SDG 6
CLEAN WATER AND SANITATION

Content Overview

01	Water Consumption Tracking	Page 2 - 3
02	Wastewater Treatment	Page 4
03	Preventing Water System Pollution	Page 5 - 7
04	Providing Free Drinking Water	Page 8
05	Water-conscious Building Standard	Page 9
06	Water-conscious Planting	Page 10 - 11
07	Water Reuse Measurement	Page 12
08	Water Management Educational Opportunities	Page 13 - 16
09	Off-campus Water Conservation Support	Page 17 - 20
10	Sustainable Water Extraction on Campus	Page 21 - 23
11	Cooperation on Water Security	Page 24 - 28
12	Promoting Conscious Water Usage on Campus and in the Wider Community	Page 29 - 32

01 Water Consumption Tracking

Universiti Malaya's campus receives 100% of its treated water supply from Air Selangor, which sources and treats water from the Selangor River, located approximately 60 km away, before distributing it to the university. UM oversees the distribution of water across campus and monitors incoming supplies to ensure reliable access to clean and safe water for academic, residential and operational needs. Monitoring water consumption is important for understanding usage patterns, detecting potential leaks or unusual consumption, and identifying opportunities to improve water efficiency and reduce unnecessary use.

Water usage across the campus is actively monitored through metering systems installed at key facilities. The data collected enables UM to track consumption across the whole university, identify usage patterns and inform targeted improvements to reduce unnecessary water use. This supports more responsible and efficient water management while helping the university respond to changes in demand.



Water Treatment Plant at Selangor River
Source: mStar



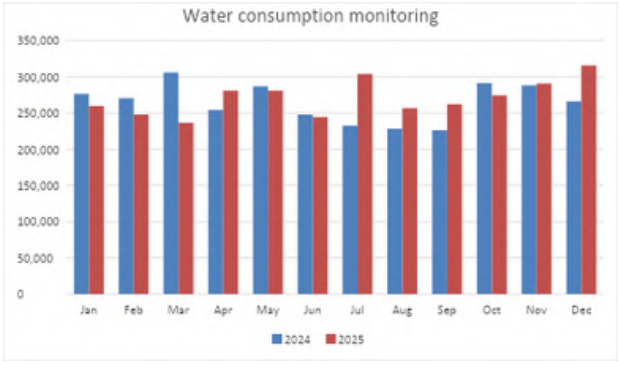
Account statement that Universiti Malaya received 100% treated water from Air Selangor.

For more information on UM's water consumption and water usage charges (2017 - 2024), visit Universiti Malaya's Office of the Chief Facility Officer website: https://jhb.um.edu.my/utilities

As shown in the table below, total water consumption at UM in 2025 amounted to 3,253,589.00 m^3. This figure represents the cumulative water usage recorded across academic buildings, residential colleges and other campus infrastructure. The recorded consumption also reflects the growing number of students entering and residing at the university in 2025, alongside the corresponding increase in water demand associated with a larger campus community.

Table of Water Consumption Tracking at UM (2024 - 2025)
Source: Office of the Chief Facility Officer, Universiti Malaya

Month/Year	2024	2025
January	276,423	259,584
February	270,504	247,656
March	305,695	236,761
April	254,344	281,020
May	286,500	280,669
June	247,906	244,357
July	232,638	303,723
August	228,087	256,653
September	226,185	262,358
October	291,103	274,380
November	288,196	290,610
December	266,022	315,818
TOTAL	**3,173,603**	**3,253,589**



Graph of Water Consumption Tracking at UM (2024 - 2025)
Source: Office of the Chief Facility Officer, Universiti Malaya

02 Wastewater Treatment

Wastewater Treatment through a Centralised Sewerage System

Universiti Malaya (UM) manages wastewater from its connected campus facilities through a centralised sewerage system operated in conjunction with Indah Water Konsortium (IWK), Malaysia's national sewerage services company. Sewage collected through the public sewerage network is treated at the Pantai 2 Regional Sewage Treatment Plant (RSTP) in Pantai Dalam, Kuala Lumpur.

UM's connection to the centralised sewerage network is documented in the UM Water Management Report 2022 and supported by IWK sewerage service records. Within the University, the Office of the Chief Facility Officer is responsible for maintaining campus sewerage infrastructure, including sewerage pipelines and sewage pumping systems, while IWK provides centralised wastewater treatment services.

Wastewater Treatment Process

The Pantai 2 RSTP uses the Advanced Anaerobic–Anoxic–Oxic (A2O) biological treatment process, which removes organic pollutants, nitrogen and phosphorus from wastewater. Treatment involves preliminary screening, grit and grease removal, biological treatment, clarification and sludge management.

The plant is designed to meet Standard A effluent discharge requirements under Malaysia's Environmental Quality (Sewage) Regulations 2009. It also incorporates resource recovery measures, including the reuse of treated effluent for non-potable purposes and biogas utilisation for energy generation.

Through this centralised sewerage arrangement, UM ensures that sewage from its connected facilities is directed to an established treatment system, supporting responsible wastewater management and the protection of surrounding water environments.





