currency is the respective currencies of the two Contracting States which are, the Zimbabwe Dollar (“ZWL”) and, the Zambian Kwacha. The functional currency of the Authority is the United States Dollar.

Income statement items have been translated into the presentation currencies using the average exchange rate for the year as an approximation to the actual exchange rate. Assets and liabilities have been translated using the closing exchange rate. Any differences arising from this process have been recognised in other comprehensive income and accumulated in the foreign exchange 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 foreign exchange 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.



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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (ii) Transactions and balances (continued)

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

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 4.

#### (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 statement of 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.

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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (h) Property, plant, and equipment (continued)

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).

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.

## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies

#### (i) Investment property (continued)

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) Intangible assets

Intangible assets are separately identifiable non monetary assets without physical substance such as computer software. The Authority initially recognises intangible assets at cost and subsequently measures them at cost less accumulated amortisation and impairment losses save for instances where the asset has an infinite life.

Intangible assets with an indefinite life are not amortised, however their useful life should be reviewed at each reporting period to determine whether events and circumstances continue to support an indefinite useful life assessment for the assets. If they do not, the change in the useful life assessment from indefinite to finite is accounted for as a change in an accounting estimate.

Intangible assets with a finite useful life are amortised on a straight line basis and in the case of software, the estimated useful life is four (4) years. Subsequent expenditure relating to intangible assets such as annual license fees is expensed to the profit or loss. The amortisation rate applicable for amortising intangible assets in this case software is:

Computer software	25%
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#### (k) 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.

#### (l) Financial instruments

Financial instruments comprise trade and other receivables (excluding prepayments), long term investments, 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.

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).

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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (I) Financial instruments (continued)

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

##### (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.

## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (l) Financial Instruments (Continued)

##### (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.

#### (m) 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 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.

#### (n) 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.

#### (o) 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.

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

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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (o) Borrowings (continued)

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.

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.

#### (p) 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.

#### (q) 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.

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.

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## Notes to the annual financial statements (continued)

### 2 Summary of significant accounting policies (continued)

#### (r) 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.

#### (s) 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

#### (u) 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 triannually. 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 2021 using the sales comparison approach based on recent sales of comparable properties in the area.

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### Notes to the annual financial statements (continued)

#### 4 Revenue from contracts with customers

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL '000	ZMW'000	US\$'000
Water Sales Variable Charge	8,506,286	384,781	22,551	2,132,835	477,512	23,578
Water Sales Fixed Charge	2,470,506	111,753	6,550	592,456	132,643	6,550
	<u>10,976,792</u>	<u>496,534</u>	<u>29,101</u>	<u>2,725,291</u>	<u>610,155</u>	<u>30,128</u>

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 (WPA) 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 addendum to the Water Purchase Agreement signed in 2022, the Authority and the two Power Utility companies agreed to maintain both the variable charge and fixed charge at the 2021 rate for the three years period commencing in 2022 to 2024.

##### b) Water allocation

During the year ended 31 December 2022, the Authority allocated a total of 45 bm<sup>3</sup> of water to be shared equally between the Utilities for purposes of power generation. The Utilities' combined usage in the year was 47.59 bm<sup>3</sup> resulting in overutilisation of 5.76%. Of this overutilisation KHPC (Pvt) Limited contributed 2.5 bm<sup>3</sup> whereas, ZESCO Limited contributed 0.09 bm<sup>3</sup> translating to 11.12% and 0.42% respectively. KHPC (Pvt) Limited was accordingly charged a penalty of USD 1,778,648.

##### 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\$/m<sup>3</sup> x 1.5.
- iii. Over utilization by over 20% of annual allocation, extra volume shall be charged at a water tariff in US\$/m<sup>3</sup> x 2.

#### 5 Other income

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Rent received from investment properties	32,253	1,459	86	4,496	1,007	50
Profit on disposal of property, plant and equipment	4,767	216	13	16,973	3,800	188
Miscellaneous income	564	25	1	582	130	6
Sale of data	113	5	-	-	-	-
Toll fees	9,202	416	24	1,406	315	16
Overutilisation penalty	670,906	30,348	1,779	1,094,365	245,013	12,098
	<u>717,805</u>	<u>32,470</u>	<u>1,903</u>	<u>1,117,822</u>	<u>250,265</u>	<u>12,358</u>



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### Notes to the annual financial statements (continued)

#### 6 Finance income

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
<b>Finance income</b>						
Interest on overdue accounts	821,561	37,163	2,178	56,602	12,673	626
Interest on term deposits	24,692	1,117	65	2,926	655	32
Interest on staff housing loans	18	1	-	675	151	8
Interest on staff car loans	22,402	1,013	59	6,643	1,487	73
Interest on furniture loans	171	8	-	-	-	-
Urealised exchange gains	517,849	23,425	1,373	553,568	123,936	6,120
	<u>1,386,693</u>	<u>62,727</u>	<u>3,675</u>	<u>620,414</u>	<u>138,902</u>	<u>6,859</u>
<b>Finance cost</b>						
Exchange loss on cash and cash equivalents	(1,987,934)	(89,924)	(5,270)	(164,791)	(36,894)	(1,822)
<b>Net finance income</b>	<u>(601,241)</u>	<u>(27,197)</u>	<u>(1,595)</u>	<u>455,623</u>	<u>102,008</u>	<u>5,037</u>

#### 7 Employee benefits expense

Salaries and wages	2,189,249	99,030	5804	553,179	123,849	6,115
Pension	169,636	7,673	450	41,461	9,283	458
Gratuity	155,510	7,034	412	36,279	8,122	401
Retrenchment costs	-	-	-	5,865	1,313	65
Other employment costs	393,849	17,816	1,044	102,804	23,016	1,137
	<u>2,908,243</u>	<u>131,553</u>	<u>7,710</u>	<u>739,588</u>	<u>165,583</u>	<u>8,176</u>

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### Notes to the annual financial statements (continued)

#### 8 Property, plant, and equipment

	Kariba Dam Complex	Land and buildings	Motor vehicles & Furniture & fittings	Capital work in progress	Total
	ZWL'000	ZWL'000	ZWL'000	ZWL'000	ZWL'000
<b>At 1 January 2021</b>					
Cost or valuation	101,152	7,737	17,529	987,628	1,114,047
Accumulated depreciation	(170,096)	(11,869)	(47,215)	-	(229,180)
Effects of foreign exchange differences	6,259,410	593,368	171,793	6,247,534	13,272,105
<b>Net book amount</b>	<b>6,190,466</b>	<b>589,236</b>	<b>142,108</b>	<b>7,235,162</b>	<b>14,156,972</b>
<b>Year ended 31 December 2021</b>					
Opening net book amount	6,190,466	589,236	142,108	7,235,162	14,156,972
Additions	-	-	36,302	2,592,958	2,629,260
Write off – overstated accumulated depreciation	-	-	9,164	-	9,164
Revaluation adjustment	-	172,851	-	-	172,851
Depreciation charge	(267,172)	(18,497)	(60,023)	-	(345,692)
Effects of Foreign Exchange Differences	1,972,597	229,473	43,224	2,976,863	5,222,157
<b>Closing net book amount</b>	<b>7,895,891</b>	<b>973,063</b>	<b>170,775</b>	<b>12,804,983</b>	<b>21,844,712</b>
<b>At 31 December 2021</b>					
Cost or valuation	1,317,079	242,301	90,160	4,565,594	6,215,134
Accumulated depreciation	(389,751)	27,025	(94,818)	-	(457,544)
Effects of foreign Exchange differences	6,968,563	703,737	175,433	8,239,389	16,087,122
<b>Net book amount</b>	<b>7,895,891</b>	<b>973,063</b>	<b>170,775</b>	<b>12,804,983</b>	<b>21,844,712</b>
<b>Year ended 31 December 2022</b>					
Opening net book amount	7,895,891	973,063	170,775	12,804,983	21,844,712
Additions	-	-	346,828	10,057,005	10,403,833
Scrapping/Disposal	-	-	(1,158)	-	(1,158)
Depreciation charge	(1,114,141)	(98,723)	(252,329)	-	(1,465,193)
Effects of foreign exchange differences	39,974,055	4,957,484	962,294	74,611,781	120,505,614
<b>Closing net book amount</b>	<b>46,755,805</b>	<b>5,831,824</b>	<b>1,226,410</b>	<b>97,473,769</b>	<b>151,287,808</b>
<b>At 31 December 2022</b>					
Cost or valuation	6,190,466	762,100	533,244	19,885,125	27,370,935
Accumulated depreciation	(1,381,313)	(117,220)	(312,352)	-	(1,810,885)
Effects of foreign Exchange differences	41,946,652	5,186,944	1,005,518	77,588,644	125,727,758
<b>Net book amount</b>	<b>46,755,805</b>	<b>5,831,824</b>	<b>1,226,410</b>	<b>97,473,769</b>	<b>151,287,808</b>

