



#### **SEMINAR ON**

# ACTIVE, BEAUTIFUL, CLEAN WATERS (ABC WATERS) - CLIMATE RESILIENT & LIVEABLE CITIES

#### **ABC WATERS CERTIFICATION 2022**

20 April 2022

### **Contents**

ABC WATERS PROGRAMME	2
PROGRAMME	3
SPEAKERS & MODERATOR PROFILE	4 - (
ABC WATERS CERTIFICATION 2022	7
SIT Campus @ Punggol North (East Zone) [Gold]	8
SIT Campus @ Punggol North (West Zone) [Gold]	9
The Woodleigh Residences and The Woodleigh Mall [Gold]	10
Alkaff Oasis	11
Kallang Breeze	12
Forest Woods	13
Toa Payoh Ridge	14
Parc Canberra	15
Waterfront I @ Northshore (Punggol)	16
The M	17
Waterfront II @ Northshore (Punggol)	18
West Scape @ Bukit Batok	19



## ABC Waters Programme

Over the years, Singapore has gradually developed a pervasive network of waterways and reservoirs to overcome its water challenges. Two thirds of Singapore's land is water catchment. Rainwater that falls in these areas is collected through a network of drains, canals and rivers, and channelled to our 17 reservoirs.

In 2006, PUB, Singapore's National Water Agency launched the Active, Beautiful, Clean Waters (ABC Waters) Programme to harness the potential of our waterways and waterbodies, integrating them with the surrounding landscape to create multi-functional blue-green spaces for all to enjoy. The ABC Waters Programme aims to develop a sense of stewardship within the public towards our local waterways, so as to engender greater responsibility towards keeping Singapore's precious water resources clean.

To date, 50 projects have been completed by PUB while more than 100 projects by other public agencies and private developers have received the ABC Waters certification.

## **Programme**

Time	Event	
8:45 AM	REGISTRATION	
9:30 – 9:40AM	OPENING ADDRESS BY GUEST-OF-HONOUR Dr Amy Khor Senior Minister of State for Sustainability and the Environment	
9:40 -10:00AM	PRESENTATION OF ABC WATERS CERTIFICATION - ABC Waters Certified (Gold) projects - ABC Waters Certified projects	
10:00 –10:25AM	"MAKING A SPLASH WITH A GREEN-BLUE CITY" Keynote speaker: Professor Cheong Koon Hean	
	Chairman of the Centre for Liveable Cities (Ministry of National Development)	
	Chairman of the Lee Kuan Yew Centre for Innovative Cities (Singapore University of Technology and Design)	
10:25 -10:45AM	TEA BREAK	
10:45 –11:10AM	"WATERSCAPES AND PEOPLE"	
	<b>Ms Melissa Yip</b> Landscape Architect AECOM Singapore	
11:10 –11:35AM	-11:35AM "A BLUE, GREEN AND GREY JOURNEY THROUGH ASIA INSPIRED BY NATURE"	
	<b>Mr Paul Nettleton</b> Design Engineer Ramboll Studio Dreiseitl	
11:35 –12:00PM	"ROTTERDAM WEATHERWISE – THE ROAD TOWARDS A CLIMATE PROOF CITY"	
	<b>Mr Johan Verlinde</b> Programme Director Rotterdam Climate Adaptation Plan at the City of Rotterdam, The Netherlands	
12:00 –12:30PM	<b>Q&amp;A</b> Moderated by Mr Damian Tang Senior Director, Design National Parks Board	
12:30PM	END OF SEMINAR	

# About the Speakers



Professor Cheong Koon Hean Chairman, Centre for Liveable Cities (Ministry of National Development)

Chairman, Lee Kuan Yew Centre for Innovative Cities (Singapore University of Technology and Design)

Professor Cheong Koon Hean is currently Chairman of the Centre for Liveable Cities (Ministry of National Development) as well as a Practice Professor and Chairman of the Lee Kuan Yew Centre for Innovative Cities (Singapore University of Technology and Design). She was formerly the CEO of the Housing and Development Board from 2010 to 2020, overseeing some 1 million public housing flats and introducing a new generation of well-designed, community centric, sustainable and smart public housing. Prof Cheong was also CEO of the Urban Redevelopment Authority from 2004 to 2010 and concurrently the Deputy Secretary of the Ministry of National Development from 2001 to 2016, with extensive experience in land use planning, conservation of heritage, the real estate market, public housing, governance and policy. She played a key role in major urban transformations such as Singapore's new city extension Marina Bay and the Sino-Singapore Tianjin Eco City.