03 Preventing Pollution of Water Systems

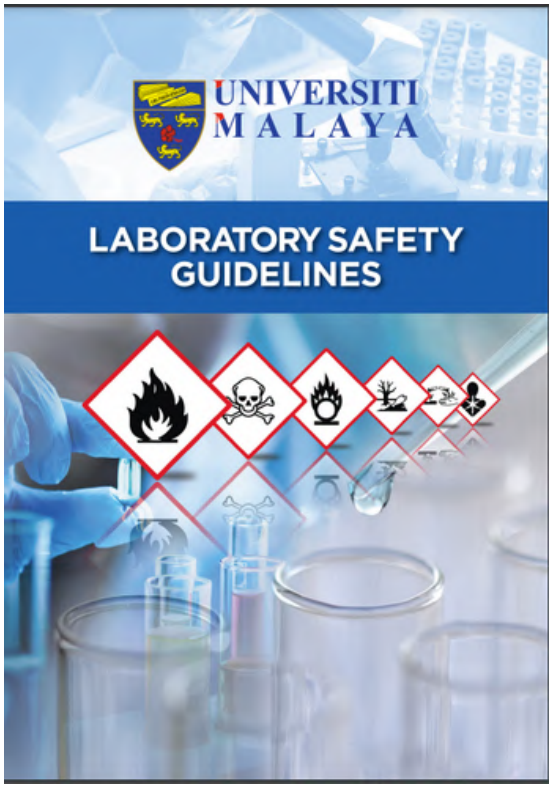


A range of preventive measures is in place across the campus to minimise the risk of pollutants entering sewage networks, stormwater systems and surrounding water bodies. These measures include source-level controls for wastewater, safe management of hazardous wastes, regular water-quality monitoring, stormwater pollution controls and natural filtration systems.

(1) Oil and Grease Traps

Every café is required to install an oil and grease trap at its wastewater discharge point before connecting to the sewage line for treatment. The traps capture oil and grease generated from food preparation and washing activities, reducing the risk of these pollutants entering the sewage system. This provides a preventive control at the point of discharge and supports responsible wastewater management.

(2) Laboratory Waste Management and Spill Containment



Universiti Malaya's Laboratory Safety Guidelines 2022, published by the Occupational Safety, Health and Environment Centre (OSHEC), provide guidance on the management of laboratory wastes involving chemical, biological and radioactive hazards, including their proper segregation, handling and disposal.

Complementing these guidelines, UM's Waste Card for scheduled waste management, developed by the Facility Division of the former UM Estates Department, instructs that immediate action should be taken to block water flow from an accidental spill or release of scheduled waste to prevent contamination of nearby rivers. Together, these documents demonstrate preventive measures for managing hazardous laboratory waste and reducing the risk of pollutants entering drainage networks and surrounding water bodies.

(3) Scheduled Waste Management

Scheduled wastes, including chemical and clinical wastes, are managed through established procedures and disposed of through licensed contractors. This controlled disposal process helps prevent hazardous substances from being discharged into drainage, sewage or other water systems and reduces the potential for contamination of the surrounding environment.



(4) Water Quality Monitoring at Tasik Varsiti, Sungai Anak Air Batu and Sungai Mustafa

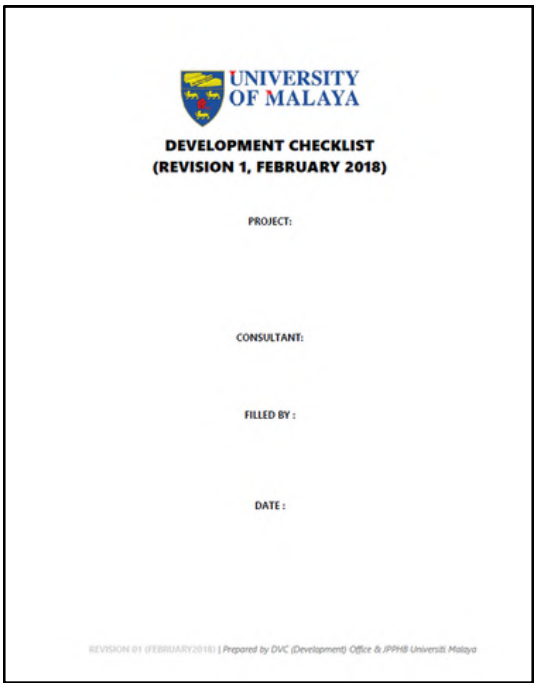
Water quality at Tasik Varsiti, Sungai Anak Air Batu and Sungai Mustafa is monitored to identify changes in water quality and detect potential sources of pollution. Monitoring is important because these water bodies can receive runoff and other inputs from surrounding campus activities, making regular assessment necessary to identify pollution risks and support timely management measures. At Tasik Varsiti, water quality is monitored against Class IIB standards under the Department of Environment, Malaysia's water quality classification, which is applicable to recreational use involving body contact. Maintaining the required water quality also forms part of the university's environmental performance monitoring and supports the protection of campus aquatic ecosystems.





(5) UM Development Checklist

The UM Development Checklist requires development projects to undertake regular water-quality monitoring as part of environmental management. This helps identify potential impacts from construction and development activities and ensures that surrounding water bodies remain within established water-quality requirements. The monitoring provides a preventive mechanism for identifying and addressing potential pollution before it adversely affects local water systems.


UNIVERSITY OF MALAYA

DEVELOPMENT CHECKLIST
(REVISION 1, FEBRUARY 2018)

PROJECT:

CONSULTANT:

FILLED BY :

DATE :

REVISION 01 (FEBRUARY2018) | Prepared by DVC (Development) Office & JPPHB Universiti Malaya

(6) Gross Pollutant Traps (GPTs)

Gross Pollutant Traps (GPTs) are installed on campus to capture litter, debris and coarse sediments from stormwater before the runoff reaches local water bodies. By intercepting these pollutants at the drainage stage, the system reduces the amount of solid pollutants entering aquatic environments and supports the protection of campus water quality.



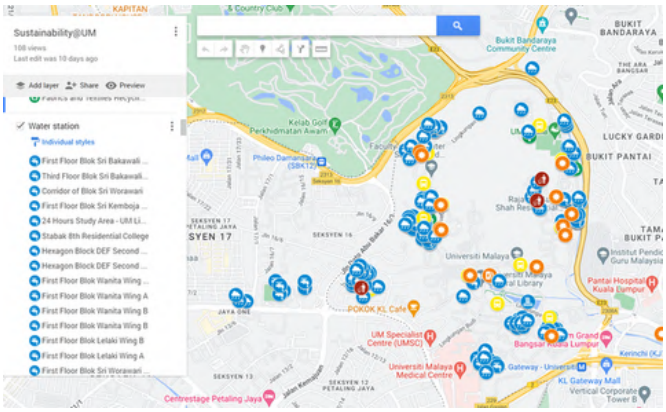
(7) Constructed Wetland at Tasik Varsiti

The constructed wetland near Tasik Varsiti provides an additional natural treatment mechanism for stormwater before it enters the lake. As water passes through the wetland, vegetation and the wetland substrate help retain and filter pollutants, reducing the pollutant load entering Tasik Varsiti. The system therefore complements engineered pollution controls and contributes to maintaining the ecological condition and water quality of the lake.

