



**REDEEMER'S
UNIVERSITY**
...running with the vision

Water Management Measurement Report

Prepared by

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INTRODUCTION



Redeemer's University is committed to sustainable water management, implementing structured practices that ensure water availability and conservation across its campus. This report details the water storage capacities and the borehole infrastructure supporting various facilities on campus, showcasing the university's dedication to resource efficiency and sustainability.

Water Storage Capacity Overview: The university's approach to water storage is strategically distributed to meet the diverse needs of

academic, residential, and administrative facilities. The largest water storage capacity is seen at the Main Female Hostel, with a substantial 706 cubic meters. Other significant storage sites include the Main Male Hostel and the Faculty of Engineering, each holding 100 cubic meters. This strategic allocation ensures that key facilities have reliable access to water for daily activities and operations.

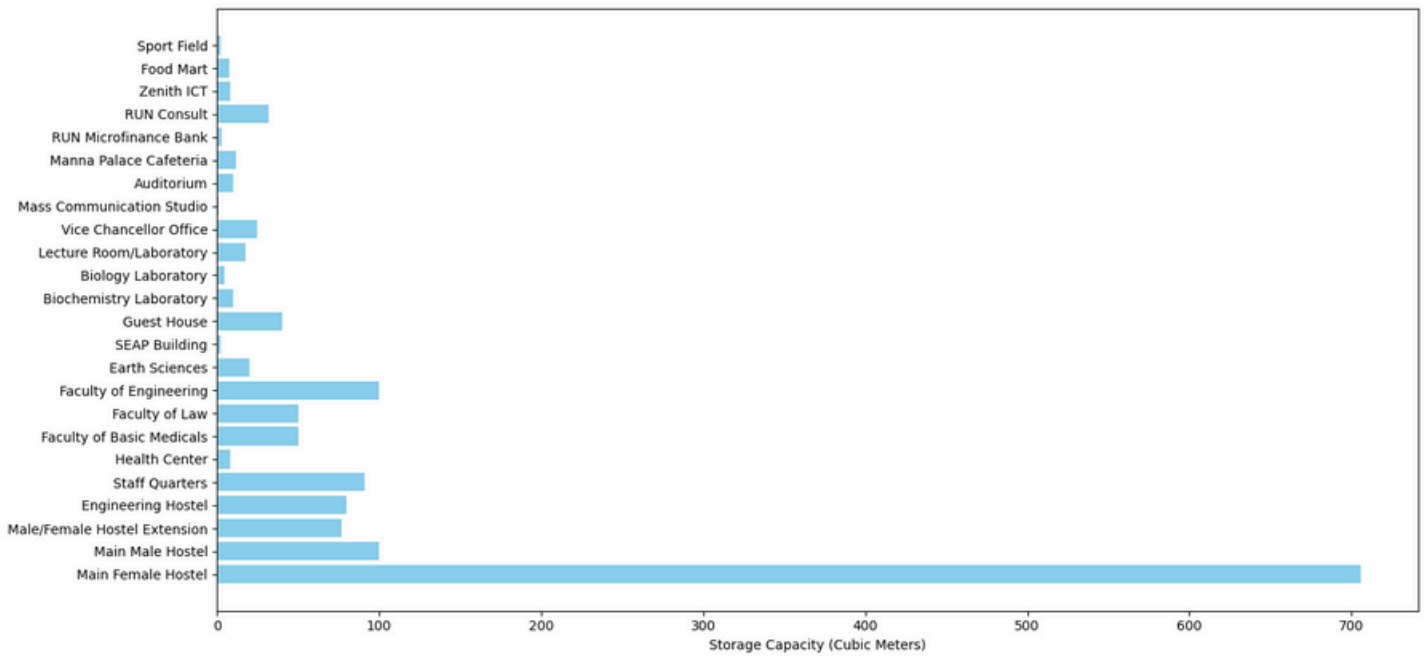


FIGURE 1: WATER STORAGE CAPACITY BY LOCATION

VISUALIZATION OF WATER STORAGE

A bar chart depicting the **Water Storage Capacity** by Location highlights the distribution across the university's facilities:

- The Main Female Hostel leads with 706 cubic meters of storage.
- Academic buildings such as the Faculty of Basic Medicals and the Faculty of Law each have storage capacities of 50 cubic meters.
- Smaller storage allocations can be found at the Biology Laboratory (4.5 cubic meters) and the Mass Communication Studio (1 cubic meter), reflecting lower water requirements.

This detailed breakdown ensures that each location is equipped according to its operational needs.

BOREHOLE INFRASTRUCTURE

The university's water supply system is supported by 87 boreholes distributed across campus facilities, ensuring consistent water access. The Main Female Hostel is equipped with 24 boreholes, demonstrating the university's focus on sustaining water availability in areas with high water demand. Other locations, such as the Engineering Hostel and Staff Quarters, have 11 boreholes each, reinforcing the university's comprehensive approach to water sourcing.

VISUALIZATION OF BOREHOLE DISTRIBUTION

The Number of Boreholes by Location bar chart provides insights into the allocation of water extraction resources:

- High-density areas like the Main Female Hostel benefit from 24 boreholes.
- Essential academic and residential facilities, including the Main Male Hostel and Engineering Hostel, are supported by a significant number of boreholes to maintain water security.



A COMMITMENT TO SUSTAINABLE WATER MANAGEMENT

Redeemer's University's water management strategy is not only about capacity but also sustainability. The university leverages:

- **Advanced monitoring systems** to track usage and optimize conservation efforts.
- **Educational initiatives** to promote water conservation among students and staff, instilling responsible usage habits.
- **Collaborative practices** with local and regional authorities to uphold water security and sustainable practices within the wider community.

