MANIPAL UNIVERSITY
JAIPUR

Manipal University Jaipur Water Reuse Policy

Policy Statement:

Manipal University Jaipur acknowledges the pressing need for water conservation and sustainable management as part of a broader commitment to address global water challenges and minimize environmental impact. This Water Reuse Policy establishes the guidelines and procedures for reusing water on campus, fostering a culture of water efficiency and environmental responsibility among students, faculty, and staff.

I. Purpose

The objectives of this Water Reuse Policy are to:

1. Encourage responsible water management practices across Manipal University Jaipur.
2. Reduce potable water consumption by using non-potable water sources.
3. Support the implementation of systems and technologies for water reuse.
4. Set guidelines for the collection, treatment, and distribution of reclaimed water.
5. Ensure compliance with all local, state, and federal water reuse regulations.

To raise awareness amongst stakeholders about sustainable water reuse.

II. Scope

This policy applies to all university facilities, including academic buildings, residence halls, administrative offices, athletic facilities, and outdoor spaces.

III. Definitions

1. Reclaimed Water: Treated wastewater that is safe and suitable for non-potable uses, such as irrigation, cooling, and toilet flushing.
2. Greywater: Wastewater generated from sinks, showers, and laundry facilities that can be treated and reused for certain non-potable purposes.
3. Rainwater Harvesting: The collection and storage of rainwater for later use, primarily for landscape irrigation.
4. Water Reuse System: Infrastructure and technologies designed to treat and distribute reclaimed water for non-potable purposes.
5. Potable Water: Safe and clean drinking water suitable for human consumption.

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IV. Guidelines and Procedures

A. Water Reuse Systems:

Manipal University Jaipur shall assess and implement water reuse systems, where feasible, to reduce potable water usage. Such systems may include but are not limited to greywater recycling, rainwater harvesting, and reclaimed water distribution.

B. Greywater Recycling:

1. Greywater generated within university facilities shall be collected, treated, and reused for approved non-potable purposes.
2. Treatment and storage systems for greywater shall be designed, installed, and maintained in compliance with applicable regulations and industry standards.
3. Campus users shall be educated on the safe and responsible use of greywater.

C. Rainwater Harvesting:

1. Rainwater shall be collected from roofs and other surfaces and stored for landscape irrigation and other non-potable uses.
2. The design and maintenance of rainwater harvesting systems shall conform to applicable guidelines and regulations.

D. Reclaimed Water Distribution:

1. Manipal University Jaipur shall establish a reclaimed water distribution network to provide treated wastewater for non-potable purposes across campus.
2. The treatment and distribution of reclaimed water shall comply with regulatory standards and ensure the safety of users.

E. Monitoring and Reporting

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1. Manipal University Jaipur shall establish a monitoring program to track water reuse system performance and water quality.
2. Regular reports on water reuse activities, water savings, and system maintenance shall be submitted to the appropriate university departments and regulatory agencies.

V. Implementation and Compliance

A. Responsibility:

1. The Directorate of General Services & Administration shall be responsible for overseeing the implementation and compliance of this policy.
2. All university departments and users shall cooperate in the implementation and enforcement of this policy.

B. Compliance:

1. Failure to comply with this policy may result in disciplinary action as per university regulations.
2. Manipal University Jaipur shall maintain compliance with all local, state, and federal regulations related to water reuse.

VI. Review and Revision

This policy shall be reviewed annually and updated as necessary to reflect changes in technology, regulations, and best practices related to water reuse.

VII. Conclusion

Through this Water Reuse Policy, Manipal University Jaipur is dedicated to minimizing environmental impact and promoting responsible water management practices. By implementing water reuse systems and nurturing a culture of water efficiency, the university aims to cultivate a sustainable, water-conscious campus and set a positive example for the broader community.

Version History

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Number	Year	Major Revision
Version 4.0	2024	Focus on Awareness
Version 3.0	2022	Greywater Resue
Version 2.0	2021	Special Clause added due to COVID 19
Version 1.0	2018	Initial policy

Approval

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Water Consumption and Treatment 2022–2023

