

SINGAPORE-UNITED STATES  
**SMART CITIES  
GREEN BUILDINGS  
PROGRAMME**



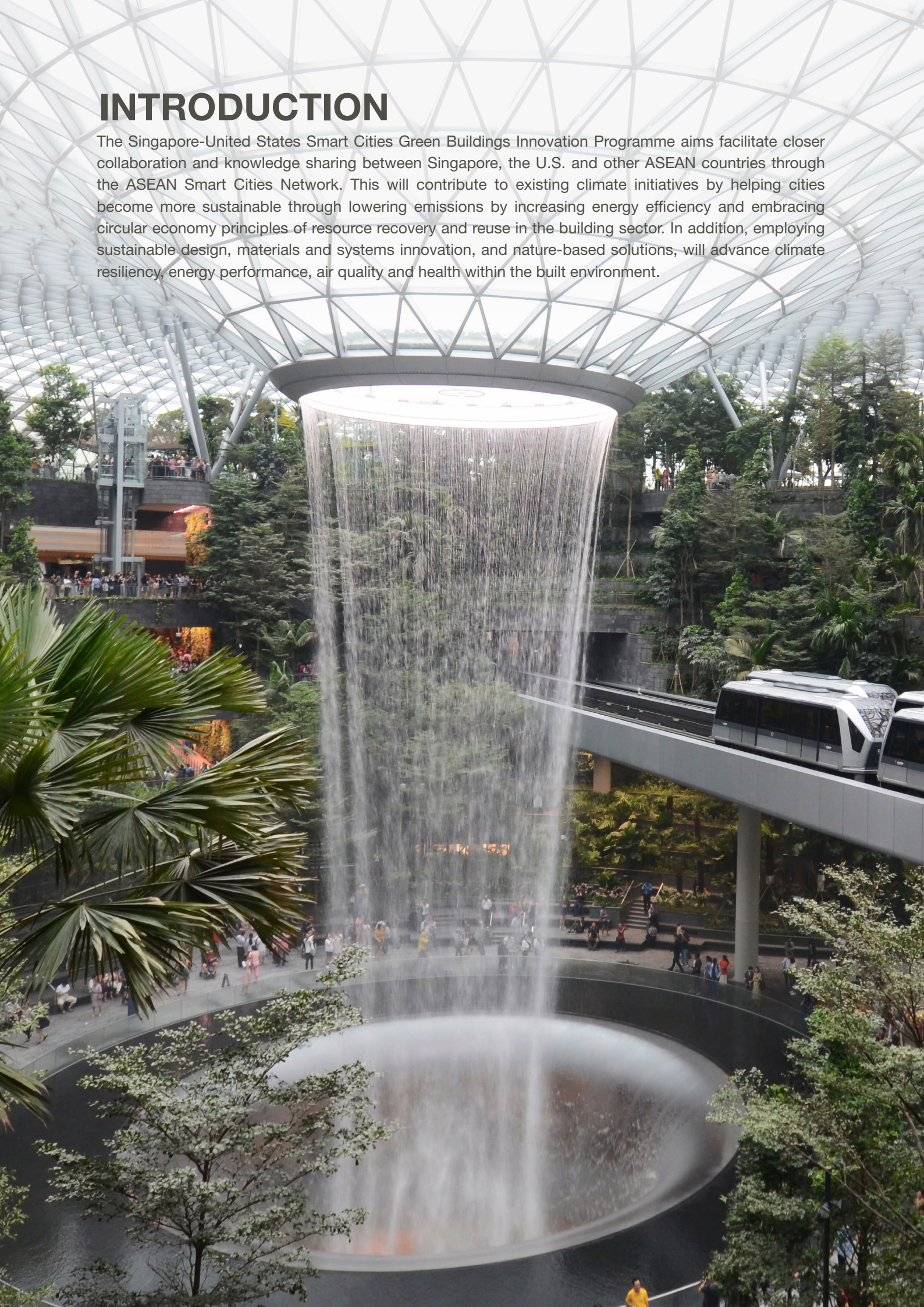
31 AUGUST ~ 6 SEPTEMBER 2022





# INTRODUCTION

The Singapore-United States Smart Cities Green Buildings Innovation Programme aims facilitate closer collaboration and knowledge sharing between Singapore, the U.S. and other ASEAN countries through the ASEAN Smart Cities Network. This will contribute to existing climate initiatives by helping cities become more sustainable through lowering emissions by increasing energy efficiency and embracing circular economy principles of resource recovery and reuse in the building sector. In addition, employing sustainable design, materials and systems innovation, and nature-based solutions, will advance climate resiliency, energy performance, air quality and health within the built environment.







## ABOUT THIS PROGRAMME

The course aims to advance smart, sustainable cities collaboration and promulgate green building standards, industry practices and innovation in ASEAN. It will also discuss and build collective knowledge in strengthening climate resilience in the region and help train a new generation of ASEAN urban planners, architects, and engineers in the latest techniques, materials and architectural designs to improve the air quality inside and outside of buildings, reduce the full lifecycle carbon footprint of the building and construction sector, and improve building siting and resilience to better adapt to climate impacts.

Complemented by policymakers, government officials and industry leaders, the sessions will incorporate sharing of sustainable policies, best practices and strategies to promote sustainability outcomes which are aligned with the United Nations' Sustainable Development Goals.