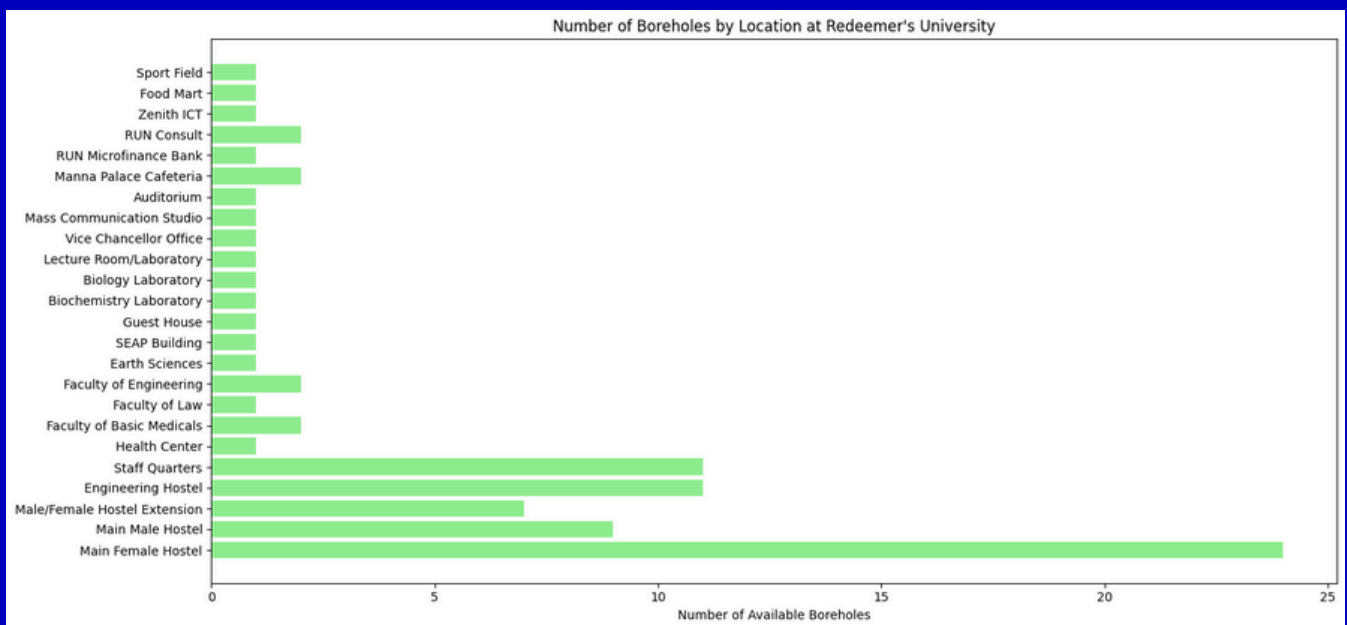


FIGURE 2: NUMBER OF BOREHOLES PER LOCATION

DETAILED ANALYSIS OF WATER CONSUMPTION AND FUTURE WATER NEEDS AT REDEEMER'S UNIVERSITY

1. Current Water Consumption:

- The total water storage capacity across all campus facilities is significant, with approximately 1,456,500 liters available at any given time.
- The current campus population is 2,873 people. Assuming that the university's water storage is utilized and refilled every 3 days, the daily water consumption can be estimated.

Calculation of Daily Water Consumption per Person:

- Total storage capacity: 1,456,500 liters
- Estimated number of days for storage replenishment: 3 days
- Daily water consumption per person = Total storage capacity / (Total population × Days of storage)

Daily water consumption per person = $1,456,500 \text{ liters} / 2,873 \text{ people} \times 3 \text{ days} \approx 169 \text{ liters per person per day}$.

This means that each person on campus currently consumes approximately 169 liters of water per day.

2. Projected Water Needs with 2%

Annual Growth Rate: To estimate future water requirements, we assume an annual campus population growth rate of 2%.

Future Population Calculation:

- Future population after 1 year = Current population × (1 + Growth Rate)

Future population = $2,873 \times (1 + 0.02) \approx 2,930$

Estimated Daily Water Need for Future Population:

- Using the same daily water consumption per person (169 liters), the total daily water requirement for the projected population can be calculated:

Estimated daily water need = $169 \text{ liters/person/day} \times 2,930 \text{ people} \approx 495,210 \text{ liters/day}$

IMPLICATIONS FOR WATER MANAGEMENT

- **Current Needs:** The university's current water storage and infrastructure effectively meet the needs of 2,873 people, consuming approximately 169 liters per person per day.
- **Future Planning:** With an estimated daily water requirement of 495,210 liters for the projected population of 2,930 people after one year, it is essential to consider strategies for expanding water storage capacity, improving efficiency, and maintaining sustainable practices to meet growing demands.

RECOMMENDATIONS FOR SUSTAINABLE WATER MANAGEMENT

- **Enhance storage capacity:** Increase the number of water storage facilities or improve the efficiency of existing infrastructure to accommodate future needs.
- **Adopt water conservation practices:** Encourage water-saving behaviors and implement water reuse systems to optimize resource usage.
- **Monitor and plan for growth:** Regularly update water consumption metrics and project needs based on anticipated population growth to ensure adequate water availability.

CONCLUSION

Redeemer's University demonstrates a strong commitment to sustainable water management, evident through its well-structured water storage and borehole infrastructure. By ensuring that critical facilities have ample water resources and engaging in responsible water management practices, the university upholds its dedication to environmental stewardship and resource sustainability.

This proactive approach not only supports the operational efficiency of campus facilities but also reinforces the university's leadership in sustainable practices in higher education. The comprehensive water management system serves as an example of Redeemer's University's broader commitment to sustainability and responsible resource usage.