She has served on numerous advisory panels including the World Economic Forum Council and is currently on the international advisory panels on Asia Sustainable Infrastructure and Urban Solutions and Sustainability. She is a board trustee of the National University of Singapore, former Deputy President and current Council member of the International Federation for Housing & Planning, Chairman of the Lee Kuan Yew World City Prize's Nominating Committee, Senior Advisor on Public Sector Sustainability (MSE), a Fellow (Life) and Honorary Fellow of the Singapore Institute of Architects and Institute of Planners respectively.

Prof Cheong has been conferred numerous awards, notably the Meritorious Service Medal for outstanding public service and is the first Asian to receive both the 2016 Urban Land Institute's Prize for Urban Visionaries and the Lynn S Beedle Lifetime Achievement Award by the Council for Tall Buildings and Urban Habitat.



Ms Melissa Yip Landscape Architect AECOM Singapore

With a background in both architecture and landscape architecture, Melissa has over 17 years in engaging communities and integrating urban hydrology, sustainability and landscape architecture in urban spaces. Her project experience ranges from public realm urban-renewal projects to urban commercial urban commercial and residential landscape design, many of which have received public acclaim internationally.



Mr Paul Nettleton
Design Engineer
Ramboll Studio Dreiseitl

Paul Nettleton is a water engineer from Ramboll who has a passion for integrating stormwater management infrastructure with the natural environment to solve the various issues that climate change presents us with in managing our water resources. He has experience designing ABC Waters features in several projects in Singapore and is also working on similar Blue-Green Infrastructure projects in Vietnam, China, Indonesia, and India. He has a strong interest in the benefits that nature brings to society and is inspired by his experiences diving and hiking in several countries in Asia to engineer solutions that preserve the natural environment and bring people and nature closer together.



Mr Johan Verlinde
Programme Director
Rotterdam Climate Adaptation Plan at the City of Rotterdam,
The Netherlands

Johan Verlinde works for the City of Rotterdam as the program director Urban Adaptation and leads the Rotterdam Climate Adaptation Plan "Rotterdam Weatherwise." The goal of this plan is to take the next step in preparing the city for severe climate hazards like heavy rainfall, flooding, heat and drought. This is done in close collaboration with citizens, private sector, social housing corporations, water boards and more. Besides climate adaptive measures in the public space, where land is scarce, climate proofing the private space will become more and more important. He also works with various international cooperation initiatives, like C40, to share and gain knowledge on climate adaptation. He was a fellow of the PUB Singapore Water Academy.

#### Moderator



Mr Damian Tang Senior Director, Design National Parks Board

Mr Damian Tang is the Senior Design Director at National Parks Board. He oversees the design of parks and public spaces; leads greenery initiatives and implements biophilia strategies in urban spaces across Singapore. Damian works with different public agencies and organisations in interagency master planning and advises on township greenery planning and design, including design advisory for climate, coastal and ecological resilience for the city. He has more than twenty years of working experience in the field of architecture, landscape architecture and interdisciplinary practices. He was seconded to PUB in 2006 and supported the development of ABC Waters Master Plan across Singapore.

# ABC Waters Certification

The Active, Beautiful, Clean Waters (ABC Waters) Certification was launched by PUB in 2010 to provide recognition to public agencies and private developers who embrace the ABC Waters concept, and incorporate ABC Waters design features in their developments. Besides providing recognition, the scheme also ensures that the design features incorporated within the developments achieve a minimum design standard.

In August 2017, a higher tier of certification, ABC Waters Certified (Gold) was launched to recognise entries of exceptional standards.

The assessment for the certification is based on a point system with four categories, namely "Active", "Beautiful", "Clean" and "Innovation". Applicants have to achieve a minimum score of 45 to be ABC Waters Certified, and a minimum of 65 to be ABC Waters Certified (Gold). Under the Clean category for Gold, treatment of at least 40% of surface runoff must be attained through the use of ABC Waters design features.