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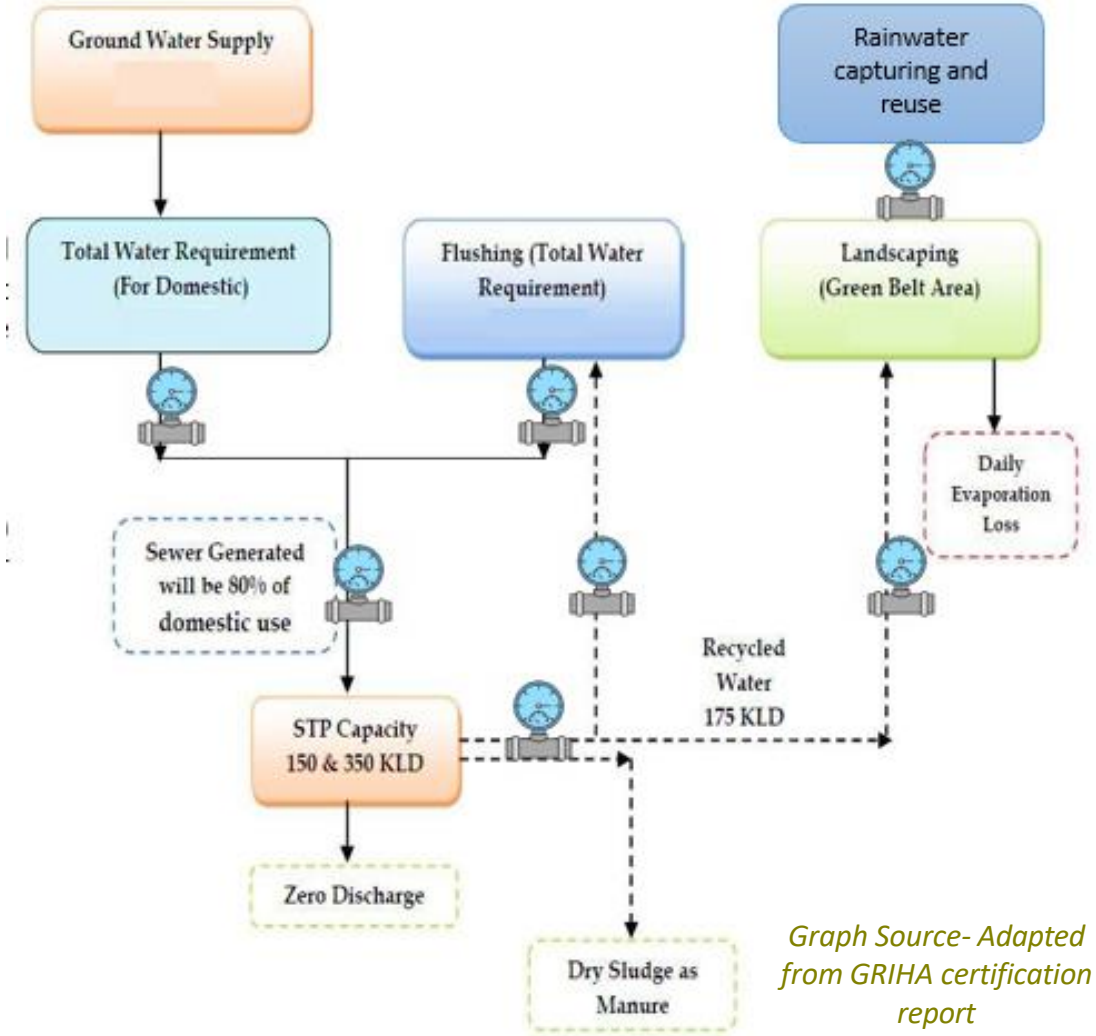
Criteria- Water

Water Source and Distribution in MUJ Campus

Manipal university has an Integrated Water management strategies that are designed & implemented for the campus mainly focusing on triple bottom line benefits i.e., social, economic and environmental benefits. This created a flexible, resilient water infrastructure which helped MUJ progress towards water neutrality.



Graph Source- Adapted from GRIHA certification report

OBSERVATIONS:

The groundwater supply meets the water demand for MUJ University, designed at 220 liters per capita per day (LKD). This total water requirement is divided into domestic use, flushing, and landscape irrigation. Groundwater is used to meet domestic needs, while treated water from the Sewage Treatment Plant (STP) supplies water for flushing and landscaping. Additionally, rainwater from Rainwater Harvesting (RWH) tanks is utilized for irrigation. Dry sludge from the STP is converted into manure for on-site landscaping.