04 Providing Free Drinking Water

Free drinking water stations are conveniently located throughout the Universiti Malaya campus, ensuring that students, staff, and visitors have easy access to clean and refreshing water. These stations are strategically placed in various areas, including residential colleges, faculties, and selected cafeterias, promoting a culture of sustainability and encouraging the reduction of single-use plastic bottles.

The Sustainability@UM Map highlights the locations of these water stations, making it simple for everyone on campus to find the nearest one. By providing accessible hydration options, UM aims to foster healthy habits and contribute to environmental conservation efforts while ensuring the well-being of its community.



The Sustainability@UM Map highlighting free water stations across UM.





05 Water-conscious Building Standard

Universiti Malaya (UM) incorporates water-conscious design considerations into its campus development planning through the UM Development Checklist (Revision 03, May 2024), prepared by the Department of Development and Estate Maintenance (JHB). The checklist establishes environmental and infrastructure requirements for proposed development projects, encouraging the integration of water-efficient technologies, alternative water sources and monitoring systems to minimise water consumption.

Under the checklist, several provisions specifically address water conservation and efficient water use in buildings:

- Section 1.5.5 – Innovative Green Building Elements (Page 5): Requires at least 20% of innovative green area elements to be integrated within the building. The provision specifically identifies water-saving through specialised water taps as an example, referencing the Thimble Project by UM Sustainable Development Network.
- Section 6.3.4 – Rainwater Harvesting for Irrigation (Page 9): Identifies rainwater harvesting systems as an active design strategy to collect and reuse rainwater for landscape irrigation, reducing reliance on the conventional water supply.
- Section 6.3.5 – Greywater Harvesting for Flushing (Page 9): Encourages the incorporation of greywater harvesting systems to reuse treated wastewater for toilet flushing and other suitable non-potable applications, helping to reduce potable water demand.
- Section 10.3.1 – Water Monitoring System (Page 12): Specifies the use of online digital meters to monitor water sources and consumption, supporting the tracking of water usage and identification of opportunities for improved water efficiency.
- Section 10.3.2 – Water Supply Sub-meters (Page 12): Specifies the provision of water supply sub-meters for buildings or units measuring 750 sq. ft. or larger, enabling more detailed monitoring of water consumption at individual building or unit level.

These provisions establish water-conscious design considerations within UM's development assessment process, encouraging project planners and consultants to incorporate water-saving fixtures, rainwater harvesting, greywater reuse and water consumption monitoring into building designs.

Through the implementation of these requirements, UM integrates water conservation considerations into campus infrastructure development and promotes more efficient water use across its buildings and facilities.

06 Water-Conscious Planting

Water-conscious Planting and Sustainable Campus Landscaping

Universiti Malaya (UM) incorporates water-conscious planting and landscaping practices to reduce irrigation requirements, conserve soil moisture and support campus biodiversity. Coordinated by the Office of the Chief Facility Officer, these practices include the selection of plants with lower watering requirements, water-efficient irrigation systems and mulching.

(1) Selection of Water-efficient Plants

UM's landscape management incorporates locally adapted and drought-tolerant plant species that can thrive under Malaysia's tropical climatic conditions with reduced irrigation requirements once established. Examples include Bidara (*Ziziphus mauritiana*), Cashew (*Anacardium occidentale*), Red Flame (*Delonix regia*) and Yellow Flame (*Peltophorum pterocarpum*) at Tasik Varsiti and UM Greenbelt. Ornamental species such as Chinese Fringe Flower (*Loropetalum chinense*) and Pinwheel Flower (*Tabernaemontana divaricata*) are also planted at the PASUM and JHB junctions. By selecting plants suited to local environmental conditions, UM aims to reduce unnecessary irrigation while maintaining healthy and biodiverse green spaces.

See more on Conservation Project through Shrubs and Tree Planting in UM.





(2) Water-efficient Irrigation through Vertical Greenery Systems

UM has implemented Vertical Greenery Systems (VGS) at the Faculty of Built Environment and the Research Management & Innovation Complex (IPPP). These systems incorporate irrigation arrangements designed to deliver water directly to plant roots, helping minimise water wastage.



(3) Soil Moisture Conservation through Mulching

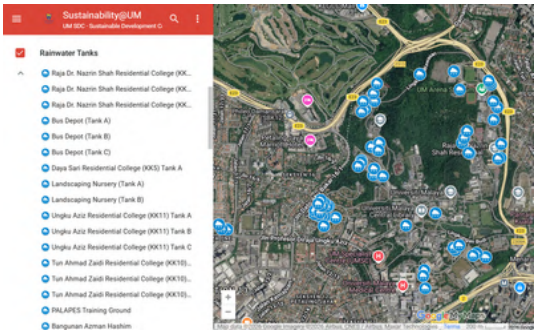
At UM Rimba Ilmu Botanic Garden, mulching is practised as part of sustainable landscape management. Covering the soil with organic materials helps retain soil moisture, reduce evaporation and regulate soil temperature, thereby reducing the need for frequent watering.



Together, these water-conscious planting and landscaping practices demonstrate UM's efforts to conserve water, improve resource efficiency and promote sustainable management of campus green spaces.