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**Notes to the annual financial statements (continued)**

**8 Property, plant, and equipment (continued)**

	<b>Kariba Dam Complex</b>	<b>Land and buildings</b>	<b>Motor vehicles, Furniture &amp; fittings</b>	<b>Capital work in progress</b>	<b>Total</b>
	<b>ZMW'000</b>	<b>ZMW'000</b>	<b>ZMW'000</b>	<b>ZMW'000</b>	<b>ZMW'000</b>
<b>At 1 January 2021</b>					
Cost or valuation	1,120,763	81,487	112,562	1,060,632	2,375,444
Accumulated depreciation	(321,677)	(6,341)	(97,311)	0	(425,329)
Effects of foreign exchange differences	776,678	74,842	20,922	781,064	1,653,506
<b>Net book amount</b>	<b>1,575,764</b>	<b>149,988</b>	<b>36,173</b>	<b>1,841,696</b>	<b>3,603,621</b>
Opening net book amount	1,575,764	149,988	36,173	1,841,696	3,603,621
Additions	-	-	8,128	580,527	588,655
Write off – overstated accumulated depreciation	-	-	2,052	-	2,052
Revaluation adjustment - Cost	-	31,969	-	-	31,969
Depreciation charge	(59,816)	(4,141)	(13,438)	-	(77,395)
Effects of foreign exchange differences	(329,963)	(31,659)	(7,264)	(498,829)	(867,715)
	<b>1,185,985</b>	<b>146,157</b>	<b>25,651</b>	<b>1,923,394</b>	<b>3,281,187</b>
<b>At 31 December 2021</b>					
Closing net book amount	1,120,763	103,217	122,742	1,641,159	2,987,881
Accumulated depreciation	(381,493)	(243)	(110,749)	-	(492,485)
Effects of foreign exchange differences	446,715	43,183	13,658	282,235	785,791
<b>Net book amount</b>	<b>1,185,985</b>	<b>146,157</b>	<b>25,651</b>	<b>1,923,394</b>	<b>3,281,187</b>
<b>Year ended 31 December 2022</b>					
Opening net book amount	1,185,985	146,157	25,651	1,923,394	3,281,187
Additions	-	-	15,689	454,929	470,618
Scrapping/Disposal	-	-	(14)	-	(14)
Depreciation charge	(50,398)	(4,466)	(11,414)	-	(66,278)
Effects of foreign exchange differences	94,734	11,766	2,360	186,580	295,440
<b>Closing net book amount</b>	<b>1,230,321</b>	<b>153,457</b>	<b>32,272</b>	<b>2,564,903</b>	<b>3,980,953</b>
<b>At 31 December 2022</b>					
Cost or valuation	1,120,763	103,219	138,416	2,096,088	3,458,486
Accumulated depreciation	(431,891)	(4,709)	(122,163)	-	(558,763)
Effects of foreign Exchange differences	541,449	54,947	16,019	468,815	1,081,230
<b>Net book amount</b>	<b>1,230,321</b>	<b>153,457</b>	<b>32,272</b>	<b>2,564,903</b>	<b>3,980,953</b>

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### Notes to the annual financial statements (continued)

#### 8 Property, plant, and equipment (continued)

	Kariba Dam Complex	Land and buildings	Motor vehicles & Furniture & fittings	Capital work in progress	Total
	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
<b>As at 1 January 2021</b>					
Cost or valuation	101,152	7,437	10,040	86,302	204,931
Accumulated depreciation	(27,308)	(408)	(8,345)	-	(36,061)
<b>Net book amount</b>	<b>73,844</b>	<b>7,029</b>	<b>1,695</b>	<b>86,302</b>	<b>168,870</b>
<b>Year ended 31 December 2021</b>					
Opening net book amount	73,844	7,029	1,695	86,302	168,870
Additions	-	-	401	28,665	29,066
Write off – overstated accumulated depreciation	-	-	101	-	101
Revaluation adjustments	-	1,911	-	-	1,911
Depreciation charge	(2,954)	(204)	(664)	-	(3,822)
<b>Closing net book amount</b>	<b>70,890</b>	<b>8,736</b>	<b>1,533</b>	<b>114,967</b>	<b>196,126</b>
<b>At 31 December 2021</b>					
Cost or valuation	101,152	8,736	10,542	114,967	235,397
Accumulated depreciation	(30,262)	-	(9,009)	-	(39,271)
<b>Net book amount</b>	<b>70,890</b>	<b>8,736</b>	<b>1,533</b>	<b>114,967</b>	<b>196,126</b>
<b>Year ended 31 December 2022</b>					
Opening net book amount	70,890	8,736	1,533	114,967	196,126
Additions	-	-	919	26,662	27,581
Scrapping/Disposal	-	-	(1)	-	(1)
Depreciation charge	(2,954)	(262)	(669)	-	(3,885)
<b>Closing net book amount</b>	<b>67,936</b>	<b>8,474</b>	<b>1,782</b>	<b>141,629</b>	<b>219,821</b>
<b>At 31 December 2022</b>					
Cost or valuation	101,152	8,736	11,460	141,629	262,977
Accumulated depreciation	(33,216)	(262)	(9,678)	-	(43,156)
<b>Net book amount</b>	<b>67,936</b>	<b>8,474</b>	<b>1,782</b>	<b>141,629</b>	<b>219,821</b>

The Authorities' head office building and residential properties were revalued as at 31 December 2021 by respective Government Valuation Department's 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 head office building and other residential properties were stated on the historical cost basis, the amounts would be as follows:

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### Notes to the annual financial statements (continued)

#### 8 Property, plant, and equipment (continued)

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Cost	593,113	89,087	5,325	593,113	89,087	5,325
Accumulated Depreciation	(326,278)	(14,759)	(865)	(66,305)	(14,845)	(733)
Effect of exchange differences	3,993,326	37,773		(15,339)	2,582	
<b>Net book value</b>	<b>4,260,161</b>	<b>112,101</b>	<b>6,190</b>	<b>511,469</b>	<b>76,824</b>	<b>4,592</b>