RECOMMENDATIONS

Water meters to be installed at all water sources/distribution lines at every building in the campus to monitor water consumption

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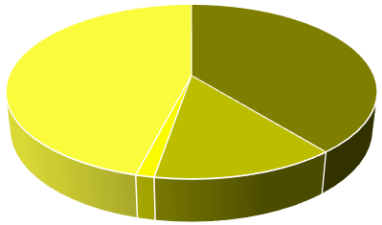
Criteria- Water

Water Consumption

- MUJ consumes 59965 kL/year of water annually for the university blocks & 53873 kL/year for hostel blocks
- Total water consumption is 113,838 kL/year
- 100% wastewater is treated on site and used for flushing and landscape purposes within the campus

Water Consumption 2022-23



200 KLD (MUJ) 80 KLD (Housing) 150KLD 350KLD

University (Administrative +Academic Blocks) data for domestic and flushing comes is shared by MUJ

To reduce the water usage, all the building toilets in MUJ are equipped with automatic, low flow fixtures and low flush fixtures. These fixtures when compared with conventional fixtures can save significant amount of water.

FIXTURE TYPE	CONVENTION AL FLOW/ FLUSH FIXTURE FLOW RATE LPF/LPM	FIXTURE FLOW RATES INSTALLED IN MUJ LPF/LPM	Estimated Water Savings (%)
WC Flush	≤ 6 LPF	3 & ≤6 LPF	50%
Sensor Urinals	≤ 3.8 LPF	≤ 0.5 LPF	86%
Restroom Faucets	≤ 9.4 LPM	≤ 2.75 LPM	70%
Pillar cock	≤ 9.4 LPM	≤ 2.75 LPM	70%
Health faucet	≤ 9.4 LPM	≤ 6.4 LPM	32%
Kitchen Faucet	≤ 9.4 LPM	≤ 7.5 LPM	20%

OBSERVATIONS:

The total water consumption in the campus is segregated for domestic and flushing purposes. 80% of waste-water from domestic and flushing purpose is treated and this recycled water is used for landscape irrigation and the dry sludge generated in the sewage treatment plant is used as manure for landscape

RECOMMENDATIONS

Regular monitoring of water use at the building level and regular maintenance checks for leaks will ensure additional water savings

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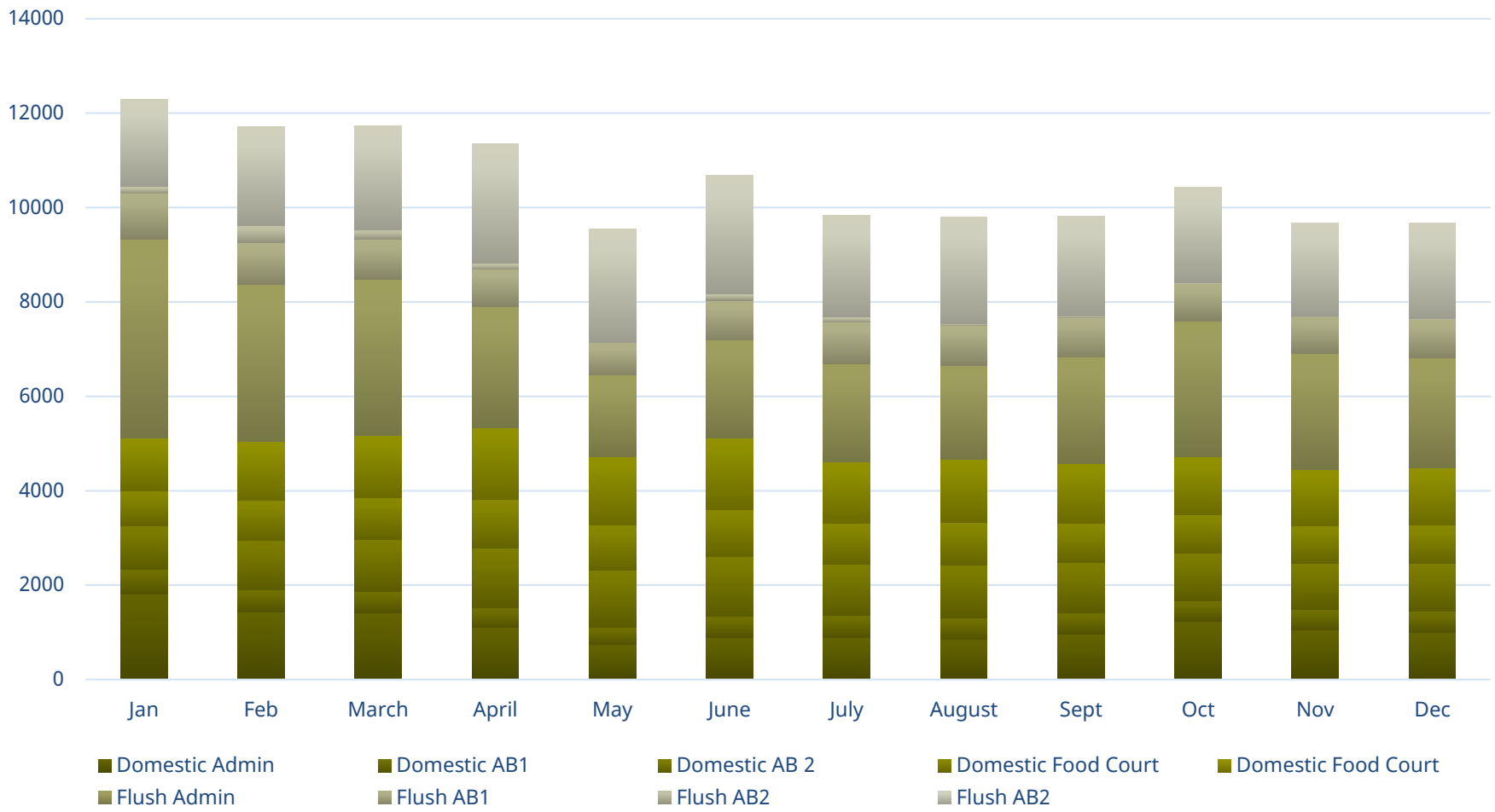
Criteria- Water