# PROGRAMME OUTLINE

Conducted through lectures, panel discussions and learning journeys by industry practitioners, academia and policymakers, the programme will:

- Provide insights on the Singapore Green Plan 2030 in advancing the city's sustainability agenda;
- Promote key implementers for a sustainable ecosystem;
- Encourage knowledge exchange on how Singapore and other ASEAN countries can develop collective resilience towards climate change, including the use of nature-based solutions and green infrastructure;
- Share internationally recognised Green Building certifications and rating tools, e.g. LEED, WELL, SITES, Green Mark; and
- Include learning journeys to exemplary projects, conference and networking sessions at the International Built Environment Week (IBEW) 2022.



# ABOUT THE ORGANISER



## BUILDING AND CONSTRUCTION AUTHORITY OF SINGAPORE

The Building and Construction Authority (BCA) champions the development and transformation of the built environment sector, in order to improve Singapore's living environment. BCA oversees areas such as safety, quality, inclusiveness, sustainability and productivity, all of which, together with our stakeholders and industry partners, help to achieve our mission to transform the Built Environment sector and shape a liveable and smart built environment for Singapore.

BCA, together with industry, developed the latest edition of Singapore Green Building Master Plan (SGBMP) in March 2021 to capture collective commitment that sets out Singapore's environmental sustainability ambitions for the built environment. Under the SGBMP, the "80-80-80 in 2030" targets are stepping up the pace to green 80% of Singapore's buildings by Gross Floor Area (GFA) by 2030, 80% of new developments (by GFA) to be Super Low Energy (SLE) buildings from 2030, and 80% improvement in energy efficiency to best-in-class green buildings by 2030.