#### 9 Investment property

	ZWL'000	ZMW'000	US\$'000
<b>At 1 January 2021</b>			
Cost	1,581	15,727	1,581
Accumulated depreciation	(2,440)	(2,836)	(231)
Effects of foreign exchange differences	114,012	15,912	-
<b>Net book amount</b>	<b>113,153</b>	<b>28,803</b>	<b>1,350</b>
<b>Year ended 31 December 2021</b>			
Opening net book amount	113,153	28,803	1,350
Depreciation charge	(3563)	(798)	(39)
Effects of foreign exchange differences	36,475	(6,066)	
<b>Net book amount</b>	<b>146,065</b>	<b>21,939</b>	<b>1,311</b>
<b>Year ended 31 December 2021</b>			
Cost	1,581	15,727	1,581
Accumulated depreciation	(6003)	(3,634)	(270)
Effects of foreign exchange differences	150,487	9,846	-
<b>Net book amount</b>	<b>146,065</b>	<b>21,939</b>	<b>1,311</b>
<b>At 1 January 2022</b>			
Opening net book amount	146,065	21,939	1,311
Depreciation charge	(14,859)	(672)	(39)
Effects of foreign exchange differences	744,215	1,769	-
<b>Closing net book amount</b>	<b>875,421</b>	<b>23,036</b>	<b>1,272</b>
<b>At 31 December 2022</b>			
Cost	1,581	15,727	1,581
Accumulated depreciation	(20,862)	(4,306)	(309)
Effects of foreign exchange differences	894,702	11,615	-
<b>Net book amount</b>	<b>875,421</b>	<b>23,036</b>	<b>1,272</b>

Management elected to carry investment property at the cost model.

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### Notes to the annual financial statements (continued)

#### 10 Intangible assets

<b>At 31 December 2021</b>	<b>ZWL'000</b>	<b>ZMW'000</b>	<b>US\$'000</b>
Opening balances	-	-	-
Addition	115,707	17,380	1,039
Amortisation charge	(5,921)	(1,326)	(65)
Effects of foreign exchange differences	(1,259)	247	-
Closing net book amount	<u>108,527</u>	<u>16,301</u>	<u>974</u>
At 1 January 2022	108,527	16,301	974
Amortisation charge	(89,411)	(4,045)	(237)
Effects of foreign exchange differences	488,336	1096	-
<b>Closing net book amount</b>	<b><u>507,452</u></b>	<b><u>13,353</u></b>	<b><u>737</u></b>
<b>At 31 December 2022</b>			
Cost	115,707	17,380	1,039
Accumulated amortisation charge	(95,332)	(5,370)	(302)
Effects of foreign exchange differences	487,077	1343	-
<b>Net book amount</b>	<b><u>507,452</u></b>	<b><u>13,353</u></b>	<b><u>737</u></b>

Intangible assets represent Enterprise Resource Planning system SAP Software.

#### 11 Long term investments

	<b>2022</b>			<b>2021</b>		
	<b>ZWL'000</b>	<b>ZMW'000</b>	<b>US\$'000</b>	<b>ZWL'000</b>	<b>ZMW'000</b>	<b>US\$'000</b>
At start of year	357	54	3	987	251	12
Additions	2,053,549	54,037	2,984			
Interest earned	2	1	-	161	36	2
Interest redeemed	(272)	(61)	(3)	(292)	(65)	(3)
Principal redemption	-	-	-	(497)	(111)	(5)
Effects of exchange differences	51	9	-	(2)	(57)	(3)
Gross carrying amount	<u>2,053,687</u>	<u>54,040</u>	<u>2,984</u>	<u>357</u>	<u>54</u>	<u>3</u>
At end of year	<u>2,053,687</u>	<u>54,040</u>	<u>2,984</u>	<u>357</u>	<u>54</u>	<u>3</u>

Long term investments represent funds held with the Commercial Bank of Zimbabwe (CBZ) (US\$ 489) and Treasury Bills (US\$ 2,983,800) issued by the Government of the Republic of Zimbabwe. The investments held with CBZ are set to mature in 2025 and 2027 respectively and are yielding a return of 5% per annum. In 2022, the Authority received interest of ZWL\$ 6,524 (US\$ 47). The Zero Coupon Treasury Bills were issued to the Authority in exchange for funds deposited (Blocked Funds) with the Reserve Bank of Zimbabwe totaling USD 2,983,800. The treasury bills have tenures ranging between 3 – 5 years with the earliest maturing in July 2025 and the latest maturing in August 2027.

#### 12 Inventory

	<b>2022</b>			<b>2021</b>		
	<b>ZWL'000</b>	<b>ZMW'000</b>	<b>US\$'000</b>	<b>ZWL'000</b>	<b>ZMW'000</b>	<b>US\$'000</b>
Consumable stores	<u>79,852</u>	<u>2,101</u>	<u>116</u>	<u>15,064</u>	<u>2,263</u>	<u>135</u>

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

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### Notes to the annual financial statements (continued)

#### 13 Financial assets at fair value through profit or loss

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
At start of the year	47,893	13,166	787	36,491	9,289	435
Additions	156,514	7,080	415	41,869	9,374	464
Fair value gain	51,013	2,308	135	1,575	353	17
Write off	-	-	-	(3,980)	(891)	(44)
Withdrawals	(203,687)	(9,214)	(540)	(4,861)	(1,088)	(54)
Effect of exchange rate differences	496,940	1,098	-	(23,201)	(3,871)	(31)
	<u>548,673</u>	<u>14,438</u>	<u>797</u>	<u>47,893</u>	<u>13,166</u>	<u>787</u>

Financial assets held at fair value through profit or loss represent funds invested with African Life Financial Services Zambia Limited (AFLIFE) and Zimnat Asset Management Company (ZIMNAT). The funds are held as sinking funds set up to meet gratuity obligations for employees on fixed term contracts. The schemes recorded fair value gains of US\$ 12,465 (2021: US\$ 9,866) and US\$ 122,776 (2021: US\$ 7,541) respectively. In the year under review, a sum of US\$ 386,407 (2021: US\$ 53,743) was withdrawn from AFLIFE to settle gratuity obligations that fell due, while under the ZIMNAT fund, the Authority drew a total of US\$ 153,592.

Financial assets held at fair value through profit or loss are investments in unit trusts whose market value changes with the pricing of the underlying assets whose pricing is based on observable inputs and the changes in the price are used to adjust the fair value of the investments in the financial statements.

#### 14 Trade and other receivables

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
ZESCO Limited	33,739,046	887,802	49,023	5,223,075	784,521	46,893
Kariba Hydro Power Company (KHPC)	<u>25,032,040</u>	<u>658,687</u>	<u>36,371</u>	<u>2,887,143</u>	<u>433,657</u>	<u>25,921</u>
Trade receivables	58,771,086	1,546,489	85,394	8,110,218	1,218,178	72,814
Less: Provision for impairment losses	<u>(17,790,069)</u>	<u>(468,124)</u>	<u>(25,848)</u>	<u>(2,363,063)</u>	<u>(354,938)</u>	<u>(21,216)</u>
	40,981,017	1,078,365	59,546	5,747,155	863,240	51,598
Prepayments	653,867	17,206	950	893,801	134,252	8,025
Ring fenced funds – Ministry of Finance and Economic Development	7,020,560	184,737	10,201	1,470,346	220,850	13,201
Rental debtors	18,961	499	28	51	8	-
Sundry receivables	651,014	17,131	945	102,224	15,353	918
Staff debtors	<u>355,155</u>	<u>9,345</u>	<u>516</u>	<u>58,055</u>	<u>8,720</u>	<u>521</u>
	8,699,557	228,918	12,640	2,524,477	379,183	22,664
	<u>49,680,574</u>	<u>1,307,283</u>	<u>72,186</u>	<u>8,271,632</u>	<u>1,242,423</u>	<u>74,263</u>
Less: Long-term receivables						
Trade receivables	(26,249,137)	(690,714)	(38,141)	(3,404,178)	(511,318)	(30,563)
House hold furnishing loans	(6,318)	(166)	(9)	-	-	-
Staff car loans	<u>(239,934)</u>	<u>(6314)</u>	<u>(349)</u>	<u>(7,371)</u>	<u>(1,107)</u>	<u>(66)</u>
	<u>(26,495,389)</u>	<u>(697,194)</u>	<u>(38,499)</u>	<u>(3,411,549)</u>	<u>(512,425)</u>	<u>(30,629)</u>
	<u>23,185,185</u>	<u>610,089</u>	<u>33,687</u>	<u>4,860,083</u>	<u>729,998</u>	<u>43,634</u>