Monthly Water Consumption: Admin, AB-1 and AB-2, Hostels

January 2023 to December 2023



OBSERVATIONS:

•Seasonal Trends and Efficiency: Although there are minor fluctuations, summer months (May to August) see slightly reduced consumption. This might be due to reduced campus activity or more efficient water usage during this period.

•Consistent Distribution Across Categories: Each category, whether domestic or flushing, maintains a similar volume of water use each month, indicating that water distribution patterns across the campus are predictable and well-regulated.

RECOMMENDATIONS

The chart highlights a well-managed water system with minimal variation in monthly consumption, which could imply that water-saving measures or consistent practices are in place.

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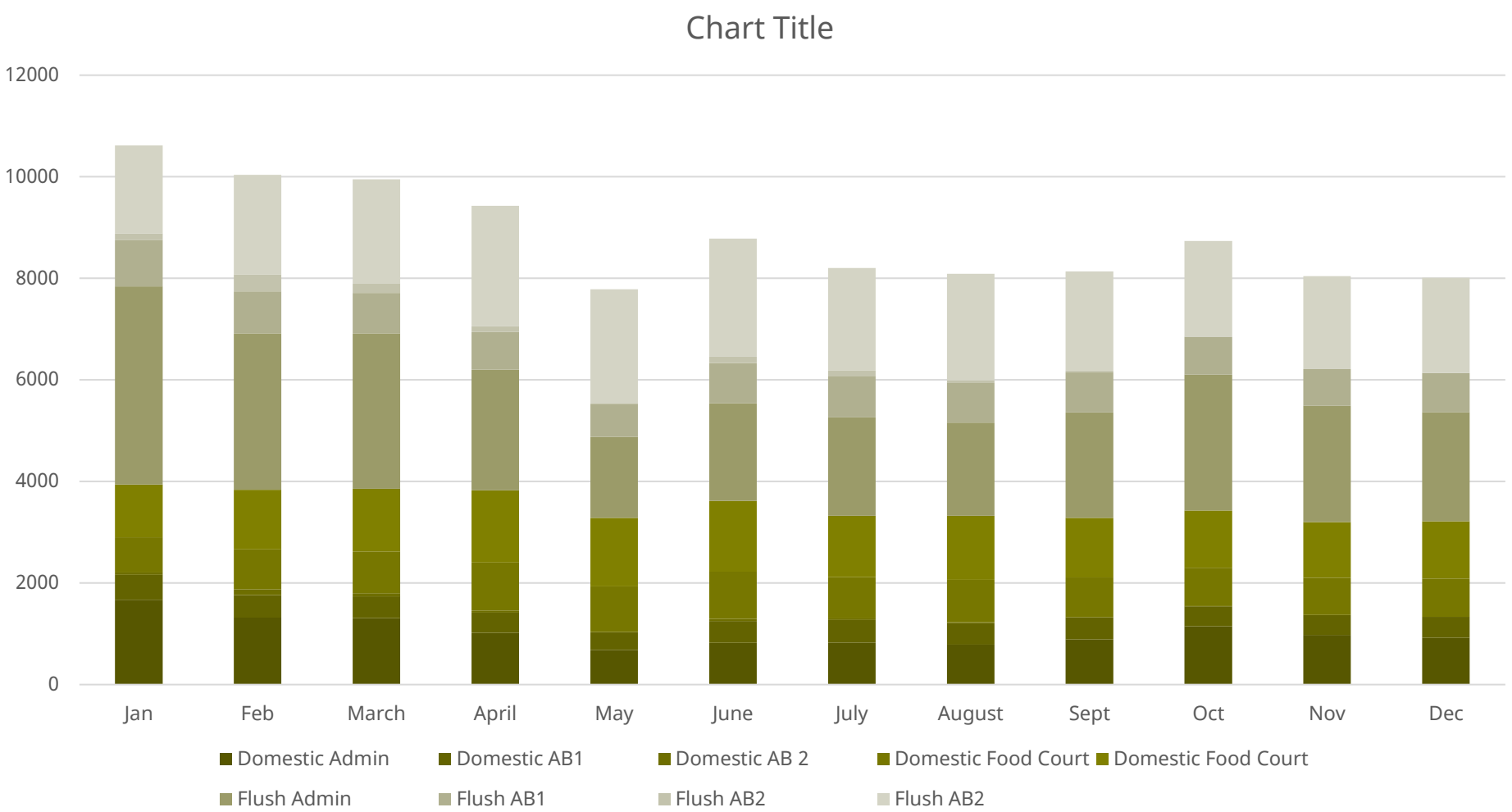