We congratulate the 12 recipients of the 2022 ABC Waters certification, of which 3 have obtained the higher tier of ABC Waters Certified (Gold), and we hope partners will be encouraged to incorporate ABC Waters designs in their developments.





## [Gold Certified] SIT Campus @ Punggol North (East Zone)

Developer / Building Owner:
Singapore Institute of Technology

Type of development: **School** 

Architect:

**RSP Architects Planners & Engineers Pte Ltd** 

Civil / Structural Engineer:

**RSP Architects Planners & Engineers Pte Ltd** 

Landscape Consultant:

Ramboll Studio Dreiseitl

Main Contractor:

Kimly Construction Pte Ltd

ABC Waters Professional: **Yin Li** 

- Located in the heart of the Punggol Digital District, the Singapore Institute of Technology (SIT) Campus is a
  new smart campus. The first of its kind, SIT is designed to be a "Campus-in-the-Park", aptly complementing
  the campus' location by the Punggol Waterway park and Serangoon Reservoir. The East zone campus will
  be home to administration buildings and indoor sports facilities.
- Runoff from 40.1% of the entire site will be treated by a rain garden, cleansing biotopes and a sedimentation pond.
- Drains along the main pedestrian route will be naturalized to channel runoff and enhance the
  overall landscape.
- ABC Waters design features will be seamlessly integrated within the lush greenery in the campus.
   Pedestrian bridge, boardwalk, viewing deck and seats will be provided to allow the visitors to get close to the ABC Waters design features.
- 55% of plant species used in the whole development will be native species.
- Educational signages will be provided to promote awareness on ABC Waters design features.
- Drip irrigation system will be provided to reduce water consumption.





Image Courtesy of WOHA Architects Pte Ltd

# [Gold Certified] SIT Campus @ Punggol North (West Zone)

Developer / Building Owner:
Singapore Institute of Technology

Type of development: **School** 

Architect:

**WOHA Architects Pte Ltd** 

Civil / Structural Engineer:

**Web Structures** 

Landscape Consultant:
Ramboll Studio Dreiseitl

Main Contractor:

China Construction-Straits LLP

Landscape Contractor:
Nature Landscape Pte Ltd

ABC Waters Professional: Yin Li

- Located in the heart of the Punggol Digital District, the Singapore Institute of Technology (SIT) is designed
  to be a "Campus- in-the park". Extensive green and blue features within the West zone campus are open to
  public access.
- Runoff from 43.1% of the entire site area will be treated by a cleansing biotope and rain gardens.
- Water from the rain gardens will be harvested and used for irrigation purposes, while water from the cleansing biotope will be recirculated through an eco-pond that creates more blue spaces and beautifies the campus.
- ABC Waters design features are seamlessly integrated within the lush greenery in the campus. A garden
  courtyard and sky garden are provided to beautify the environment and enhance visitor experience.
  Elevated boardwalks and seats are provided to allow visitors to get close to the ABC Waters design features.
- 37% of plant species used in the whole development will be native species.
- Educational signages promote awareness on ABC Waters design features.
- Drip irrigation system will be provided to reduce water consumption.





# [Gold Certified] The Woodleigh Residences and The Woodleigh Mall

Developer / Building Owner:

The Woodleigh Residences Pte Ltd and The Woodleigh Mall Pte Ltd

Type of development:

Mixed Development

Architect:

**DP Architects Pte Ltd** 

Civil / Structural Engineer:
Meinhardt (Singapore) Pte Ltd

Landscape Consultant:

**SALD Pte Ltd** 

Main Contractor:

Kajima (S) Tiong Seng JV, Kajima Overseas Asia (Singapore) Pte Ltd and Tiong Seng Contractors Pte Ltd

Landscape Contractor: Plantwerkz Pte Ltd

ABC Waters Professional:

Ong Toon Lian

- The Woodleigh Residences and The Woodleigh Mall is a mixed-use commercial and residential development
  located in the new Bidadari Town. Lush greenery will be integrated with the communal and lifestyle
  facilities to create a tranquil urban oasis.
- Runoff from 50.5% of the entire site area will be treated by rain gardens spread across the developments.
- More than 80 rain gardens will be provided throughout the development. Rain gardens are distributed
  across the development and located next to facilities like pool desks, yoga pavilion and playgrounds and
  BBQ pits to allow the residents to get close to features.
- Vertical greeneries, a landscape deck with a lawn and miniaturized gardens will be provided to add to the
  lushness of the area and enhance the living environment of the residents. A bridge that extends out of the
  development will serve as a vantage point for residents and visitors to pause and admire the neighbouring
  Bidadari Park and Alkaff Lake.
- 23% of plant species used in the whole development will be native species.
- Educational signages will be provided to increase awareness and explain the concept behind the ABC Waters design features.
- · Innovative fast flow siphonic roof drainage system and drip irrigation will be used in the development.





#### **Alkaff Oasis**

Developer / Building Owner:

**Housing & Development Board** 

Type of development:

Residential

Architect:

**Surbana Jurong Consultants Pte Ltd** 

Civil / Structural Engineer:

Surbana Jurong Consultants Pte Ltd

**Landscape Consultant:** 

Surbana Jurong Consultants Pte Ltd

Main Contractor:

**CES Engineering & Construction Pte Ltd** 

**Landscape Contractor:** 

**Nature Landscapes Pte Ltd** 

**ABC Waters Professional:** 

Lee Chu Yang, Luke

- Alkaff Oasis is a public housing development located at the junction of Bidadari Park Drive and Alkaff
  Crescent. The development consists of residential buildings, roof gardens at two multi-storey carparks
  (MSCP) and a linear greenery between the MSCPs.
- Runoff from 10.7% of the entire site area is treated by rain gardens.
- The rain gardens form part of the development landscape. Seats are provided near the rain gardens to bring
  the residents and visitor closer to the ABC Waters features.
- Roof gardens, linear greenery between the MSCPs, façade planting, and extensive green roofs on the
  pavilion and covered linkway are provided to beautify the precinct.
- 28% of plant species used in the whole development are native species.
- Educational signages are provided to educate the residents and visitors on how rainwater runoff is being treated by the rain gardens.
- Innovative Soilless GaiaMat™ system is used in the extensive green roof and drip irrigation system is used
  to conserve water.





#### **Kallang Breeze**

Developer / Building Owner: Housing & Development Board

Type of development:

Residential

Architect:

**ADDP Architects LLP** 

Civil / Structural Engineer: KTP Consultants (S) Pte Ltd

Landscape Consultant: Earthscape Concepts Pte Ltd

Main Contractor:

**Hock Guan Cheong Builder Pte Ltd** 

Landscape Contractor:

Nyee Phoe Flower Garden Pte Ltd

ABC Waters Professional: Etzel Seah & Aw Boon Leong

- Kallang Breeze is a public housing development that consists of residential buildings and a roof garden at the multi-storey carpark (MSCP).
- Runoff from 27% of the entire site area will be treated by rain gardens.
- A roof garden and vertical greenery façade planters will be provided at the multi-story carpark block add to the overall greenery within the development
- 21.5% of plant species used in the whole development will be native species.
- Educational signages will be provided to educate the residents and visitors on how rainwater runoff is being treated by ABC Waters design features.
- Drip irrigation system will be provided to reduce water consumption.





#### **Forest Woods**

Developer / Building Owner:

Serangoon Green Pte Ltd (JV between City Developments Limited, Hong Leong Holdings Limited and TID Pte. Ltd.)

Type of development:

Residential

Architect:

DCA Architects Pte Ltd

Civil / Structural Engineer:

LSW Consulting Engineers Pte Ltd

Landscape Consultant:

SALD Pte Ltd

Main Contractor:

Ssangyong Engineering & Construction Co., Ltd.