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## Notes to the annual financial statements (continued)

### 14 Trade and other receivables (continued)

Ringfenced funds refer to Authority funds held in Zimbabwe Dollars against which the Government of the Republic of Zimbabwe made a commitment to release United States Dollar equivalents on a one-to-one basis following the redenomination of funds previously held as United States Dollars to Zimbabwe Dollars. In the year 2022, the Authority received USD 3,000,000 against the said funds bringing the amount outstanding to USD 10,200,850.27 (2021: USD 13,200,850).

#### (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 relate to car, household furnishing and housing loans which carry interest rates of 6%, 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.

15 Cash and cash equivalents	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Cash at bank and in hand	1,635,270	43,031	2,376	15	2	-
Short term investments	3,830,175	100,786	5,565	118,574	17,810	1,065
	<u>5,465,445</u>	<u>143,817</u>	<u>7,941</u>	<u>118,589</u>	<u>17,812</u>	<u>1,065</u>

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

Below is the tabular presentation of the movements in the Authority's net debt movement reconciliation. In the year under review, US\$4,481,976 (2021 : US\$ 3,780,807) was drawn from the International Development Association ("IDA"), World Bank US\$ 75 million loan facility while US\$ 3,383,827 (2021:US\$ 4,064,547) was drawn from the ("ADF") US\$ 39 million loan facility.



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### Notes to the annual financial statements (continued)

#### 15 Cash and cash equivalents (continued)

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Cash and cash equivalents	5,465,445	143,817	7,941	118,589	17,812	1,065
Liquid Investments	14 548,673	14,438	797	47,893	13,166	787
Borrowings repayable in more than one year	18 (19,725,508)	(519,052)	(28,661)	(2,419,390)	(363,399)	(21,721)
<b>Net debt</b>	<b>(13,711,390)</b>	<b>(360,797)</b>	<b>(19,923)</b>	<b>(2,252,908)</b>	<b>(332,421)</b>	<b>(19,869)</b>
Cash and liquid investments	6,014,118	158,255	8,738	166,482	30,978	1,852
Gross debt – fixed interest rates	(19,725,508)	(519,052)	(28,661)	(2,419,390)	(363,399)	(21,721)
<b>Net debt</b>	<b>(13,711,390)</b>	<b>(360,797)</b>	<b>(19,923)</b>	<b>(2,252,908)</b>	<b>(332,421)</b>	<b>(19,869)</b>

ZWL'000	Cash and cash equivalent	Liquid investments	Borrowings in more than 1 year
Net debt as at 1 January 2021	83,775	36,491	(1,194,610)
Cash flows	5,880	41,960	(709,770)
Redemptions	-	(4,861)	72,366
Effects of foreign exchange differences	-	(5,210)	(38,435)
Other noncash movements	28,934	(20,487)	4,289,839
<b>Net debt as at 31 December 2021</b>	<b>118,589</b>	<b>47,893</b>	<b>(2,419,390)</b>
Cash flows	2,593,626	156,514	(2,966,980)
Redemptions	-	(203,687)	196,781
Other non cash movements	-	64,214	152,552
Effects of foreign exchange differences	2,753,230	483,739	(19,527,251)
<b>Net debt as at 31 December 2022</b>	<b>5,465,445</b>	<b>548,673</b>	<b>(19,725,508)</b>

ZMW'000	Cash and cash equivalent	Liquid investments	Borrowings in more than 1 year
Net debt as at 1 January 2021	21,320	9,289	(304,084)
Cash flows	1,316	9,374	(158,908)
Redemptions	-	(1,088)	16,202
Other noncash movements	-	(538)	(8,605)
Effects of foreign exchange differences	(4,824)	(3,871)	91,996
<b>Net debt as at 31 December 2021</b>	<b>17,812</b>	<b>13,166</b>	<b>(363,399)</b>
Cash flows	117,322	7,080	(134,211)
Redemptions	-	(9,214)	8,901
Other noncash movements	-	2,905	6,901
Effects of foreign exchange differences	8,683	501	(37,244)
<b>Net debt as at 31 December 2022</b>	<b>143,817</b>	<b>14,438</b>	<b>(519,052)</b>

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## Notes to the annual financial statements (continued)

### 15 Cash and cash equivalents (continued)

US\$'000	Cash and cash equivalent	Liquid investments	Borrowings in more than 1 year
<b>Net debt as at 1 January 2021</b>	1,000	435	(14,250)
Cash flows	65	464	(7,846)
Redemptions	-	(54)	800
Other noncash movements	-	(58)	(425)
<b>Net debt as at 31 December 2021</b>	<b>1,065</b>	<b>787</b>	<b>(21,721)</b>
Cash flows	6,876	415	(7,866)
(Redemptions) Repayments	-	(540)	522
Other non cash movements	-	135	404
<b>Net debt as at 31 December 2022</b>	<b>7,941</b>	<b>797</b>	<b>(28,661)</b>

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

### 16 Restricted cash

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Restricted cash	-	-	-	83,405	12,528	749

The Authority has been reporting all funds held in its bank accounts in Zimbabwe as Restricted Cash due to the difficulties encountered in accessing United States Dollar equivalents. Management has reassessed the situation and has reclassified the funds to cash and cash equivalents due to the improved access to United States Dollars and ease of transferring funds between the two Contracting States. At 31 December 2022, the Authority held US\$ 145,143 in its bank accounts maintained in Zimbabwe.

### 17 Borrowings

#### Government of the Republic of Zambia

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
At start of year	2,419,390	363,399	21,721	1,194,610	304,084	14,250
Draw downs						
-World Bank IDA	1,690,601	76,474	4,482	342,000	76,569	3,781
-AFDB Loan	1,276,379	57,737	3,384	367,669	82,316	4,065
Interest charged	97,585	4,414	259	38,435	8,605	425
Loan repayment	(196,781)	(8,901)	(522)	(72,366)	(16,202)	(800)
Reclassified to grants	(250,138)	(11,315)	(663)			
Effects of exchange rate differences	14,688,472	37,244	-	549,042	(91,973)	-
At end of year	<b>19,725,508</b>	<b>519,052</b>	<b>28,661</b>	<b>2,419,390</b>	<b>363,399</b>	<b>21,721</b>

## Notes to the annual financial statements (continued)

### 17 Borrowings (continued)

#### 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. Due to liquidity challenges, the Authority defaulted on its repayments on the loan facility for four consecutive years resulting in arrears of US\$ 19,786,000 at the end of 31 December 2020. The Authority held discussions with the Ministry of Finance and National Planning (MoFNP) to restructure the terms of the loan agreement taking into account the liquidity position of the Authority. The Government of the Republic of Zambia (GRZ), in consultation with the primary lenders i.e. the World Bank (IDA) and the African Development Bank (ADF) agreed to restructure the terms of the on lending agreement between the GRZ and the Authority. Key among the changes to the Credit Agreements were; reduction of interest rate from 2% to 1.25%, basing the bi annual principal and interest payments on the actual amount drawn on the facility as opposed to the allotted amount of US\$ 114 million and granting of a two year grace period on the payment of principal with the first payment due on 1 March 2024. The Authority and the MoFNP successfully signed the Restructured Credit Agreements on 1 April 2022 under the aforementioned terms. At the said date, the balance of the loans drawn and outstanding under this facility was US\$ 7,128,157.