OBSERVATIONS:

- Consistent Usage: Water usage appears to be relatively stable across the months, with only slight fluctuations. This indicates a steady demand throughout the year.
- Highest Consumption in Jan and April: The highest total water usage is seen in January and April, slightly exceeding other months, which could correspond to seasonal factors or increased campus activities.

RECOMMENDATIONS

Regular monitoring of water use at the building level and regular maintenance checks for leaks will ensure additional water savings

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Criteria- Water

Sewage Treatment plant

Manipal University Jaipur has zero discharge waste-water policy. Hence 100% of the wastewater generated on site is treated to tertiary standards and reused within the campus for various purposes like Flushing, cooling tower makeup, Horticulture etc.

MUJ has two Sewage treatment plants with 150kLd and 350 kLd respectively. Membrane Bioreactor(MBR) type Sewage Treatment plant with total capacity of 500 kLd is commissioned at MUJ university campus considering the future developments & excess wastewater from hostels.

A standalone 350 kLd Sewage Treatment plant is commissioned to serve only the Hostel blocks,excess wastewater is sent to University STP. Wastewater treated on site will have projected water quality standards meeting central pollution control board (CPCB) norms.

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RECOMMENDATIONS

HYPOTHESIS-
If the treated water used for landscape can be reduced by 10- 15% then this water can be used for flushing purpose as the 2019 water consumption was flushing is not 100% catered by treated water

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Criteria- Water

USAGE OF RECYCLE WATER

Key Points

- Zero Water Discharge Campus (Water Recycling)
- Sludge From STP Used As Manure For Landscaping. Reusing the debris waste for the pathways and road areas base compaction
- Vehicle Washing
- Gardening and Horticulture

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Criteria- Water

WATER EFFICIENT APPLIANCES

Water Aerator Installed in all Taps for handwash

Sensor Based Urinals

Storm water drain and Drip Irrigation

BENEFITS

•Reduced Water Bills: By using less water, these appliances lower monthly utility costs.

•Environmental Conservation: Lower water consumption reduces strain on local water resources and supports environmental sustainability.

•Energy Savings: Many water-efficient appliances also use less energy, especially those involved in heating water, such as washing machines, further decreasing energy bills and carbon footprints.

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Criteria- Water

WATER USE REDUCTION WITH WATER EFFICIENT FIXTURES:

Some of the key highlights of sustainable water management at MUJ:

- Potable water use reduction by using water efficient fixtures
- Recycling 100% of waste water generated on site and reuse on site.
- Use of treated water for non-potable water requirement
- Reduction in landscape water use by choosing right species of plants which are regional and adaptable to local conditions & reduction of turf areas
- Use of Highly efficient Irrigation equipment like micro drips for landscape needs
- A well-developed stormwater management infrastructure to capture and use rainwater for both building and landscape needs

FIXTURE TYPE	CONVENTIONAL FLOW/FLUSH FIXTURE(base case) FLOW RATE LPF/LPM	FIXTURE FLOW RATES INSTALLED IN MUJ (design case) LPF/LPM
WC Flush	≤ 6 LPF	3 & ≤6 LPF
Sensor Urinals	≤ 3.8 LPF	≤ 0.5 LPF
Restroom Faucets	≤ 9.4 LPM	≤ 2.75 LPM
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