Landscape Contractor:

**Scenic Landscape Pte Ltd** 

ABC Waters Professional:

Ong Toon Lian

- Forest Woods is a private residential development located at Lorong Liew Lian with a commitment to sustainable architecture.
- Runoff from 11.1% of the entire site area is treated by 3 rain gardens.
- Footpaths, BBQ pavilions and alfresco lounge, located next to the rain gardens, bring residents and visitors close to the ABC Waters design features.
- A Bio-Pond is provided to create more blue spaces to encourage residents and visitors to come closer to the water.
- Vertical greenery at the landscape wall, sensory gardens with a variety of flowers add to the overall
  greenery and enhance the aesthetic within the development.
- 37.5% of plant species used in the whole development are native species.
- Educational signages are provided to educate the residents and visitors on the concept of the ABC Waters
  design features.
- Drip irrigation system is provided to reduce water consumption.





#### **Toa Payoh Ridge**

Developer / Building Owner: Housing & Development Board

Type of Development: **Residential** 

Architect:
ONG&ONG Pte Ltd

Civil / Structural Engineer:
Rankine & Hill (Singapore) Pte Ltd

Landscape Consultant: ONG&ONG Pte Ltd

Main Contractor:
Rich Construction Company Pte Ltd

Landscape Contractor:
It Meng Landscape & Construction Pte Ltd.

ABC Waters Professional:
Etzel Seah Boon Beng

- The public housing development, Toa Payoh Ridge, consists of residential buildings and a multi-story carpark with green roof.
- Runoff from 35.3% of the entire site area will be conveyed to and treated by rain gardens and bioretention swales.
- Playgrounds, outdoor fitness area, mini plaza, shelters and footpaths located near to the ABC Waters
  design features bring residents and visitors closer to the features.
- Gravel swales will be used in lieu of traditional concrete drains to convey rainwater runoff and add to the overall greenery within the development.
- 22.1% of plant species used in the whole development will be native species.
- Educational signages will be provided to educate the residents and visitors on how rainwater runoff is being treated by ABC Waters design features.
- Drip irrigation system will be provided to reduce water consumption.





#### **Parc Canberra**

Developer / Building Owner: Hoi Hup Sunway Canberra Pte Ltd

Type of Development: **Residential** 

Architect:

**Consortium 168 Architects Pte Ltd** 

Civil / Structural Engineer:
TW-Asia Consultants Pte Ltd

Landscape Consultant:
Tinderbox Landscape Studio Pte Ltd

Main Contractor: Straits Construction Singapore Pte Ltd

ABC Waters Professional:
Ng Shu Wei Sharron

- Parc Canberra is an Executive Condominium development located at Sembawang Link.
- Runoff from 12.1% of the entire site area will be treated by rain gardens in the development.
- A pavilion and community garden will be located next to the rain gardens to bring residents and visitors
  close to the ABC Waters features. A multitude of BBQ pavilions surrounded with lush greenery will beautify
  the development.
- 32% of plant species used in the whole development will be native species.
- Educational signages will be provided to educate the residents and visitors on how rainwater runoff is being treated by the rain gardens. This information will also be provided in the resident's handbook to create greater awareness of the rain gardens.
- Drip irrigation system will be provided to reduce water consumption.





### Waterfront I @ Northshore (Punggol)

Developer / Building Owner: Housing & Development Board

Type of Development: **Residential** 

#### Architect:

Housing & Development Board, Building & Research Institute

#### Civil / Structural Engineer:

Housing & Development Board, Building & Research Institute

#### Landscape Consultant:

Housing & Development Board, Building & Research Institute

#### Main Contractor:

China Construction (South Pacific)
Development Co Pte Ltd

#### Landscape Contractor:

G.G. Landscape + Construction Pte Ltd

#### **ABC Waters Professional:**

Aw Boon Leong

- Waterfront I @ Northshore (Punggol) is a public housing development along the seafront and next to the Punggol Park Connector Network. The development consists of residential buildings, eco-pond within the common green next to the development.
- Runoff from 10.9% of the entire site area is conveyed to and treated by bioretention swales, vegetated swales and rain garden.
- Footpaths, a birdwatch plaza, fitness corners and playground are provided to bring the residents and visitors closer to the ABC Waters design features.
- Vertical greenery, sky gardens, green roofs at Childcare Centre and Active Aging Hub add to the overall greenery within the development.
- 29.3% of plant species used in the whole development are native species.
- Educational signages are provided to promote greater awareness on the ABC Waters design features.
- Drip irrigation system is provided to reduce water consumption.