In the period under review, the Authority drew US\$4,481,976 (2021: US\$ 3,780,807). Of this amount US\$ 1,049,128 (2020: US\$ 1,264,012) was paid directly to Stucky for technical services and supervision services and US\$53,095 (2021:US\$ 205,260) was paid directly to the panel of experts engaged on the KDRP project while US\$407, 444 was paid to the panel of experts from the Designated Account. US\$2,120,658 (2021: US\$1,720,482) was paid directly to Consortium of General Hydro Electric – France and Freyssinet International the contractor undertaking the Spillway Refurbishment Project.

US\$147,990 was paid directly to individual consultants from the DA Account and US\$56,202 was paid to Tractebel Engineering for 5 yearly inspections for Kariba Dam Rehabilitation Project (KDRP). Furthermore, a total of US\$271,688 was paid to GE Hydro France and Freyssinet from the DA Account and US\$ 21,793 was paid to Stucky for Technical and Supervision Services. US\$228,772 was paid to Huggenburger for procurement of additional monitoring instruments for the Plunge Pool. In the period under review, US\$70,640 was paid to various training providers for capacitating the Project Implementation Unit (PIU) team in order to enhance the skills set. During the year, a Consultant, SHERQ Patriot was engaged under the Zambezi Valley Development Fund (ZVDF) to conduct a performance assessment to determine the social impact of the construction of the KDRP. A total of US\$54,007 was paid directly to the Consultant for the services. US\$57,894 was paid to the PIU staff dedicated to the project. Additionally, US\$16,940 was paid directly to the Gender Based Specialist (GBV) for development of the GBV manual.

#### African Development Bank Group AFDB

The Authority also has a 30-year subsidiary 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 Restructured Credit Agreement governing the onlending facility between the Authority and the MoFNP was also signed on 1 April 2022. Under the said the Restructured Credit Agreement, the interest rate applicable on the amount drawn and outstanding is 1.25% per annum charged and payable on 1 March and 1 September of each year. Additionally, the Authority was given a grace period of 2 years on payment of principal which at the date of the restructuring was US\$ 6,153,062.

In the year under review, US\$ 3,383,827 was drawn under this facility and was applied as follows; US\$693,242 was paid directly to Stucky for Technical Services and Supervision Services and US\$2,392,135 was paid directly to the Consortium of General Electric Hydro of France and Freyssinet. US\$54,203 was paid directly to Tractebel Engineering for 5 yearly inspection of the Kariba Dam. Furthermore, US\$224,783 was paid directly to Huggenburger for the procurement of additional Dam safety monitoring instrumentation for the Plunge Pool and US\$15,430 was paid to the ZVDF Performance Assessment Consultant, SHERQ Patriot. US\$4,033 was paid directly to the Gender Based Violence (GBV) Consultant.

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### Notes to the annual financial statements (continued)

18 Trade and other payables	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
Trade creditors	2,640,776	69,489	3,837	399,697	60,036	3,588
Accruals	297,633	7,832	433	160,820	24,156	1,444
ZVDF	10,362	273	15	36,400	5,467	327
Statutory liabilities	62,462	1,644	91	3,830	575	34
Employee benefits	1,220,324	32,111	1,773	382,560	57,464	3,435
Total	4,231,557	111,349	6,149	983,307	147,698	8,828

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 three grant financing facilities for the Kariba Dam Rehabilitation Project (KDRP) and they are briefly described below:

#### (a) 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 2022, US\$ 3,121,716 was accessed from this facility and was applied towards the Spillway Rehabilitation Project.
- 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 the year under review US\$4,166,916 was drawn under this facility; US\$ 2,874,335 was paid directly to Consortium GE Hydro France and Freyssinet for Spillway works and US\$1,292,581 was paid directly to Stucky for Technical Services and Supervision services.
- 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 2022, US\$ 11,067,188 (2021 : US\$ 12,169,793) was disbursed through direct payments under this facility to Razelbec, the contractor engaged on the Plunge pool.

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**Notes to the annual financial statements (continued)**

**19 Capital Grants (continued)**

**(b) Movements in grants**

	2022			2021		
	ZWL'000	ZMW'000	US\$'0000	ZWL'000	ZMW'000	US\$'000
<b>Movements in capital grants</b>						
At start of year	7,865,885	1,181,478	70,620	4,235,666	1,078,176	50,526
Received during the year:						
• African Development Bank	2,867,808	75,463	4,167	341,773	76,518	3,778
• European Union	7,616,802	200,427	11,067	1,100,842	203,601	12,170
• Swedish International Development Agency (Sida)	2,604,865	68,544	3,122	375,052	83,969	4,146
Reclassified from loans	456,298	12,007	663	-	-	-
Effects of exchange Differences	40,281,058	85,449	-	1,812,552	(260,786)	-
At end of year	<u>61,692,716</u>	<u>1,623,368</u>	<u>89,639</u>	<u>7,865,885</u>	<u>1,181,478</u>	<u>70,620</u>

**(c) 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 the statement of income and expenditure yet.

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## Notes to the annual financial statements

### 20 Financial instruments by category

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
<b>Financial assets at amortised cost</b>						
Trade and other receivables (excluding pre-payments)	49,022,788	1,289,973	71,230	7,377,831	1,108,171	66,238
Cash and cash equivalents	5,465,445	143,817	7,941	118,589	17,812	1,065
Restricted cash	-	-	-	(83,405)	(12,528)	(749)
Long term investments	2,053,687	54,040	2,984	357	54	3
	<u>56,541,920</u>	<u>1,487,830</u>	<u>82,155</u>	<u>7,413,372</u>	<u>1,113,509</u>	<u>67,557</u>
<b>Financial assets at fair value through profit or loss</b>						
	<u>548,673</u>	<u>14,438</u>	<u>797</u>	<u>47,893</u>	<u>13,166</u>	<u>787</u>
<b>Other Financial liabilities at amortised cost</b>						
<b>Financial liabilities</b>						
Borrowings	19,725,508	519,052	28,661	2,419,390	363,399	21,721
Trade and other payables (excluding statutory liabilities)	4,169,095	109,705	6,058	979,477	147,123	8,794
	<u>23,894,603</u>	<u>628,757</u>	<u>34,719</u>	<u>3,398,867</u>	<u>510,522</u>	<u>30,515</u>

### 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 embedded 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 Dollars 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 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.

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## Notes to the annual financial statements

### 21 Financial risk management objectives and policies (continued)

At 31 December 2022, 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 surplus and accumulated reserves for the Authority would have been ZMW 0.00489 million (2021: ZMW 0.1930 million ) and, ZWL 0.1086 million and (2021 : ZWL 0.8579) higher or lower than the 2022 result.

#### 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 cash flow to interest rate risk. Management manages this risk by ensuring sufficient liquidity to meet loan obligations when they fall due. As at 31 December 2022, an increase/decrease of 200 (2021: 200) basis points on US\$ did not have a material impact on the operating surplus 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 Management. 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 credit risk continues to be 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.