07 Water Reuse Measurement

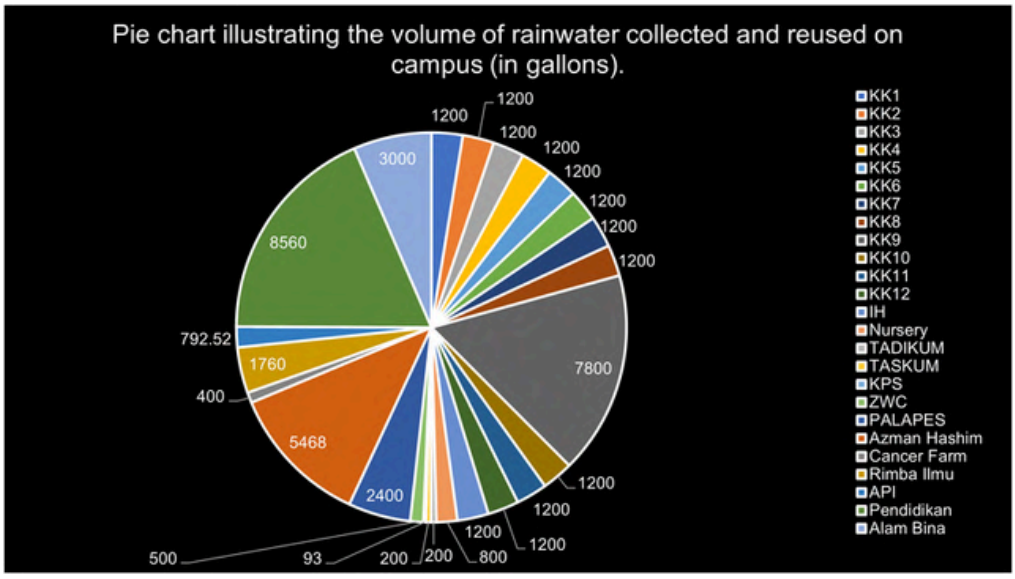






In line with the UM Sustainability Policy 2021–2030 and the UM Net Zero Blueprint, water reuse is supported through rainwater harvesting and water recycling systems across campus. These systems provide alternative water sources for applications such as fishponds, cooling systems, toilet flushing, cleaning and plant watering. The UM Water Management Report 2022, prepared by the UM Sustainable Development Centre (UMSDC) and the UM Estates Department (JHB), documents water reuse facilities that continue to support campus operations through 2025.

A total of 62 rainwater harvesting tanks, with capacities of 200, 400 and 600 gallons, are installed at strategic locations including residential colleges, faculties, the landscaping nursery, bus depot, green fields and the botanical garden. In addition, a 3,000-litre rainwater harvesting tank, constructed in 2017 at the Academy of Islamic Studies Musolla, provides a clean water source for ablution and is equipped with a filtration system. Water reuse is also incorporated into campus cooling systems through closed-loop systems, where water is continuously circulated and reused within the system rather than being discharged after a single use. Together, these facilities demonstrate the continued measurement and management of water reuse across different campus applications.



Above: *Pie chart showing the volume of rainwater collected and reused at UM (measured in gallons) (Source: UM Water Warriors and UM Estates Department)*

08 Water Management Educational Opportunities

Universiti Malaya provides free and paid educational opportunities for local communities to build awareness and understanding of responsible water management. These activities provide accessible learning opportunities on topics such as water conservation, clean water management and flood preparedness, enabling community members to gain practical knowledge that can support more informed and sustainable water-related practices.

Examples include:

- **Community-Based Water Quality Monitoring through Borneo Citizen Science (free)** (Page 14)
- **Enhancing Community Flood Preparedness Through CEPA Activities (free)** (Page 15)
- **Scientific Seminar on Clean Water Management with Air Selangor (free)** (Page 15)
- **World Lake Day Celebration during UM-AUN Summer Camp 2025 (paid)** (Page 16)

Community-Based Water Quality Monitoring through Borneo Citizen Science

The Borneo Adventures: Citizen Science in Action programme provided practical environmental education for secondary school students, university students, librarians, researchers and members of the public across Sarawak and Sabah. With a specific focus on biodiversity and water quality, participants took part in lectures and hands-on citizen science activities that included water quality monitoring using water testing kits. Through field-based learning at natural reserves and other local environments, participants gained practical experience in assessing water conditions and developed a better understanding of the importance of water quality in supporting healthy ecosystems.

The programme was organised by the Standing Committee on Library Services to Special Groups of the Librarians Association of Malaysia (PPM) and Sekitar Kita, with support from the U.S. Embassy Kuala Lumpur and collaboration involving the Universiti Malaya Sustainable Development Centre (UMSDC), American Corners Malaysia, Sarawak State Library, Sabah State Library, Universiti Malaysia Sabah, Universiti Teknologi MARA Pahang Library and PPM Sabah & Sarawak Groups. Expert sessions involving academics and researchers further strengthened the learning component, while the use of citizen science tools enabled participants to contribute to real-world environmental monitoring. By equipping community members with knowledge and practical skills to observe and document water quality, the programme helped bridge scientific knowledge with community participation in the stewardship of local water environments.









Enhancing Community Flood Preparedness Through CEPA Activities



The programme "From Awareness to Action: University Commitment to Flood Preparedness" took place on 5 November 2025 at the Faculty of Science, in collaboration with the Department of Science and Technology Studies and UM Water Warriors. It is part of the Communication, Education and Public Awareness (CEPA) Flood Forecasting and Warning Programme – Phase 2 (Package 1), jointly implemented by the National Hydraulic Research Institute of Malaysia (NAHRIM) and the Department of Irrigation and Drainage Malaysia. The free initiative focuses on strengthening flood awareness and preparedness in the Klang River Basin, Kuala Lumpur, and includes a visit to the flood CCTV and siren systems installed by JPS since 2022. Through CEPA-PRAB, students and lecturers are engaged in learning and action to help build flood-resilient communities, within and outside of the campus.