#### The M

Developer / Building Owner:

Wingcharm Investment Pte Ltd

Type of Development:

Residential with first storey commercial

Architect:

P&T Consultants Pte Ltd

Civil / Structural Engineer:

**KCL Consultants Pte Ltd** 

**Landscape Consultant:** 

Sitetectonix Pte Ltd

Main Contractor:

**Dragages Singapore Pte Ltd** 

Landscape Contractor:

**Scenic Landscape Pte Ltd** 

**ABC Waters Professional:** 

**Ong Toon Lian** 

- The M is a private residential development located along Middle Road.
- Runoff from 13% of the entire site area will be treated by rain gardens.
- Footpaths, viewing deck with seating areas, reading deck, lounge and gardens will be provided to bring people closer to the ABC Waters design features.
- An e-deck, sky terrace, trailing creepers on the buildings' facade and a green roof will add to the overall
  greenery within the development.
- 34% of plant species used in the whole development will be native species.
- Educational signages will be provided to promote greater awareness on the ABC Waters design features.





### Waterfront II @ Northshore (Punggol)

Developer / Building Owner: Housing & Development Board

Type of Development: **Residential** 

Civil / Structural Engineer:

**Housing & Development Board** 

Landscape Consultant:

**Housing & Development Board** 

Main Contractor:

China Construction (South Pacific)
Development Co Pte Ltd

Landscape Contractor:

G.G. Landscape + Construction Pte Ltd

**ABC Waters Professional:** 

Aw Boon Leong

- Waterfront II @ Northshore (Punggol) is a public housing development along the seafront and next to the Punggol Park Connector Network. The development consists of residential buildings and a landscaped pond (Dragonfly Pond) within the common green.
- Runoff from 11.2% of the entire site area is conveyed to and treated by bioretention swales and rain garden.
   Part of the water from the ABC Waters design features is channeled into the Dragonfly Pond to create more blue spaces for the residents and visitors.
- Pedestrian pathways are provided to bring the residents and visitors close to the ABC Waters design features.
- Vertical greenery, sky gardens, green roof at Electrical Sub-station and Education Centre add to the overall
  greenery within the development.
- 29.8% of plant species used in the whole development are native species.
- Educational signages are provided to promote greater awareness of the ABC Waters design features.
- Drip irrigation system is provided to reduce water consumption.





#### West Scape @ Bukit Batok

Developer / Building Owner: Housing & Development Board

Type of development: **Residential** 

Architect:

**Surbana Jurong Consultants Pte Ltd** 

Civil / Structural Engineer:

**Surbana Jurong Consultants Pte Ltd** 

Landscape Consultant:

**Surbana Jurong Consultants Pte Ltd** 

Main Contractor:

China Construction Realty Co. Pte Ltd

**ABC Waters Professional:** 

Lee Hong Keow

- West Scape @ Bukit Batok is a public housing development that consists of residential buildings and a "Biodiversity Corridor" within the precinct to bring residents closer to nature.
- Runoff from 15.3% of the entire site area will be conveyed to and treated by bioretention swales, vegetated swales and rain gardens.
- A biodiversity corridor within the precinct, roof Garden and façade planting at multi-story carpark add to the overall greenery within the development.
- 28% of plant species used in the whole development will be native species.
- Educational signages will be provided to promote greater awareness on the ABC Waters design features.
- Drip irrigation system will be provided to reduce water consumption.

#### **PUB, Singapore's National Water Agency**

PUB is a statutory board under the Ministry of Sustainability and the Environment (MSE). It is the national water agency, which manages Singapore's water supply, water catchment, and used water in an integrated way. From April 2020, PUB also took on the responsibility of protecting Singapore's coastline from sea-level rise as the national coastal protection agency.

PUB has ensured a diversified and sustainable supply of water for Singapore with the Four National Taps (local catchment water, imported water, NEWater, desalinated water). PUB leads and coordinates whole-of-government efforts to protect Singapore from the threat of rising seas and the holistic management of inland and coastal flood risks.

PUB calls on everyone to play a part in conserving water, in keeping our waterways clean, and in caring for Singapore's precious water resources. If we all do our little bit, there will be enough water for all our needs – for commerce and industry, for living, for life.

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