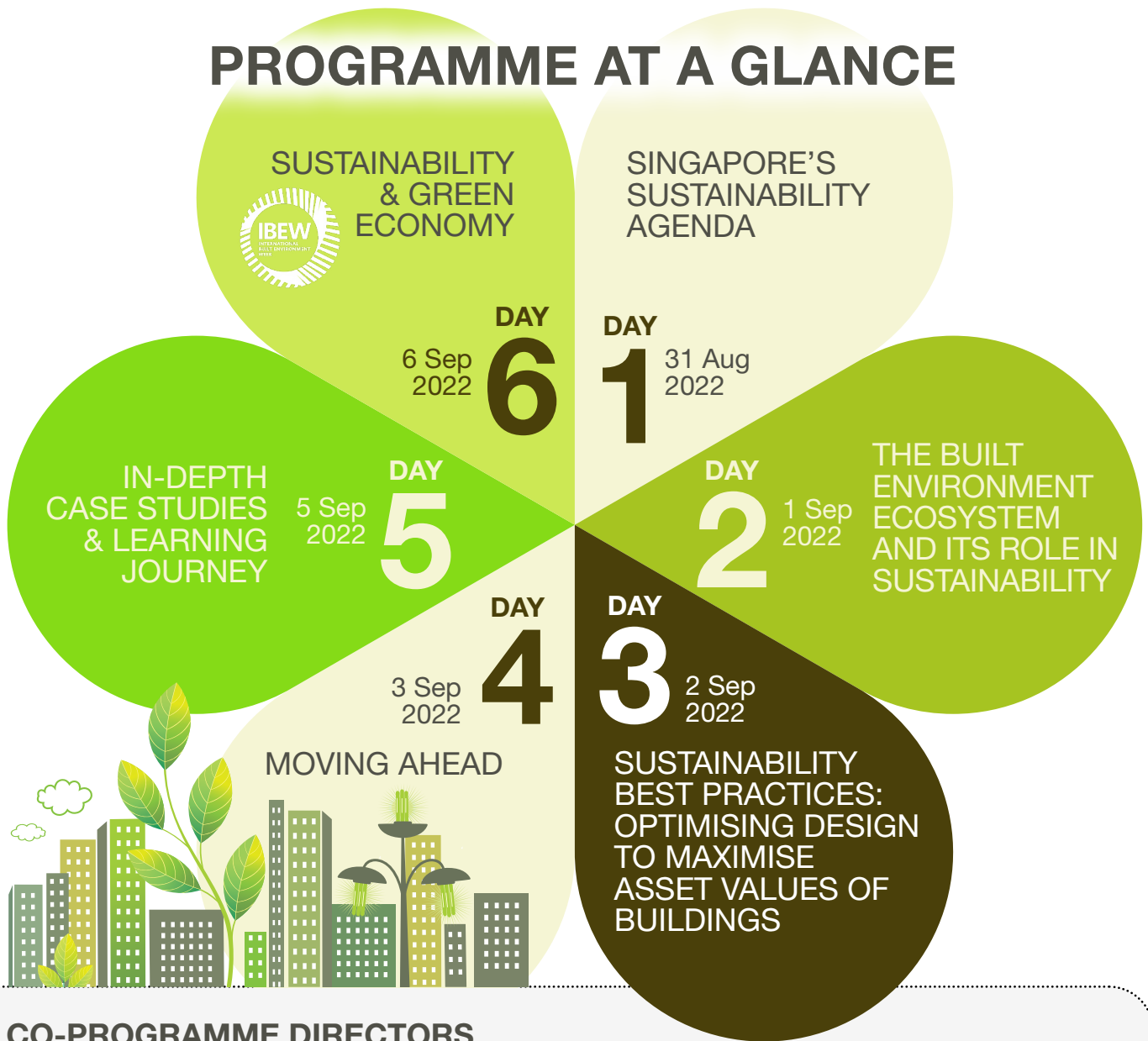
## BCA ACADEMY

### BCA ACADEMY

BCA Academy is the education arm of the Building and Construction Authority, Singapore, which offers a wide range of training and education programmes tailored to advance the built environment sector. These programmes are specifically designed for professionals, management and executive personnel, and technical specialists, as well as to attract a talent pipeline to the sector. In support of the national effort to transform Singapore into a sustainable and highly technologically advanced global city, BCA Academy conducts a suite of programmes in support of accreditation schemes for green personnel at various levels



# PROGRAMME AT A GLANCE



## CO-PROGRAMME DIRECTORS



### DR EDWARD ANG

*Director (Green Building Policy Department), Environmental Sustainability Group, Building and Construction Authority, Singapore (BCA)*

Dr Edward Ang leads a team in BCA to develop green building policies and implement the Singapore Green Building Master Plan measures to drive the built environment sector towards the 80-80-80 goals in 2030 as part of the overall Singapore Green Plan. He has more than 15 years of experience in public sector across a diverse portfolio ranging from research, sustainable construction, manpower and strategic policy to Green Mark, super low energy buildings and his latest portfolio on green building policies. He also sits in various industry and inter-agency committees related to environmental sustainability.



### MR VINCENT LOW

*Co-Founder & Vice President, G-Energy Holdings Pte Ltd*

Mr Vincent Low is the Co-Founder and Vice President of G-Energy Holdings. He is a Qualified Energy Services Specialists (QuESS), accredited by National Environment Agency, Singapore (NEA). He is also a Green Mark Advanced Accredited Professional (GMAAP), recognised and accredited by BCA and the Singapore Green Building Council respectively. Furthermore, Vincent chairs the Energy Efficiency Committee for Sustainability Energy Association of Singapore (SEAS) to lead the committee in promoting energy conservation strategies and is an adjunct faculty with BCA Academy.



# PROGRAMME HIGHLIGHTS

## DAY 1: SINGAPORE'S SUSTAINABILITY AGENDA

Participants will gain insights on Singapore's sustainability journey as we collectively address the challenges of climate change. Facilitated by policy makers, government officials and leaders, participants will be exposed to plans and strategies of Singapore's visions and targets towards sustainable development through the Singapore Green Plan 2030; the 80-80-80 goals call for the adoption of sustainable, innovative and energy efficient technologies in our districts, towns and buildings; with the following learning outcomes:

- Recognise key pillars and enablers of the Singapore Green Plan 2030;
- Identify the respective Singapore's government agencies' initiatives to pursue best-in-class standards to enable a more liveable, sustainable and healthier urban environment; and
- Explore the interactive Singapore City Gallery to learn about Singapore's remarkable physical transformation and urban planning efforts in integrating sustainability, community and economic vibrancy to enhance how the city live, work and play.



<b>Venue</b>	<b>BCA Braddell Campus 200 Braddell Road, Singapore 579700; Block C, Level 2, Room C2-5</b>
<b>Dress Code</b>	<b>Business attire (with coat/jacket)</b>
<b>9:00am</b>	<p><b>Programme Overview Introduction</b> Co-Programme Directors; Dr Edward Ang &amp; Mr Vincent Low</p> <p><b>Welcome Remarks</b> Mr Neo Choon Keong, Deputy CEO (Industry Development), Building and Construction Authority, Singapore</p> <p><b>Opening Speeches</b></p> <ul style="list-style-type: none"> <li>• Ms Koong Pai Ching, Deputy Director-General, Outreach and Planning, Technical Cooperation Directorate, Ministry of Foreign Affairs, Singapore;</li> <li>• Mr Chad R. Norberg, Economic Unit Chief, Embassy of the United States of America</li> <li>• Ms Helen Santiago Fink, Program Manager, U.S.-ASEAN Smart Cities Partnership, U.S. Department of State, Washington, D.C.</li> </ul>
<b>Singapore's Vision on Sustainable Development</b>	
<b>9:30am</b>	<p><b>Smart Nation, Smart City</b> Ms Shanny Tan, Deputy Director (Smart City Concepts), Smart City Projects Office (Smart Nation and Digital Government Office), Prime Minister's Office, Singapore</p>
<b>10:00am</b>	<b>Photo-taking and tea break</b>
<b>10:30am</b>	<b>Ice Breaker Session &amp; Day 1 Programme Introduction</b>
<b>11:00am</b>	<p><b>Singapore Green Plan 2030</b> Mr Wang Weixiang, Director (Environmental Policy Division), Ministry of Sustainability and the Environment, Singapore</p>
<b>Greening the City State: Planning &amp; Development with an Innovative Mindset</b>	
<b>11:30am</b>	<p><b>Singapore's Green Building Journey and Masterplans</b> Dr Edward Ang, Director (Green Building Policy Department), Environmental Sustainability Group, BCA</p>
<b>12:00pm</b>	<p><b>BCA Green Mark 2021: Raising Energy Performance &amp; Sustainability Outcomes</b> Mr Jeffery Neng, Deputy Group Director (Green Mark Department), Environmental Sustainability, Group, BCA</p>
<b>12:30pm</b>	<b>Lunch break</b>
<b>1:30pm</b>	<b>Coach ride to Urban Redevelopment Authority, Singapore (URA)</b>
<b>Learning Journey to Envisioning a Sustainable District</b>	
<b>2:00pm</b>	<p><b>Planning for a Sustainable Singapore</b> Ms Melissa Sapuan, Director, Knowledge Management Department, URA Academy, URA</p>
<b>2:30pm</b>	<b>Learning Journey to Singapore City Gallery by URA</b>
<b>4:00pm</b>	<b>Tea Break; with informal conversations on eco-districts</b>
<b>4:30pm</b>	<p><b>Discussion on Planning and Greening of the Built Environment</b> Co-Programme Directors; Dr Edward Ang &amp; Vincent Low</p>
<b>5:00pm</b>	<b>End of Day 1</b>