Due to the nature of the Authority's debtors, it has applied the IFRS 9 general approach in calculating its expected credit loss. The debtors are in default due to the Authority's debtors payment policy. There has been delays in receiving payments from the Authority's only two main debtors and historically the Authority has not suffered any losses on non payment of debt.

IFRS 9 requires that credit losses on financial assets be measured and recognised using the expected credit loss (ECL) approach. Credit loss is calculated as the difference between the carrying amount of the contractual cash flows and the present value (PV) of expected future cash flows over a period of 4 years for KHPC and 6 years for ZESCO Limited. The expected cash flows are based on the historical payment pattern of the debtors. The present values have been discounted at the opportunity cost market borrowing rate of 10%.

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**Notes to the annual financial statements (continued)**

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

**Credit risk (continued)**

**Impairment of financial assets (continued)**

On that basis, the loss allowance as at 31 December 2022 was determined as follows for trade and other receivables:

**KHPC Limited Impairment**

**Year ended 31 December 2022**

<b>ZWL'000</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Outstanding balance					25,032,040
Expected cashflows	1,939,983	2,440,624	1,501,922	19,149,511	25,032,040
Loss rate	0.91	0.83	0.75	0.68	
Discounted cashflows	1,763,621	2,017,045	1,128,417	13,079,374	17,988,457
<b>Impairment Loss</b>	<b>176,362</b>	<b>423,579</b>	<b>373,505</b>	<b>6,070,137</b>	<b>7,043,583</b>

<b>ZMW'000</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Outstanding balance					658,687
Expected cashflows	51,048	64,222	39,521	503,896	658,687
Loss rate	0.91	0.83	0.75	0.68	
Discounted cashflows	46,408	53,076	29,693	344,168	473,345
<b>Impairment Loss</b>	<b>4,640</b>	<b>11,146</b>	<b>9,828</b>	<b>159,728</b>	<b>185,342</b>

<b>US\$'000</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Outstanding balance					36,371
Expected cashflows	2,819	3,546	2,182	27,824	36,371
Loss rate	0.91	0.83	0.75	0.68	
Discounted cashflows	2,563	2,931	1,640	19,004	26,138
<b>Impairment Loss</b>	<b>256</b>	<b>615</b>	<b>542</b>	<b>8,820</b>	<b>10,233</b>



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## Notes to the financial statements (continued)

### 21 Financial risk management objectives and policies (continued)

#### Credit risk (continued)

#### Impairment of financial assets (continued)

##### ZESCO Limited Impairment

Year ended 31 December 2022

ZWL'000	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Outstanding balance							33,739,046
Expected cash flows	3,953,080	5,272,398	2,976,354	3,340,505	4,466,811	13,729,898	33,739,046
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(3,593,709)	(4,357,354)	(2,236,179)	(2,281,610)	(2,773,538)	(7,750,170)	22,992,560
<b>Impairment Loss</b>	<b>359,371</b>	<b>915,044</b>	<b>740,175</b>	<b>1,058,895</b>	<b>1,693,273</b>	<b>5,979,728</b>	<b>10,746,486</b>

ZMW'000	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Outstanding balance							887,802
Expected cash flows	104,020	138,737	78,319	87,901	117,539	361,286	887,802
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(94,564)	(114,658)	(58,842)	(60,038)	(72,982)	(203,936)	(605,020)
<b>Impairment Loss</b>	<b>9,456</b>	<b>24,079</b>	<b>19,477</b>	<b>27,863</b>	<b>44,557</b>	<b>157,350</b>	<b>282,782</b>

US\$'000	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Outstanding balance							49,023
Expected cash flows	5,744	7,661	4,325	4,854	6,490	19,949	49,023
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(5,222)	(6,331)	(3,249)	(3,315)	(4,030)	(11,261)	(33,408)
<b>Impairment Loss</b>	<b>522</b>	<b>1,330</b>	<b>1,076</b>	<b>1,539</b>	<b>2,460</b>	<b>8,688</b>	<b>15,615</b>

Zambezi River Authority  
Annual Financial Statements  
For the year ended 31 December 2022

### Notes to the financial statements (continued)

#### 21 Financial risk management objectives and policies (continued)

##### Credit risk (continued)

##### Impairment of financial assets (continued)

##### KHPC Limited Impairment

Year ended 31 December 2021

ZWL'000	Year 1	Year 2	year 3	Total
Outstanding balance	-	-	-	2,887,143
Expected cashflows	292,526	292,526	2,302,091	2,887,143
Loss rate	0.91	0.83	0.75	
Discounted cash flows	(265,933)	( 241,757)	(1,729,439)	(2,237,285)
Impairment Loss	26,593	50,679	623,421	649,858

ZMW'000	Year 1	Year 2	year 3	Total
Outstanding balance				433,657
Expected cashflows	43,938	43,938	345,781	433,657
Loss rate	0.91	0.83	0.75	
Discounted cash flows	( 39,944)	(36,313)	(259,767)	(336,047)
Impairment Loss	3,994	7,625	86,014	97,610

US\$'000	Year 1	Year 2	year 3	Total
Outstanding balance				25,921
Expected cashflows	2,626	2,626	20,669	25,921
Loss rate	0.91	0.83	0.75	
Discounted cash flows	(2,388)	(2,171)	(15,527)	(20,086)
Impairment Loss	238	455	5,142	5,835

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## Notes to the annual financial statements (continued)

### 21 Financial risk management objectives and policies (continued)

#### Credit risk (continued)

#### Impairment of financial assets (continued)

##### ZESCO Limited Impairment

Year ended 31 December 2021

ZWL'ooo	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Expected cashflows	478,649	611,969	816,210	460,764	517,137	2,338,348	5,223,075
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(435,136)	(505,759)	(613,230)	(314,708)	(321,101)	(1,319,936)	(3,509,870)
<b>Impairment Loss</b>	<b>43,513</b>	<b>106,210</b>	<b>202,980</b>	<b>146,056</b>	<b>196,036</b>	<b>1,018,412</b>	<b>1,713,205</b>

ZMW'ooo	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Expected cashflows	71,894	91,919	122,597	69,208	77,675	351,226	784,521
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(65,359)	(75,966)	(92,109)	(47,270)	(48,230)	(198,258)	(527,193)
<b>Impairment Loss</b>	<b>6,535</b>	<b>15,953</b>	<b>30,488</b>	<b>21,938</b>	<b>29,445</b>	<b>152,968</b>	<b>257,328</b>

USD'ooo	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Expected cashflows	4,297	5,494	7,328	4,137	4,643	20,994	46,893
Loss rate	0.91	0.83	0.75	0.68	0.62	0.56	
Discounted cash flows	(3,907)	(4,541)	(5,506)	(2,825)	(2,883)	(11,850)	(31,512)
<b>Impairment Loss</b>	<b>390</b>	<b>953</b>	<b>1,822</b>	<b>1,312</b>	<b>1,760</b>	<b>9,144</b>	<b>15,381</b>

The closing allowances for the trade and other receivables as at 31 December 2022 reconcile to the opening loss allowance as follows:

	2022			2021		
	ZWL'ooo	ZMW'ooo	US\$'ooo	ZWL'ooo	ZMW'ooo	US\$'ooo
At start of year	2,358,064	354,188	21,171	1,049,897	267,248	12,524
Receivables write - off	-	-	-	(6,024)	(1,349)	(67)
Impairment loss allowance recognised in profit or loss during the year	1,747,645	79,055	4,633	788,279	176,485	8,714
Effect of Exchange differences	13,653,450	34,067		525,912	-88,196	-
<b>Total</b>	<b>17,759,159</b>	<b>467,310</b>	<b>25,804</b>	<b>2,358,064</b>	<b>354,188</b>	<b>21,171</b>

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## Notes to the annual financial statements

### 21 Financial risk management objectives and policies (continued)

#### Credit risk (continued)

#### Impairment of financial assets (continued)

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.

