



ABOUT THE SINGAPORE WATER STORY

As a small island that does not have natural aquifers and lakes and with little land to collect rainwater, Singapore needs to maximise whatever it can harvest. Driven by a vision of adequacy, reliability and sustainability in water, Singapore has been investing in research and technology. Today, the nation has built a robust, diversified and sustainable water supply from four different sources known as the Four National Taps (water from local catchment areas, imported water, reclaimed water known as NEWater and desalinated water).

By integrating the system and maximising the efficiency of each of the four taps, Singapore has ensured a stable and sustainable water supply capable of supporting the country's continued growth.

ABOUT THE SINGAPORE WATER ACADEMY

The Singapore Water Academy is a practitioner-focused learning institute in urban water management. Established by PUB, Singapore's National Water Agency, the Academy enhances capability development for water professionals both locally and internationally.

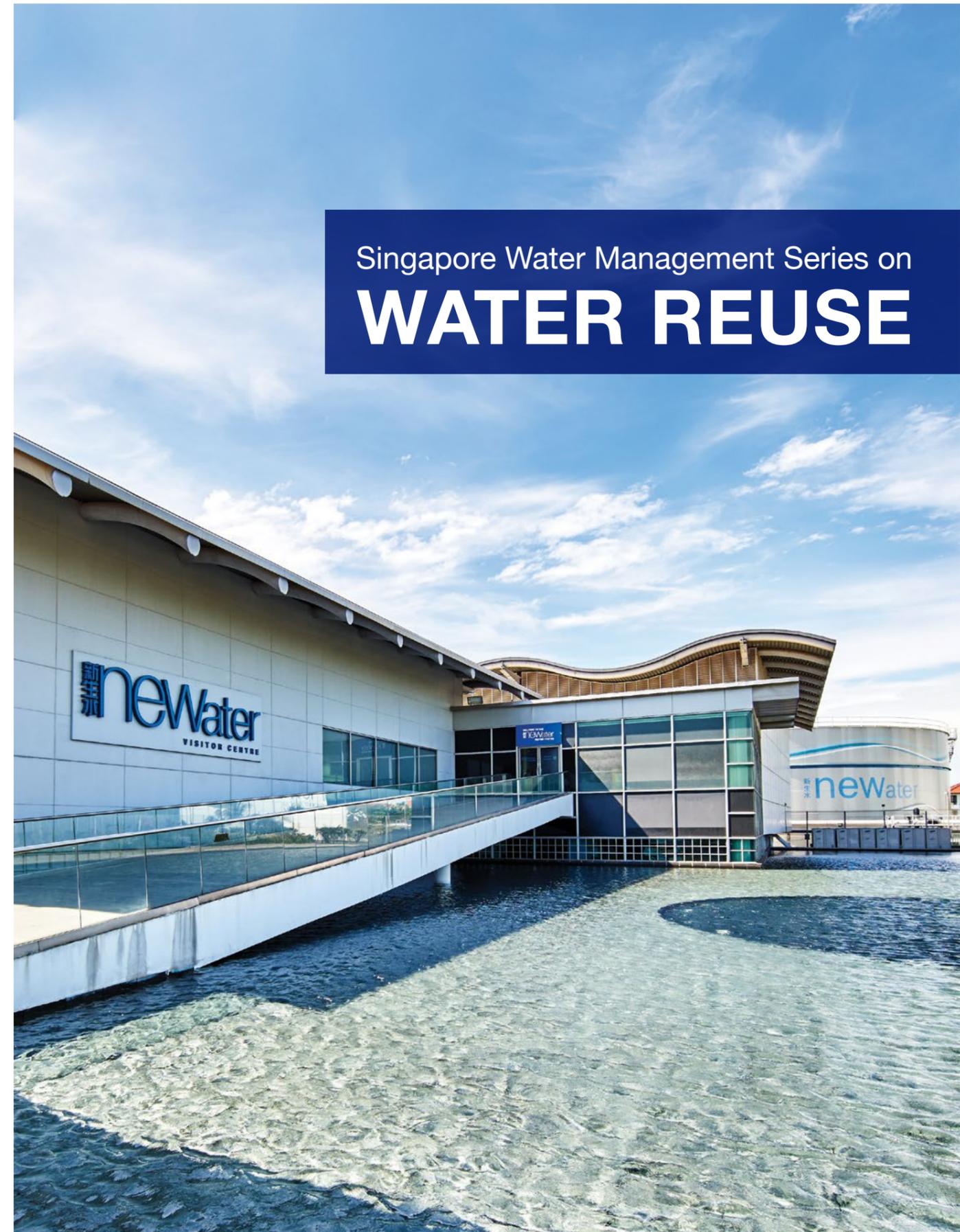
REGISTER YOUR INTEREST TODAY

For enquiries and course registration, please contact:

Jason Wong
Vickneswaran Danabal

jason_jx_wong@pub.gov.sg
vickneswaran_danabal@pub.gov.sg

DID: +(65) 8606 6256
DID: +(65) 9004 3375





The Singapore Water Management Series on Water Reuse offers practitioner-based technical training to equip participants with the depth and breadth of knowledge in the area of water reuse. It features trainers who are world leaders in the field of wastewater treatment and water reuse, as well as senior PUB officers with depth in planning and operational experience of wastewater treatment and water reuse facilities in Singapore.