# TOPICS AND SPEAKERS

**DAY 1:** Singapore's Sustainability Agenda



**Ms Shanny Tan**  
Deputy Director (Smart City Concepts), Smart City Projects Office (Smart Nation and Digital Government Office), Prime Minister's Office, Singapore

## Smart Nation, Smart City

Singapore have come a long way as a Smart Nation. Singapore's journey in the use of Information and Communications Technology (ICT) in Singapore's development have paved the way for today's vision of becoming a Smart Nation and towards a Smart City. Gain insights on how Singapore could leverage ICT and other technologies or strategies towards a Smart City to improve the people's quality of life and improve the lived experiences of citizens.

**Ms Shanny Tan** is the Deputy Director of the newly formed Smart City Project Office in Smart Nation and Digital Government Office. She has spent more than decade managing Singapore's Parks and Greenery and enjoys engaging citizens to build local communities. She hopes to work closely with agencies within the Built Environment sector to explore more creative and ambitious ways of thinking about how tech can drive urban management and to encourage adoption of operational technology and cyber physical systems into everyday operations to improve the lived experiences of Singaporeans.



**Mr Wang Weixiang**  
Director (Environmental Policy Division), Ministry of Sustainability and the Environment, Singapore (MSE)

## Singapore Green Plan 2030

The presentation will give an overview of the Singapore Green Plan 2030, which comprises five key pillars, namely, City in Nature, Sustainable Living, Energy Reset, Green Economy, and Resilient Future, as well as two key enablers - Green Citizenry and Green Government. Zooming into the focus on Green Government or GreenGov.SG for short; under GreenGov.SG, we aim to green Government infrastructure and operations, as well as embed sustainability considerations in everything we do. Building design and facilities management will play a critical role in our greening journey.

**Mr Wang Weixiang** is the Director of Environmental Policy at MSE. He leads a division that is responsible for formulating environmental and sustainability policies, including the Singapore Green Plan 2030. He also leads the Public Sector Sustainability Office which drives sustainability within the public service through the GreenGov.SG initiative, and the SG Eco Office which manages the S\$50 million SG Eco Fund to support community projects that advance environmental sustainability. Before joining MSE, Weixiang spent 15 years in the Economic Development Board, Singapore in roles with increasing responsibilities in the Industry Development, International Operations and New Ventures divisions. Weixiang graduated from University of California, Berkeley with a Bachelor of Science (Chemical Engineering) degree and a Bachelor of Arts (Economics) degree. He is also a Sloan Fellow with a Master of Business Administration from Massachusetts Institute of Technology's Sloan School of Management.



## Singapore's Green Building Journey and Masterplans

**Dr Edward Ang**, Director (Green Building Policy Department), Environmental Sustainability Group, Building and Construction Authority, Singapore (BCA)

Buildings account for over 20% of Singapore's emissions. Singapore's Building and Construction Authority has rolled out initiatives towards a low-carbon built environment through successive green building masterplans since 2006. The latest edition of the Singapore Green Building Masterplan, launched last year as part of the larger Singapore Green Plan 2030, set out three key targets dubbed "80-80-80 in 2030". The presentation will share on the key green building strategies and considerations, co-created alongside industry stakeholders, experts, government agencies and the community.



# TOPICS & SPEAKERS

DAY 1: Singapore's Sustainability Agenda



**Mr Jeffery Neng**  
Deputy Group  
Director (Green Mark  
Department),  
Environmental  
Sustainability Group,  
Building and  
Construction Authority,  
Singapore (BCA)

## BCA Green Mark 2021: Raising Energy Performance & Sustainability Outcomes

BCA Green Mark scheme is a green building rating scheme developed with special focus on tropical context. It provides a nationally and globally recognised green building performance rating and serves as a key enabler to support Singapore's Green Building Journey and Masterplans. It provides a robust and leading method to assess and verify buildings for their environmental performance, assisting project teams and building owners to deliver and demonstrate high performing and sustainable buildings in Singapore. GM: 2021 aims to further stretch outcomes of buildings to substantially reduce the environmental impacts – focusing on whole life carbon, health and wellbeing, resilience, intelligence and maintainability. The presentation highlights the key enhancements in Green Mark 2021 and case studies of certified buildings in Singapore.