#### 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 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 the 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 cashflows:

	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 2022:					
- Borrowings	367,085	2,685,839	5,298,262	50,382,433	58,733,619
- trade and other payables	2,402,069	1,767,026	-	-	4,169,095
	<u>2,769,154</u>	<u>4,452,865</u>	<u>5,298,262</u>	<u>50,382,433</u>	<u>62,902,714</u>
At 31 December 2021:					
- Borrowings	30,242	30,242	616,866	11,216,349	11,893,699
- trade and other payables	181,517	797,960	-	-	979,477
	<u>211,759</u>	<u>828,202</u>	<u>616,866</u>	<u>11,216,349</u>	<u>12,873,176</u>
	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 2022:					
- Borrowings	9,659	70,675	139,417	1,325,752	1,545,503
- trade and other payables	63,213	46,492	-	-	109,705
	<u>72,872</u>	<u>117,167</u>	<u>139,417</u>	<u>1,325,752</u>	<u>1,655,208</u>
At 31 December 2021:					
- Borrowings	4,542	4,542	92,655	1,684,728	1,786,467
- trade and other payables	27,269	119,854	-	-	147,123
	<u>31,811</u>	<u>124,396</u>	<u>92,655</u>	<u>1,684,728</u>	<u>1,933,590</u>

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## Notes to the annual financial statements (continued)

### 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 2022:					
- Borrowings	533	3,903	7,698	73,206	85,340
- trade and other payables	3,491	2,567	-	-	6,058
	<u>4,024</u>	<u>6,470</u>	<u>7,698</u>	<u>73,206</u>	<u>91,398</u>
At 31 December 2021					
- Borrowings	272	272	5,538	100,701	106,783
- trade and other payables	1,630	7,164	-	-	8,794
	<u>1,902</u>	<u>7,436</u>	<u>5,538</u>	<u>100,701</u>	<u>115,577</u>

Note : Trade and other payables exclude statutory payables

#### (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 ZWL'000	Level 2 ZWL'000	Level 3 ZWL'000	Total ZWL'000
<b>Year ended 31 December 2022</b>				
<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	548,673	-	548,673
<i>Non-financial assets</i>				
Buildings	-	548,673	5,831,824	6,380,497
<b>Year ended 31 December 2021</b>				
<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	47,893	-	47,893
<i>Non-financial assets</i>				
Buildings	-	-	973,063	973,063
	-	47,893	973,063	1,020,956

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## Notes to the annual financial statements

### 21 Financial risk management objectives and policies (Continued)

Year ended 31 December 2022	Level 1 ZMW'000	Level 2 ZMW'000	Level 3 ZMW'000	Total ZMW'000
<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	14,438	-	14,438
<i>Non-financial assets</i>				
Buildings	-	-	153,457	153,457
	-	14,438	153,457	167,895

#### Year ended 31 December 2021

<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	13,166	-	13,166
<i>Non-financial assets</i>				
Buildings	-	-	146,157	146,157
	-	13,166	146,157	159,323

Year ended 31 December 2022	Level 1 US'000	Level 2 US'000	Level 3 US'000	Total US'000
<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	797	-	797
<i>Non-financial assets</i>				
Buildings	-	-	8,474	8,474
	-	797	8,474	9,271

#### Year ended 31 December 2021

<b>Assets</b>				
<i>Financial assets</i>				
Financial assets at fair value through profit or loss	-	787	-	787
<i>Non-financial assets</i>				
Buildings	-	-	8,736	8,736
	-	787	8,736	9,523

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.

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## Notes to the annual financial statements (continued)

### 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's 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:

	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
<b>Directors compensation</b>						
Director's fees and allowances	64,380	2,912	171	9,711	2,174	107
Other expenses	75,262	3,404	200	386	86	4
	<u>139,642</u>	<u>6,316</u>	<u>371</u>	<u>10,097</u>	<u>2,260</u>	<u>111</u>
<b>Key management compensation</b>						
Salaries and other benefits	256,721	11,613	681	53,255	11,923	589
Pension contribution	131,507	5,949	349	18,639	4,173	206
	<u>388,228</u>	<u>17,562</u>	<u>1,030</u>	<u>71,894</u>	<u>16,096</u>	<u>795</u>
<b>Loans to key management</b>						
At start of year	16,357	4,976	267	8,192	3,148	177
Additions	61,460	2,780	163	14,567	3,261	161
Repayments	(57,334)	(2,594)	(152)	(6,402)	(1,433)	(71)
At end of year	<u>20,483</u>	<u>5,162</u>	<u>278</u>	<u>16,357</u>	<u>4,976</u>	<u>267</u>
<b>Amounts advanced and amounts owed to ZVDF</b>						
ZVDF Receivable	18,367	483	27	493	74	4
ZVDF Payable	(10,362)	(273)	(15)	(32,049)	(4,814)	(288)
Net position at year end	<u>8,005</u>	<u>210</u>	<u>12</u>	<u>(31,556)</u>	<u>(4,740)</u>	<u>(284)</u>

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## Notes to the annual financial statements

### 24 Related party transactions (Continued)

Water sales revenue	2022			2021		
	ZWL'000	ZMW'000	US\$'000	ZWL'000	ZMW'000	US\$'000
ZESCO	5,273,129	238,529	13,980	1,375,307	307,912	15,204
KHPC	5,703,663	258,005	15,121	1,349,984	302,243	14,924
	<u>10,976,792</u>	<u>496,534</u>	<u>29,101</u>	<u>2,725,291</u>	<u>610,155</u>	<u>30,128</u>

### Outstanding receivable balances from Water sales

ZESCO	33,739,046	887,802	49,023	5,223,075	784,521	46,893
KHPC	25,032,040	658,687	36,371	2,887,143	433,657	25,921
	<u>58,771,086</u>	<u>1,546,489</u>	<u>85,394</u>	<u>8,110,218</u>	<u>1,218,178</u>	<u>72,814</u>



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### Appendix I - Statement of Capital Expenditure Compared to Budget

<b>Year ended 31 December 2022</b>	<b>Spent ZWL'000</b>	<b>Budget ZWL'000</b>	<b>Balance ZWL'000</b>
Kariba Dam Structure	-	805,232	805,232
CWIP- Kariba Rehabilitation	10,057,006	39,236,413	29,179,407
CWIP- Batoka HES	-	1,089,341	1,089,341
Devil's Gorge	-	261,873	261,873
Land & Buildings	-	375,087	375,088
Furniture, Fittings, Plant & Equip.	45,257	832,118	786,861
Motor Vehicles	229,747	653,821	424,074
ICT Infrastructure	71,823	917,414	845,591
<b>Total</b>	<b>10,403,833</b>	<b>44,171,299</b>	<b>33,767,467</b>

<b>Year ended 31 December 2022</b>	<b>Spent ZMW'000</b>	<b>Budget ZMW'000</b>	<b>Balance ZMW'000</b>
Kariba Dam Structure	-	21,189	21,189
CWIP- Kariba Rehabilitation	454,928	1,032,458	577,530
CWIP- Batoka HES	-	28,665	28,665
Devil's Gorge	-	6,891	6,891
Land & Buildings	-	9,870	9,870
Furniture, Fittings, Plant & Equip.	2,048	21,896	19,848
Motor Vehicles	10,393	17,205	6,812
ICT Infrastructure	3,249	24,141	20,892
<b>Total</b>	<b>470,618</b>	<b>1,162,315</b>	<b>691,697</b>

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

Year ended 31 December 2022	Spent US\$'000	Budget US\$'000	Balance US\$'000
Kariba Dam Structure	-	1,170	1,170
CWIP- Kariba Rehabilitation	26,662	57,010	30,348
CWIP- Batoka HES	-	1,583	1,583
Devil's Gorge	-	381	381
Land & Buildings	-	545	545
Furniture, Fittings, Plant & Equip.	120	1,209	1,089
Motor Vehicles	609	950	341
ICT Infrastructure	190	1,333	1,143
<b>Total</b>	<b>27,581</b>	<b>64,181</b>	<b>36,600</b>

The budget was approved by the Council of Ministers on 17 December 2021.