The course focuses on topical issues such as the latest advancements in wastewater treatment and water reuse technologies, and strategies for source control management. It also explores the overall concept of fit-for-purpose reuse, the latest developments in industrial wastewater treatment and reuse, as well as policies, strategies and best practices guiding the implementation of water reuse.

COURSE HIGHLIGHTS

Overview on Used Water Management and Water Reuse in Singapore

- Integrated Management of Water Resources in Singapore
- Singapore's development in used water management infrastructure
- Centralised used water collection – Deep Tunnel Sewerage System (DTSS)
- Multi-barrier approach to production of NEWater
- Importance of maintaining consistent treated effluent quality for sustainable water reuse

Used Water Source Control, Monitoring and Strategies in Singapore

- Policies/Regulations for sewer systems
- Legislation and enforcement strategies for source control
- SMART solutions for sewer management
- Effectiveness of Singapore's enforcement procedures

Municipal Used Water Treatment and Reuse

- A review of existing and new technologies in used water treatment and reuse
- Process development, optimisation and smart technologies
- Resiliency and reliability of wastewater treatment operations
- Role of membranes, including drivers and challenges
- Examples of municipal used water treatment and reuse

Water Reuse: Potable and Non-Potable Reuse

- Overall concept of fit-for-purpose reuse
- Environmental and Health Guideline assessment
- Source control and used water treatment – the 1st two barriers
- Implementation strategies, economics and sustainability of water reuse
- Examples of water reuse – Australia, South Africa, Namibia and the US

Industrial Wastewater Treatment and Reuse in Singapore

- Overview of trends and challenges in industrial used water treatment and reuse
- Examples of industrial water reuse in oil and gas, manufacturing, electronics, pharmaceutical, food and beverage industries in Singapore

Water Reuse – Effective Policies and Engagement

- Drivers, policies and regulations guiding the implementation of water reuse
- Importance of effective engagement with public and industry

WHO WILL BENEFIT

Engineers and Scientists with at least 5 years of experience in the field of wastewater and water reuse.

Course Fee: SGD\$3,490.00 (excluding 7% Goods and Services tax)

RENOWNED SPEAKERS IN THE WATER REUSE COURSE



Cecilia Tortajada

Senior Research Fellow, Lee Kuan Yew School of Public Policy, National University of Singapore

Cecilia has been advisor to major international institutions such as FAO, UNDP, JICA, ADB, OECD, IDRC and GIZ. The focus of her work is on impacts of global events on water resources and the environment. She is Editor-in-Chief of the *International Journal of Water Resources Development* and has published numerous books and papers on water policy.



Harry Seah

Deputy Chief Executive (Operations), PUB, Singapore's National Water Agency

Harry provides strategic oversight of the entire water systems operations of PUB to ensure total integration and effective management so that PUB remains operationally effective and efficient to serve Singapore's current and future water needs.



Ian Law

Chief Executive, IBL Solutions, Adjunct Professor, University of Queensland

Ian has more than 40 years of experience in advanced treatment and reuse projects in Southern Africa, Southeast Asia and Australia. He is also involved in numerous Water Research Foundation Projects in the US that are all associated with advanced forms of reuse.



Kiran Kekre

Senior Principal Specialist, Technology Department, PUB, Singapore's National Water Agency

Kiran has more than 30 years of experience in the water industry and specialises in the areas of membrane separation processes (micron-filtration, ultra filtration, nano-filtration and RO), electro-deionization, ion exchange, physical-chemical processes, and in the design, testing and commissioning of reuse/reclaim systems, instrumentation and process control and optimisation of treatment processes.



Kwok Wing On

Chief Engineer, Water Reclamation (Networks), PUB, Singapore's National Water Agency

Wing On has over 30 years of experience in the field of used water and has undertaken roles in the operation and management of water reclamation plants and public sewerage networks. He currently oversees the operation, maintenance and regulatory enforcement of Singapore's public sewer network to ensure a safe and reliable conveyance of used water.



Michael R. Markus

General Manager, Orange County Water District

Mike has more than 40 years of experience in the water industry and has been responsible for managing and implementing the Groundwater Replenishment System programme in OCWD. This 379,000m³/day advanced water purification facility is the largest potable reuse plant in the world and has won many awards including the 2008 Stockholm Industry Water Award and the 2014 Lee Kuan Yew Water Prize.



Ooi Kian Eng

Director, Water Reclamation (Plants), PUB, Singapore's National Water Agency

Kian Eng has more than 25 years of experience in civil and wastewater engineering and currently oversees the planning, operations and maintenance of all the municipal wastewater treatment plants in Singapore. He was also involved in the planning, design and construction of several drainage and sewerage infrastructure projects. Prior to this appointment, he was the Director of the Water Reclamation (Network) Department in PUB, managing the entire sewerage network in Singapore.



Tao Guihe

Principal Specialist, Water Reclamation (Plants), PUB, Singapore's National Water Agency

Guihe has over 20 years of experience in wastewater water treatment and reuse, focusing on the development, design and optimisation of wastewater treatment processes including membrane bioreactors (MBR), MBR-RO, nutrient removal and resource recovery. He leads the Integrated Validation Plant and Demonstration Plant study and is actively involved in the Design Review for Singapore's upcoming Tuas Water Reclamation Plant, an 800,000m³/day capacity plant which is expected to be commissioned by 2025.