**Mr Jeffery Neng** is the Deputy Group Director overseeing Environmental Sustainability at BCA. He oversees several key green building initiatives under the Singapore Green Building Masterplan. These include the BCA Green Mark Scheme which certifies buildings on their level of environmental friendliness and legislation of Environmental Sustainability Regulations for building sector. Prior to his current position, he led the Facilities Management (FM) Project Office in BCA and worked with industry stakeholders to co-create initiatives and programmes to facilitate the transformation of the FM sector in Singapore. The scope includes manpower and industry development, promoting procurement best practices, enabling adoption of smart FM technologies, and facilitating research and innovation. Jeffery is a scholar of the former Construction Industry Development Board. He was conferred the Public Administration (Bronze) award in 2011 for his contributions in green building movement in Singapore.



**Ms Melissa Sapuan**  
Director (Knowledge  
Management  
Department),  
URA Academy, Urban  
Redevelopment  
Authority, Singapore  
(URA)

## Planning for a Sustainable Singapore

The presentation will cover how Singapore plans for a sustainable city by balancing across economic, social and environmental considerations, and optimising our limited land and sea space.

**Ms Melissa Sapuan** is currently Director (Knowledge Management) at URA, Singapore's land use planning and conservation authority. As part of the URA Academy, she leads efforts to develop learning resources to build professional planning expertise and facilitates knowledge management initiatives. She has two decades of public sector experience in the areas of urban planning, policy, and research. Melissa previously served as Deputy Director (Infrastructure) at the Ministry of National Development. Prior to this, she headed URA's Strategic Research Department and contributed to the development of research programmes, such as the Land and Liveability National Innovation Challenge.



# LEARNING JOURNEY

DAY 1: Singapore's Sustainability Agenda



## LEARNING JOURNEY

Photo credit: URA



### Singapore City Gallery

The Singapore City Gallery showcases Singapore's dramatic transformation over the past 50 years, to become one of the most liveable cities in Asia. It tells Singapore's development story, through 40 interactive and immersive exhibits that detail our planning challenges and the innovative solutions that tackle them.





# PROGRAMME HIGHLIGHTS



Thursday

**1**

SEP 2022

## DAY 2: THE BUILT ENVIRONMENT ECOSYSTEM AND ITS ROLE IN SUSTAINABILITY

Gearing towards the climate action agenda, this segment will highlight how various stakeholders can be key implementers to achieve a successful sustainability ecosystem. Complemented by leading firms, the sessions will incorporate discussions on how corporate commitments could drive mindsets towards sustainable developments; with these learning outcomes:

- Identify the United States' evolution of green buildings and how it influences environmental advocates, businesses, non-profit organisations etc.;
- Recognise and hear from thought leaders on the key enablers in driving their project teams to walk the sustainability talk right from the start; and
- Explore the first-of-its-kind development, Kampung Admiralty, that integrates housing with a wide range of social, healthcare, communal, commercial and retail facilities for the elderly.

<b>Venue</b>	<b>BCA Braddell Campus 200 Braddell Road, Singapore 579700; Block C, Level 2, Room C2-5</b>
<b>Dress Code</b>	<b>Smart casual attire with comfortable walking shoes</b>
<b>9:00am</b>	<b>Recap of Day 1 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>Effective Ecosystem: Making it Work</b>	
<b>9:15am</b>	<b>US Green Building Evolution, Industry Practices, &amp; Exemplary Projects</b> <ul style="list-style-type: none"> <li>• Ms Helen Santiago Fink, Program Manager, U.S.-ASEAN Smart Cities Partnership, U.S. Department of State, Washington, D.C.;</li> <li>• Ms Elizabeth Beardsley, Senior Policy Counsel, US Green Building Council, Washington, D.C.;</li> <li>• Ms Elizabeth Heider, Founder &amp; CEO, Heider Sustainability Advisors, LLC; and</li> <li>• Ms Eden Brukman, Senior Green Building Coordinator, San Francisco Department of the Environment.</li> </ul>
<b>10:15am</b>	<b>Tea break</b>
<b>10:45am</b>	<b>Building Sector Circularity</b> Ms Eden Brukman, Senior Green Building Coordinator, San Francisco Department of the Environment
<b>11:15am</b>	<b>Creating Sustainable Values in our Built Environment</b> Mr James Tan, Senior Manager (Communications & Partnerships), Singapore Green Building Council
<b>11:45am</b>	<b>Spearheading Green Building Capability Development for the Built Environment Sector</b> Mr Paul Juwono, Director (School of Professional & Specialist Education), BCA Academy, BCA
<b>12:15am</b>	<b>Innovation and Technology (I&amp;T) Development through Cities of Tomorrow R&amp;D Programme</b> Dr Ng Hsiao Piau, Programme Director (Advanced Construction & Innovation Planning Department), Built Environment Research and Innovation Institute, BCA
<b>12:45pm</b>	<b>Lunch break</b>
<b>Making the Sustainability Commitment</b>	
<b>1:45pm</b>	<b>Walking the Sustainability Talk</b> <ol style="list-style-type: none"> <li>Kampung Admiralty: New Forms of Sustainable Architecture; by Ms Pearl Chee, Director, WOHA</li> <li>Integrated Community Hubs: Better-than-Sustainable Aspirations; by Mr Seah Chee Huang, Chief Executive Officer, DP Architects</li> <li>TBA; by Ms Elke Kornalijnslijper, Head of Energy and Sustainability Services, SEA JLL</li> <li>Sustainable Data Centres; by Ms Debbie Seibold Egeland, Environmental Regional Solutions Director (APAC), Jacobs</li> </ol>
<b>2.45pm</b>	<b>Panel Discussion on Sustaining the Sustainability Journey</b> Moderated by Mr Vincent Low, Co-Founder & Vice President, G-Energy Holdings
<b>3:45pm</b>	<b>Tea Break</b>
<b>4:15pm</b>	<b>Coach ride to Kampung Admiralty</b>
<b>Learning Journey to Kampung Admiralty</b>	
<b>4:45pm</b>	<b>Kampung Admiralty: New forms of Sustainable Architecture</b> Ms Pearl Chee, Director, WOHA
<b>5:45pm</b>	<b>Wrap Up of Day 2 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>6:00pm</b>	<b>End of Day 2</b>