Scientific Seminar on Clean Water Management with Air Selangor



On 14 March 2025, the Institute of Ocean and Earth Sciences (IOES) hosted a free Scientific Seminar Series featuring experts from Pengurusan Air Selangor Sdn Bhd to strengthen public understanding of effective water management. The free two-hour session introduced participants to Air Selangor's operations, including the production of clean and treated water, key processes that ensure water quality, and a live demonstration of monitoring methods. The speakers also highlighted the organisation's sustainability initiatives, particularly its circular economy practices and strategies for addressing climate change. This educational programme provided valuable, accessible knowledge to the UM community and the wider public, supporting informed awareness of responsible water resource management.

World Lake Day Celebration during UM-AUN Summer Camp 2025

World Lake Day was celebrated as part of the UM-AUN Summer Camp 2025, themed "Empowering Youth & Innovating for a Sustainable Future: A Pathway to Net Zero". This paid by access programme was hosted by the Universiti Malaya Sustainable Development Centre (UMSDC) in collaboration with the Global Mobility Centre (GMC) from 25 August to 4 September 2025. The camp brought together youth participants from the ASEAN University Network (AUN) and incorporated activities that promoted sustainability education and environmental awareness. As part of the World Lake Day celebration, participants took part in activities at Tasik Varsiti, Universiti Malaya, focusing on freshwater ecosystems and environmental monitoring.

The activity incorporated citizen science monitoring of the lake, giving participants practical exposure to freshwater assessment through the measurement of water quality parameters and biological monitoring of aquatic invertebrates. Through these hands-on activities, participants learned how water quality indicators and aquatic organisms can be used to understand the condition of a freshwater ecosystem. The activity also encouraged youth participation in environmental monitoring and strengthened their awareness of the importance of conserving freshwater ecosystems.











09 Off-Campus Water Conservation

Universiti Malaya supports practical water conservation initiatives beyond the campus by working with schools, rural communities and other local organisations to promote efficient water use, improve access to clean water and strengthen water management practices. These initiatives provide communities with practical solutions and hands-on knowledge that can contribute to more sustainable use and protection of water resources.

Examples include:

- **Installation of Rainwater Harvesting at Sabah Schools** (Page 18)
- **Water Quality Monitoring Support at Taiping Zoo** (Page 18)
- **Litter Hotspot Scoping Study in the Kerayong River Sub-Basin** (Page 19)
- **Hands-On Learning on Clean Water and Filtration at SMK Muadzam Jaya** (Page 20)

Installation of Rainwater Harvesting at Sabah Schools



Under the Student Empowerment in Climate Action in Sabah (SECA) Phase 2 initiative, Universiti Malaya supported practical water conservation off campus by installing rainwater harvesting devices in eight schools across Kudat, Kota Marudu, and Pitas. These systems provided an alternative water source for schools facing water shortages. The initiative helped school communities use water more efficiently and demonstrated UM's commitment to practical water conservation beyond the campus.

Water Quality Monitoring Support at Taiping Zoo



The Surface Water Assessment, Eutrophication Treatment, and Monitoring of Water Bodies in Taiping Zoo project, led by Dr. Fathiah Mohamed Zuki from the Faculty of Engineering, focuses on evaluating water quality and addressing eutrophication in the zoo's water bodies. The initiative supports sustainable water resource management through scientific monitoring and targeted treatment measures to maintain healthy aquatic ecosystems and improve environmental conditions within the zoo.

This project forms part of UMCares@Taiping, a high-impact initiative by Universiti Malaya in collaboration with the Taiping Municipal Council (Majlis Perbandaran Taiping). Through research-driven solutions and community engagement, the initiative contributes to environmental sustainability while supporting the welfare of animals in captivity and the long-term conservation of water resources.

Litter Hotspot Scoping Study in the Kerayong River Sub-Basin

Universiti Malaya supported practical water conservation and river protection beyond campus through the Litter Hotspot Scoping Study in the Kerayong River Sub-Basin, jointly organised with WWF-Malaysia, government agencies, NGOs and community groups. Fatoumata Fofana, MSc Candidate at the Institute of Biological Sciences, UM, contributed insights from her MSc research on microplastic pollution in Sungai Gombak and Sungai Kerayong, conducted under the supervision of Associate Professor Dr. Fauziah Shahul Hamid. Her preliminary findings highlighted the links between microplastic pollution, river health and sustainable waste management.



During the two-day engagement, Fatoumata shared these research insights to emphasise the importance of incorporating microplastic monitoring into river clean-up strategies. The initiative also included hands-on water quality monitoring and solid waste audits, supporting the identification of pollution hotspots and practical approaches to improving river management and protecting the off-campus water resource.

Hands-On Learning on Clean Water and Filtration at SMK Muadzam Jaya

As part of the SULAM project “Bridging Knowledge: Engineering for Youth and Community Development”, students from the Faculty of Engineering, Bachelor of Civil Engineering programme, Universiti Malaya, collaborated with Global Peace Foundation (GPF) to promote awareness of clean water and sustainable water management among Form 4 students at SMK Muadzam Jaya, Muadzam Shah, Rompin, Pahang on November 2025.

A dedicated water filtration activity introduced students to the importance of clean water and the basic principles of water filtration. Following a briefing by the person in charge, students worked in groups to construct simple water filters using cotton, sand, activated charcoal, gravel and recycled bottles. Guided by facilitators, they arranged the filtration materials in the appropriate order before pouring soil-contaminated water through their filters to observe the purification process. A Kahoot quiz was conducted at the end of the session to reinforce key concepts. The hands-on activity encouraged teamwork, problem-solving and practical understanding of how filtration can improve water quality.



10 Sustainable Water Extraction on Campus

Sustainable Water Extraction on University Grounds

Universiti Malaya (UM) utilises groundwater and surface-water resources at selected university facilities, including its main campus, satellite campuses and research centres. These alternative water sources support research, irrigation, sanitation and other operational needs, reducing reliance on treated mains water for suitable applications.