Chairperson



Co-Chairperson



PricewaterhouseCoopers  
 Chartered Accountants  
 Lusaka



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

Zambezi River Authority  
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 For the year ended 31 December 2022

## Appendix II – Country statement of income and expenditure

Amounts are Stated in ZWL'000	Year ended 31 December 2022		
	Zambia	Zimbabwe	Consolidated
Revenue	5,273,129	5,703,663	10,976,792
Finance income	220,587	1,166,106	1,386,693
Fair value gain on financial assets	4,702	46,311	51,013
Other income	16,276	701,529	717,805
Segment income	5,514,694	7,617,609	13,132,303
<b>Segment costs</b>			
Board expenses	163,967	116,840	280,807
Repairs and maintenance	43,164	119,686	162,850
Employee benefit expense	1,974,952	933,291	2,908,243
Finance Costs	1,803,106	184,828	1,987,934
Other administration expenses	2,074,318	3,017,599	5,091,917
	6,059,507	4,372,244	10,431,751
Net (Deficit)/Surplus	(544,813)	3,245,365	2,700,552

Amounts are Stated in ZMW'000	Year ended 31 December 2022		
	Zambia	Zimbabwe	Consolidated
Revenue	238,529	258,005	496,534
Finance income	9,995	52,732	62,727
Fair value gain on financial assets	213	2,095	2,308
Other income	736	31,734	32,470
Segment income	249,473	344,566	594,039
<b>Segment costs</b>			
Board expenses	7,417	5,285	12,702
Repairs and maintenance	1,954	5,414	7,368
Employee benefit expense	89,336	42,217	131,553
Finance Costs	81,569	8,355	89,924
Other administration expenses	93,800	136,507	230,307
	274,076	197,778	471,854
Net Deficit/Surplus	(24,603)	146,788	122,185

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<b>Amounts are Stated in US\$'000</b>	<b>Year ended 31 December 2022</b>		
	<b>Zambia</b>	<b>Zimbabwe</b>	<b>Consolidated</b>
Revenue	13,980	15,121	29,101
Finance income	585	3,090	3,675
Fair value gain on financial assets	12	123	135
Other income	43	1,860	1,903
<b>Segment income</b>	<b>14,620</b>	<b>20,194</b>	<b>34,814</b>
<b>Segment costs</b>			
Board expenses	434	310	744
Repairs and maintenance	114	317	431
Employee benefit expense	5,236	2,474	7,710
Finance Costs	4,780	490	5,270
Other administration expenses	5,498	8,000	13,498
	16,062	11,591	27,653
<b>Net (Deficit)/Surplus</b>	<b>(1,442)</b>	<b>8,603</b>	<b>7,161</b>

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

Kariba Dam Rehabilitation	Institutional Support											Dam Break & Other studies	Plunge Pool Reshaping Contract	Spillway Rehabilitation	KDRP Total			
	Panel of Experts (PoE)	Technical Services & Supervisory Consultancy	5 Yearly Inspection	Gender Based Violence	Individual Consultants	PIU Salaries	Additional Intraumentation	Capacity Building	ZVDF Performance assessment	Bank Charges	Environmental & Social Impact Assessment					Dam Break	LIDA Survey	
<b>Dec-21</b>	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	
<b>Disbursements for the Year (2022)</b>																		
International Development Association Loan (55630) - Loan	53	1,049	-	-	-	135	-	-	-	-	-	-	-	-	-	-	2,121	3,358
International Development Association Loan (55630) - Loan (Designated Account)	407	22	56	17	148	94	58	71	54	3	-	-	-	-	-	-	272	1,202
Swedish International Fund Grant -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,122	3,122

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Kariba Dam Rehabilitation	Institutional Support										Dam Break & Other studies	Plunging Pool Reshaping Contract	Spillway Rehabilitation	KDRP Total	
Grant (TF19029)															
The Africa Development Fund (ADF Loan)	-	693	54	4	-		225	15	-	-	-	-	2,392	3,383	
The Africa Development Fund (ADF Grant)	-	2,874	-	-	-				-	-	-	-	-	2,874	
The Africa Development Fund (TSF Grant)	-	1,293	-	-	-				-	-	-	-	-	1,293	
European Union Funding (ZM/FED/031-570) - Grant	-	-	-	-	-				-	-	-	11,067	-	11,067	
<b>Total Disbursements for the Year 2022</b>	<b>460</b>	<b>5,931</b>	<b>110</b>	<b>21</b>	<b>148</b>	<b>58</b>	<b>454</b>	<b>69</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>11,067</b>	<b>8,570</b>	<b>26,962</b>	
<b>Dec-22</b>															
<b>Cumulative Disbursements</b>															
International Development Association	2,031	6,581	72	-	-		135		-	147	-	-	6,624	15,967	

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Kariba Dam Rehabilitation	Institutional Support										Dam Break & Other studies	Plunging Pool Reshaping Contract	Spillway Rehabilitation	KDRP Total		
Loan (55630)) - Loan																
International Development Association Loan (55630)) - Loan (Designated Account)	603	162	71	21	268	58	94	71	54	5						1,773
Swedish International Fund - Grant (TF19029)	-	-	-	-	-											16,381
The Africa Development Fund (ADF Loan) 2100150032548	-	1,272	141	4	-		225		15	-						12,213
The Africa Development Fund (ADF Grant) 2100155029116	-	561	-	-	-					-						6,679
The Africa Development Fund (TSF Grant)	-	5,654	-	-	-					-						5,654
European Union Funding	-	-	-	-	-					-					55,767	55,767

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Kariba Dam Rehabilitation	Institutional Support										Dam Break & Other studies	Plunge Pool Reshaping Contract	Spillway Rehabilitation	KDRP Total		
(ZM/FED/031-570) - Grant																
<b>Cumulative Total Disbursements 2022</b>	2,634	14,230	284	25	268	58	454	71	69	5	377	1,666	2,778	55,767	35,748	114,434

#### Appendix IV List of IDA Loan Designated Account Replenishment Transactions

Date	World Bank Transaction No.	Disbursed Amount US\$)
05/01/2022	174	192,085.60
28/04/2022	187	198,691.14
22/06/2022	191	134,410.15
08/08/2022	200	134,531.27
26/09/2022	205	156,750.00
16/11/2022	208	140,139.09
06/12/2022	209	167,886.39
<b>Total</b>		<b>1,124,493.64</b>



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**Appendix V: List of SIDA Grant Designated Account Replenishment Transactions**

<b>Date</b>	<b>World Bank Transaction No.</b>	<b>Disbursed Amount US\$)</b>
06/12/2022	87	117,727.52
28/11/2022	86	200,000.00
<b>Total</b>		<b>317,727.52</b>