# TOPICS AND SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability

## US Green Building Evolution, Industry Practices, & Exemplary Projects

This session will introduce the concept of green building, using the US as an example. Explanation of the origins of green building in the US, and how it spread through engagement of environmental advocates, businesses, non-profit organizations, and governments will be shared. Also, on how green building systems are designed to evolve and the significance of market recognition; with examples that highlight the key elements of green building: energy, water, materials, health, biodiversity, and transportation, as well as the role of independent third-party certification to verify performance and advance corporate commitments that drive mindsets toward sustainable development.



**Ms Helen Santiago Fink**  
Program Manager  
(U.S.-ASEAN Smart  
Cities Partnership), U.S.  
Department of State,  
Washington, D.C.

**Ms Helen Santiago Fink** currently manages the programmatic, technical and financial aspects of more than 20 projects' initiatives to address urbanisation challenges in Southeast Asia. She works at the intersection of the social, natural, and physical sciences. With more than 25 years of professional experiences, she brings multi-disciplinary expertise in sustainable development, climate change mitigation/adaptation and resilience, urban (systems) planning, energy-efficient buildings, community and economic development. Helen has worked at the global, national, and local scale as technical advisor and program manager for organizations, including the United States Agency for International Development (USAID), United Nations Environment Programme (UNEP), World Bank, European Commission, Federal Emergency Management Agency (FEMA), and the Organization for Security and Cooperation in Europe (OSCE). Helen's publications highlight how nature-based solutions can accelerate urban sustainability and climate resilience. Additionally, she holds a Bachelor of Arts (Economics), Master of Arts in Urban and Regional Planning and undertook doctoral work in Eco-cities and Climate Change at the BOKU (University of Natural Resources and Life Sciences) in Vienna Austria.



**Ms Elizabeth  
Beardsley, P.E.**  
Senior Policy Counsel,  
US Green Building  
Council, Washington,  
D.C.

**Ms Elizabeth (Liz) Beardsley** brings more than 25 years of professional experience working on environmental and climate issues both as an engineer and lawyer. In her current role, Liz serves as Senior Policy Counsel at the U.S. Green Building Council, a global environmental non-profit best known for LEED, the world's most widely used green building rating program. She provides strategic green building law and policy guidance and direction across the international, federal, state and local spectrum, and her work focuses on connecting building policy to climate mitigation. Liz is a sought-after expert and spokesperson for USGBC who has been interviewed by dozens of media outlets such as the LA Times, Yale Climate Connection, BBC News: Business Matters etc. She is also an accomplished writer whose work has been published in Governing Magazine, Green Operations, USGBC+, and others. Since joining USGBC in 2014, Liz has represented the organization at multiple United Nations COP climate change conferences and currently serves on the Board of the Virginia Energy Efficiency Council (VAEEC). She has authored or co-authored policy papers such as State and Local Policy Proposal: Property Tax Incentive for GHG Reductions (2019).



# TOPICS & SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability



**Ms Elizabeth Heider**  
Founder & Chief  
Executive Officer,  
Heider Sustainability  
Advisors, LLC

Known for her work in making business cases for green and net zero energy buildings, **Ms Elizabeth (Beth) Heider** works at the nexus of design, construction, sustainability, and good business. She is a licensed architect, early in her career specialising in the preservation and adaptive use of large historic buildings. For the last three decades, she has held leadership positions in the construction industry - from 2013 to 2020 as Chief Sustainability Officer for Skanska's USA, one of the largest construction companies in the world. In 2020, she founded Heider Sustainability Advisors to catalyze prosperous and sustainable business through research and advisory services. Among other honors, she has been elevated to Fellow of the American Institute of Architects and LEED Fellow by the US Green Building Council (USGBC). She is delighted to have been recognized as a Living Hero by the International Living Future Institute (ILFI) and to have received USGBC's Kate Hurst Leadership Award for her "passion in helping and inspiring others and creating lasting change." Her Board service includes USGBC, International Living Future Institute (ILFI), the Institute for Sustainable Infrastructure (ISI) Envision Review Board and Excel Academy. She is a graduate of the University of Virginia's School of Architecture.