UM's approach to sustainable water extraction involves the use of groundwater wells, pumping and treatment systems, supported by water-resource monitoring and assessment at selected locations.

(1) Groundwater Extraction and Monitoring at Bachok Satellite Campus

At UM's Bachok Satellite Campus in Kelantan, groundwater is extracted from an aquifer using a pumping system and treated through sand filtration before distribution for campus use.

Water extraction volumes are recorded, providing information for monitoring groundwater abstraction and managing the water supply.

(2) Groundwater Monitoring and Assessment at the Main Campus

UM's Department of Geology maintains groundwater tube wells for research and teaching, including the assessment of groundwater quality and quantity.

In addition, groundwater wells established through the National Water Balance Study at Tasik Varsiti and Tun Syed Zahiruddin Residential College have contributed to understanding groundwater availability within the Klang River catchment. These facilities have subsequently been repurposed as alternative campus water sources.

(3) Alternative Water Sources for Campus Operations

Groundwater wells are also used at selected university facilities, including the Centre for Agro-Science in Gemas, the UM Plant Nursery and Varsity Field, to provide water for irrigation and other appropriate uses.

At the Ulu Gombak Field Studies Centre, surface water is extracted from a nearby river to support field station operations.





Left: Groundwater tube for National Water Balance Study
Right: Groundwater tube at Department of Geology





Left: Tube well and groundwater storage tank at the UM Plant Nursery.
Right: Tube well and groundwater storage tank at the Varsity Field.

Location	Water source and extraction technology	Treatment / use	Monitoring or sustainability measure
Bachok Satellite Campus	Aquifer groundwater extracted using a pump	Sand filtration before distribution for campus use	Water extraction is monitored and abstraction data are maintained
Centre for Agro-Science, Gemas	Groundwater extracted through a groundwater well	Used for toilets and irrigation	Provides an alternative water source for the research field centre
Department of Geology	Groundwater extracted through tube wells	Used for research and teaching	Groundwater quality and quantity are studied and monitored
NAHRIM collaboration well	Groundwater well	Research use	Supports study of groundwater quality and chemistry
National Water Balance Study	Two groundwater tube wells at Tasik Varsiti and Tun Syed Zahiruddin Residential College	Subsequently repurposed as alternative campus water sources	Water-resource availability was assessed as part of the Klang River catchment study
Plant Nursery and Varsity Field	Groundwater sources explored where conventional pipe distribution is limited	Supplementary clean-water supply	Provides alternative sources where network distribution is constrained
Ulu Gombak Field Studies Centre	Water extracted directly from a river	Used to support the field centre	Further information on extraction volume and monitoring is required

These systems demonstrate the use of groundwater and surface-water sources across university grounds, supported by extraction infrastructure, water treatment and resource monitoring at selected locations.

11 Cooperation on Water Security

Universiti Malaya collaborates with government agencies and public authorities at local, regional, national and global levels to support water security and sustainable water management.

Examples include:

Local:

- **Collaborating on the Conservation of Taman Aman Lake** (Page 25)

National:

- **Participation in UNESCO-IHP Malaysia on National Water Resources Management** (Page 26)

Regional:

- **SMART AQUA-EZ: Regional Collaboration for Sustainable Rural Water Purification** (Page 27)

Global:

- **Global Collaboration on Lake Sustainability and Integrated Water Resource Management** (Page 28)

Collaborating on the Conservation of Taman Aman Lake

Universiti Malaya (UM), through the UM Sustainable Development Centre (UMSDC) and UM Water Warriors, has maintained an ongoing relationship with the Petaling Jaya City Council (MBPJ) in advancing freshwater conservation and community-based environmental initiatives. In 2019, UM Water Warriors received the SDG 14 (Life Below Water) Champion Award under the Petaling Jaya Sustainable Community Award 2019: Localising Sustainable Development Goals, organised by MBPJ. Building on this engagement, UM and Monash University Malaysia implemented the project "Guarding Our Water Together: Unveiling the Hidden World of Water Security and Ecosystems" (MBPJ02-2024) under MBPJ's Petaling Jaya Sustainable Community Grant (PJ SEED 5.0) in 2024. The project involved citizen-science water quality monitoring, pollution prevention measures and community engagement activities at Taman Aman Lake.

Building on these previous collaborations, representatives from UMSDC and UM Water Warriors participated in a Focus Group Discussion (FGD) and workshop in July 2025 on the conservation of the Taman Aman Lake ecosystem and improvement of lake water quality. The initiative, involving MBPJ, Global Environment Centre (GEC), Bonneville Environmental Foundation (BEF) and Google, aimed to explore opportunities for lake rehabilitation through nature-based solutions and active community participation. The engagement brought together local authorities, environmental organisations, technical experts and community stakeholders to exchange knowledge, identify conservation priorities and develop recommendations through facilitated discussions and a site visit.

UM's participation in the 2025 engagement reflected the continuation of its cooperation with MBPJ, drawing on its previous experience in community-based water quality monitoring, pollution prevention and freshwater ecosystem conservation at Taman Aman Lake. Through UMSDC and UM Water Warriors, the University contributed to stakeholder discussions on sustainable lake rehabilitation and management, strengthening collaboration between academia, local authorities and environmental organisations to support the long-term conservation of the lake ecosystem.







Participation in UNESCO-IHP Malaysia on National Water Resources Management

Universiti Malaya strengthens national-level cooperation on water security through its participation in the Jawatankuasa Pendidikan, Latihan dan Penerangan Awam (JKPLPA), UNESCO-IHP Malaysia. In 2025, a UM representative was formally appointed as a committee member for the 2025–2027 session, serving as an institutional representative responsible for contributing professional and technical expertise, participating in meetings and activities, and supporting collaboration among participating agencies and institutions. Subsequent engagement with strategic partners further highlighted the commitment to strengthening cooperation in water resources management, environmental sustainability and high-impact scientific research. Through this national-level platform, UM contributes its expertise and participates in collaborative efforts related to sustainable water resource management and water security.



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Secretariat Office:
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MALAYSIA INTERNATIONAL HYDROLOGICAL PROGRAMME
DEPARTMENT OF IRRIGATION AND DRAINAGE MALAYSIA
BLOCK B , LEVEL 5 , PERSIARAN RIMBA PERMAI
CYBER 8 , 63000 CYBERJAYA , SELANGOR

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Tarikh : 5 Disember 2025

SENARAI SEPERTI DI LAMPIRAN

YBhg. Dato'/Datin/YBhg. Prof./YBrs. Ir./Dr./Tuan/Puan,

PELANTIKAN SEBAGAI AHLI JAWATANKUASA PENDIDIKAN, LATIHAN DAN PENERANGAN AWAM (JKPLPA) UNESCO-IHP MALAYSIA SESI 2025-2027

Dengan hormatnya perkara tersebut di atas adalah dirujuk.

2. Sukacitanya dimaklumkan bahawa Jawatankuasa Pendidikan, Latihan dan Penerangan Awam (JKPLPA) UNESCO-IHP Malaysia sesi 2025-2027 Bil. 1/2025 yang bersidang pada 22 Oktober 2025 telah bersetuju melantik YBhg. Dato'/Datin/YBhg. Prof./YBrs. Ir./Dr./Tuan/Puan sebagai **Ahli Jawatankuasa Pendidikan, Latihan dan Penerangan Awam, UNESCO IHP Malaysia** seperti di **LAMPIRAN.**

3. Sebagai Ahli JKPLPA, YBhg. Dato'/Datin/YBhg. Prof./YBrs. Ir./Dr./Tuan/Puan merupakan **wakil rasmi agensi/institusi** untuk:

i) Menyelaras keperluan program-program JKPLPA bagi phak agensi / institusi yang diwakili;
ii) Menyampaikan maklumat dan perkembangan program kepada agensi / institusi masing-masing;
iii) Memberi pandangan profesional, nasihat teknikal serta sumbangan kepakaran dalam perancangan program;
iv) Menyertai mesyuarat, bengkel serta aktiviti lain yang dianjurkan oleh JKPLPA sepanjang tempoh lantikan;
v) Menjadi tuan rumah program (*host agency*) dan menyelaras keperluan tindakan lanjut di peringkat agensi / institusi apabila diperlukan bagi menyokong pelaksaan aktiviti JKPLPA; dan
vi) Membantu pelaksanaan program-program JKPLPA bersama agensi / institusi tuan rumah.

SMART AQUA-EZ: Regional Collaboration for Sustainable Rural Water Purification

Through a grant from the UM Community Engagement Centre (UMCares), Universiti Malaya's SMART AQUA-EZ initiative provides sustainable water purification solutions to underserved rural communities, including Gua Musang, Ulu Tual, Pos Piah and Ulu Balingian. The initiative integrates advanced filtration technology, automation and renewable energy to improve access to clean and safe drinking water in communities where reliable water services may be limited. Its self-cleaning ultrafiltration mechanism uses automatic backwashing to reduce membrane clogging and manual maintenance, while Internet of Things (IoT) technology enables remote monitoring and control. Solar steam generation further harnesses renewable energy for water purification.

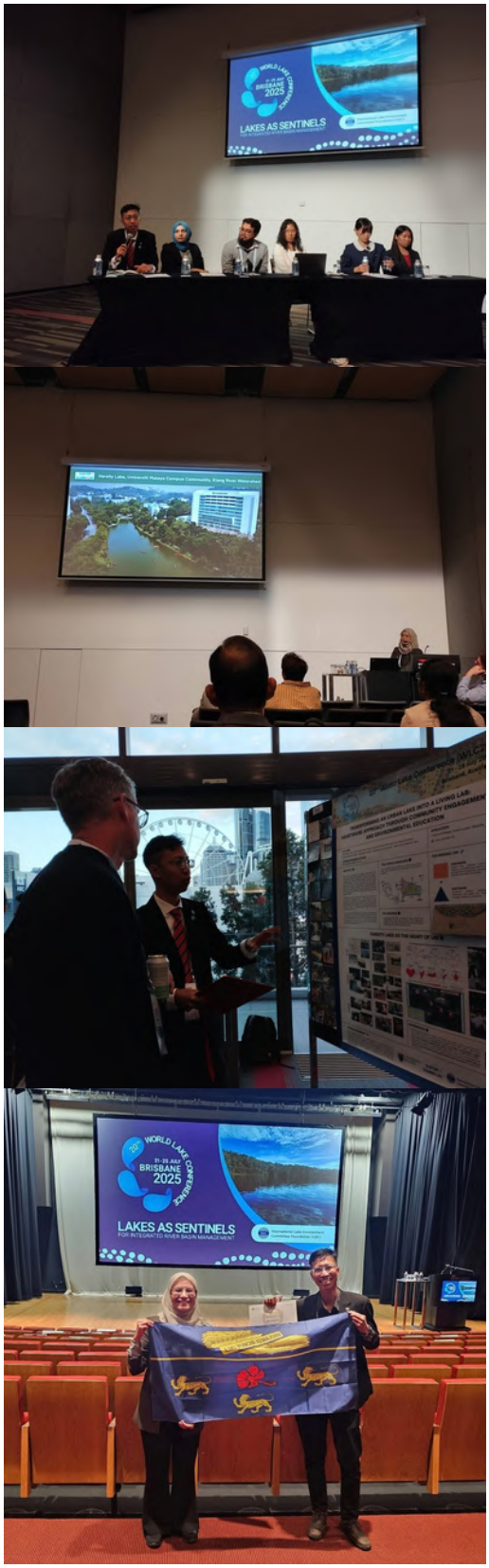


The initiative brings together university expertise, technological innovation and community engagement to address rural water-security challenges. By providing practical water treatment solutions and supporting efficient system operation, SMART AQUA-EZ contributes to improving access to safe drinking water and strengthening community capacity in water management. Its engagement with local communities and identified state-level stakeholders offers potential evidence of regional cooperation in addressing water-security needs.