**Ms Eden Brukman**  
Senior Green Building  
Coordinator,  
San Francisco  
Department of the  
Environment

## Building Sector Circularity

Construction activities are responsible for 23% of global greenhouse gas emissions, most from material production, and more than 30% of global resource use. Despite the great cost and ongoing demand for building materials, the majority of remnant, salvageable, and surplus items are landfilled or incinerated. This session will re-form the traditional linear take-make-waste pattern for buildings and their materials and offer strategies that reduce embodied carbon and support circularity.

For more than 25 years, **Ms Eden Brukman** has focused on establishing socially and environmentally responsible solutions for human habitat as a licensed architect, outreach strategist, and standards developer. She co-authored Living Building Challenge<sup>SM</sup> and directed its evolution and global deployment; was the first Technical Director of the Health Product Declaration<sup>®</sup> Collaborative; and contributed to the early development of other programs such as the Pharos Project<sup>TM</sup>, Declare<sup>SM</sup>, and EcoDistricts<sup>®</sup>. Eden currently serves as the Senior Green Building Coordinator for the City and County of San Francisco Department of the Environment. She is a recipient of the prestigious Buckminster Fuller Challenge award and Women in Sustainability Leadership Award, and was designated a Living Building Hero and LEED Fellow, as well as one of the Forty under 40 in Portland, Oregon. Also, a licensed architect, her advocacy efforts have led to restorative developments, reform of conventional building industry resource flows, and the creation of a network of local action groups in cities all over the world.



# TOPICS AND SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability



**Mr James Tan**  
Senior Manager  
(Communications &  
Partnerships),  
Singapore Green  
Building Council  
(SGBC)

## Creating Sustainable Values in our Built Environment

The built environment sector is composed of numerous stakeholders working interdependently to provide the places and spaces which form the very fabric of modern society. With the onus on decarbonisation ramping up across all sectors, the built environment – which is responsible for 40 percent of global carbon emissions while only occupying 3 percent of the world’s total land mass – needs to step up sustainability efforts to help mitigate the increasingly dire effects of climate change while providing people with safe, healthy and equitable buildings. Formed as a public-private partnership, the Singapore Green Building Council (SGBC) maintains a stable of programmes and initiatives intended to derive, develop and deliver value to further built environment sustainability. In this presentation, SGBC will outline a number of their activities that go towards fostering an effective, efficient built environment ecosystem not only for industry stakeholders but also for the ultimate beneficiaries of greener buildings – everyone, everywhere.

**Mr James Tan** leads the communication of sustainability outcomes and oversees partnerships for the SGBC. With nearly a decade of experience in green building, sustainability leadership, built environment decarbonisation, net zero building strategies and ESG metrics, he engages with every type of organisation across the building and construction value chain to help achieve their sustainability objectives. At SGBC, James advances, actualises and advocates for built environment sustainability through a spectrum of engagement pathways and avenues tailored for organisations at every stage of their own corporate sustainability journey. He has spearheaded the rollout of several of these programmes, notably Greenbuildings.sg, the Council’s permanent consumer engagement programme, the biannual SG Green magazine, the SGBC-BCA Leadership in Sustainability Awards programme as well as the Green Schools Initiative. James is adept at catalysing tri-sector synergistic collaborations with different industry players to achieve beneficial outcomes for the greater community, having facilitated the creation of the JOULES Smart Centre @ Bukit View Secondary School and the Sustainability Experience Centre @ Nanyang Polytechnic.



**Mr Paul Juwono**  
Director (School of  
Professional & Specialist  
Education),  
BCA Academy,  
Building and  
Construction Authority,  
Singapore (BCA)

## Spearheading Green Building Capability Development for the Built Environment Sector

The session highlights BCA Academy’s comprehensive training framework to groom green building professionals, specialists and experts who can design and manage sustainable buildings. The holistic approach towards capability development allows flexible yet progressive pathways for aspiring students, graduates, practising professionals and leaders to acquire knowledge, qualifications and specialisation in green building to enable them to enhance their professionalism in the sector and steer organisations towards greater competitiveness for growth.

As Director of BCA Academy’s School of Professional & Specialist Education, **Mr Paul Juwono** oversees the efforts in the formulation of capability development frameworks for the professionals and specialists of the built environment sector. This includes the development and implementation of relevant and recognised professional, specialist and executive training programmes to meet the training needs of the industry practitioners, so that they could be well-equipped with the knowledge and skills to contribute towards the advancement of the built environment sector.



# TOPICS & SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability



**Dr Ng Hsiao Piau**  
Programme Director  
(Advanced Construction  
& Innovation Planning  
Department),  
Built Environment  
Research and Innovation  
Institute, Building and  
Construction Authority,  
Singapore (BCA)

## Innovation and Technology (I&T) Development through Cities of Tomorrow R&D Programme

Launched in 2017, the Cities of Tomorrow R&D Programme (CoT) is a multi-agency effort led by Ministry of National Development (MND) to identify challenges that cities face and develop R&D solutions to address the challenges. The CoT programme was developed by the MND Family in conjunction with partner agencies, with the vision of establishing Singapore as a highly liveable, sustainable and resilient city of the future, and as a vibrant urban solutions hub that features cutting-edge urban solutions. Under RIE2025, this vision will be achieved through the development of integrated R&D solutions in 5 key verticals and supported by 3 enabling horizontals. CoT will support R&D across the project value chain from upstream research to downstream technology deployment, with an emphasis on projects that have high potential for practical implementation and commercialisation. Research outcomes would be delivered in collaboration with the research community and industry partners.