Global Collaboration on Lake Sustainability and Integrated Water Resource Management

In July 2025, representatives from the Universiti Malaya Sustainable Development Centre (UMSDC) and UM Water Warriors participated in the 20th World Lake Conference (WLC20) in Brisbane, Australia, themed “Lake as Sentinels: For Integrated River Basin Management”. UM contributed actively to the global dialogue through a presentation, poster presentation and by leading the discussion during the Youth Session, “Youth in Action for Lakes”, which brought together young participants and stakeholders to discuss the role of youth in lake conservation and sustainable water management. UM also engaged with the International Lake Environment Committee Foundation (ILEC) and other international stakeholders working towards the sustainable management and protection of lake ecosystems and their connected river basins.

UM's participation further contributed to global cooperation on water security through the Meanjin Brisbane Declaration on World Lake Sustainability, adopted at WLC20. UM representatives was among the signatories to the Declaration, which calls for the protection, restoration and sustainable governance of lakes and their basins, recognising lakes as interconnected systems linked to surface water, groundwater and river networks. The Declaration also calls for strengthened monitoring and research, integrated basin-scale and transboundary cooperation, community and Indigenous stewardship, technology and knowledge transfer, and the integration of lake sustainability into national and global policy frameworks. Through its contribution to the conference discussions, presentation, youth leadership and endorsement of the Declaration, UM participated in international efforts to advance integrated and cooperative approaches to freshwater and lake management.



12 Promoting Conscious Water Usage on Campus and in the Wider Community

Universiti Malaya actively promotes conscious and responsible water usage through initiatives both on campus and in the wider community. These efforts combine awareness and education with practical measures that encourage more efficient water use, reduce unnecessary water wastage, and increase understanding of water conservation among students, staff and community members.

Examples include:

On campus:

- **Promoting Conscious Water Usage Through Awareness Campaigns, Water-Efficient Facilities and Alternative Water Sources** (Page 30 - 31)
- **Sustainability Literacy 101 Course** (Page 32)

Wider community:

- **Water Footprint Awareness for Sabah Schools** (Page 32)

Promoting Conscious Water Usage Through Awareness Campaigns, Water-Efficient Facilities and Alternative Water Sources





Universiti Malaya promotes conscious water usage through a combination of awareness campaigns, water-efficient facilities, alternative water sources and practical conservation measures across the campus. These initiatives encourage staff, students and other campus users to reduce unnecessary water consumption and make more responsible use of available water resources.

(1) Awareness Campaign: "Stop That Drip" Campus Water Conservation Campaign



UM promotes active participation in water conservation through the "Stop That Drip" campaign, which encourages the university community to promptly report water leaks through the UM Touch app. Highlighted around World Water Loss Day, the campaign makes it easier for staff and students to take action when leaks are identified in common areas, faculties or residential colleges. Reports submitted through the Helpdesk are directed to the Estates Department or relevant PTj for follow-up, supporting timely maintenance and reducing avoidable water loss.

(2) Water-Efficient Sanitary Facilities



Water-efficient fixtures are used across various campus facilities. Dual-flush toilet systems are installed at locations including the research complex, residential colleges, faculties, clubhouse and library, allowing users to control the volume of water used for flushing. Low-flow showerheads have also been installed across campus to reduce water flow and consumption during showering.

(3) Water-Efficient Products in New Buildings and Renovations

UM is moving towards greater use of water-efficient products. For new buildings and renovation projects, toilet fittings such as water closets, taps, urinals and showerheads, as well as relevant appliances such as washing machines, are required to comply with the Water Efficient Products requirements set by the Malaysian Government. Most washing machines provided at the residential colleges are also designed to be both water- and energy-efficient, supporting more conscious resource use by residents.



(4) Groundwater Use for Landscaping

Groundwater is used as an alternative water source for selected non-potable purposes at three locations on campus, including the plant nursery and two fields. UM also uses simple awareness materials to encourage the campus community to understand and support the appropriate use of groundwater for plant watering, helping reduce reliance on treated water for landscaping purposes.



(5) Rainwater Harvesting

UM has 62 rainwater harvesting tanks located across the campus, including at residential colleges, faculties, the landscaping nursery, bus depot, green fields and botanical garden. The collected rainwater is used for activities such as landscaping, floor washing and vehicle washing. Awareness materials displayed on the tanks help communicate their purpose and encourage the campus community to recognise rainwater as an alternative source for suitable non-potable uses.



Sustainability Literacy 101 Course

In December 2025, the Universiti Malaya Sustainable Development Centre (UMSDC), together with the Talent and Excellence Centre (TEC), organised an internal Sustainability Literacy 101 course for UM staff, incorporating elements of conscious water usage alongside waste management to promote more responsible resource use on campus.





Water Footprint Awareness for Sabah Schools

Under the Student Empowerment in Climate Action in Sabah (SECA) Phase 2 research initiative, led by TPr Dr. Goh Hong Ching, Universiti Malaya promoted awareness of conscious water usage in the wider community through an online talk on water footprint held on 24 June 2025. The session was delivered by Dr. Lee Soon Loong and involved participants from 13 secondary schools across the districts of Kudat, Kota Marudu, and Pitas. The talk increased understanding of both direct and indirect water use embedded in daily activities and provided practical guidance on reducing individual and household water footprints. By engaging school communities beyond the campus, the initiative empowered students and educators to adopt more mindful water-use behaviours and practical water-saving practices.