**Dr Ng Hsiao Piau** is a Programme Director at Building and Construction Authority (BCA) Built Environment Research and Innovation Institute (BERII). He heads the Advanced Construction & Innovation Planning Department which oversees the BE Robotics and Cities of Tomorrow R&D Programmes and support various research and innovation efforts in Robotics & Automation, and Advanced Construction Materials. The department also manages the BE Living Lab Framework and Building Innovation Panel who facilitates test-bedding and deployment of innovative solutions. In addition to his role at BCA, Hsiao Piau serves as an Adjunct Assistant Professor at National University of Singapore and an Adjunct Lecturer at Nanyang Polytechnic. He holds a PhD and Bachelor Degree in Electrical Engineering from National University of Singapore, and did his post-doctoral training at Harvard University. He was a recipient of the A\*STAR Graduate Scholarship (PhD) and A\*STAR Graduate Scholarship (Post-Doc).



**Ms Pearl Chee**  
Director,  
WOHA

## Kampung Admiralty: New Forms of Sustainable Architecture

A one-stop community-cum-residential integrated development, Kampung Admiralty is a flagship project that brings together a multitude of programmes under one roof. Commissioned on a tight 0.9Ha site with an imposed height limit of 61m AMSL, the development helms the exploration of inter-community dynamics and urban density in land scarce Singapore, where the increased stress on the ground level demands creative ways of intensifying land use. The scheme builds upon a layered 'club sandwich' approach comprising a vibrant, public People's Plaza with sheltered tropical community spaces, retail and Hawker Centre on the ground tier, Admiralty Medical Centre spread out across two floors in the mid-tier, and a tranquil, more intimate and semi-private Community Park with the Senior Care Centre, Childcare Centre, Senior Activity Centre, Sky Terrace and Studio Apartments for seniors on the new upper ground tier. These three distinct multi-level zoning tiers juxtaposes the various building uses into an architecturally sustainable integrated solution that not only results in richness and diversity of cross-programming, but also frees up the ground level for activity generators while maximising the footprint to create a generous urban umbrella that shelters a breezy tropical plaza below.

As a Director with WOHA, **Ms Pearl Chee** leads its project teams through design execution to project construction & implementation of innovative and award-winning projects which includes both private and public projects. Pearl graduated with a Bachelor of Architecture from the School of Architecture, National University of Singapore and is a member of both the Board of Architects and the Singapore Institute of Architects. Complementing her professional work, Pearl is a Green Mark Accredited Professional and Universal Design Assessor.



# TOPICS AND SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability



**Ar Seah Chee Huang**  
Chief Executive Officer,  
DP Architects

## Integrated Community Hubs: Better-than-Sustainable Aspirations

This presentation looks at the integrated community hub typology and the way these nodal developments leverage their urban context and programmatic offerings to generate a better-than-sustainable hub ecology for the city. Through these projects, we also examine the complexities of synergistic operations within a multi-stakeholder framework, and analyse specific urban design strategies and the participatory approach to build social capital and support closed-loop environmental outcomes.

**Ar Seah Chee Huang** is the CEO of DP Architects. He is a firm believer in purpose-driven architecture that synergises economic, environmental and social dynamics, to bring positive impact and delight to everyday life. His design pursuits include Singapore Sports Hub, Our Tampines Hub, Bukit Canberra and Punggol Regional Sports Centre – all pioneering models of integrated community, sports and lifestyle hubs in Singapore. Chee Huang champions corporate social responsibility initiatives including Goodlife! Makan, which received the prestigious President’s Design Award 2020 for its progressive approach to senior care; Project Bus Stop, an innovative prototype bus shelter; and Heartware Network, a co-workplace for youth volunteers. An advocate of the architecture profession, Chee Huang led the fraternity as President of the Singapore Institute of Architects from 2018 to 2020 to drive sustainable design, ethical and enterprising practices grounded in innovative and social causes. He partakes actively in the larger discourse of the built environment in design advisory panels and committees for various agencies and institutions.



**Ms Debbie Seibold Egeland**  
Environmental Regional  
Solutions Director  
(APAC), Jacobs

## Sustainable Data Centres

The presentation will discuss the importance of sustainability for data centres and highlight some project examples that cover corporate ESG, Site Selection, Scope 3 including embodied carbon, Operational Carbon (sourcing low-carbon energy), and sustainable design.

**Ms Debbie Seibold Egeland** brings 18 years of Environmental Consulting experience to her current role as APAC Environmental Regional Solutions Director. She is responsible for bringing a team of technical experts from around the world together to solve some of the most complex environmental challenges. Prior to moving to Singapore in 2019, Debbie worked in Seattle, Washington, Oakland, California, and Philadelphia, Pennsylvania, USA. Debbie has served on numerous sustainability projects focusing on advanced facilities including data centres. Her current projects include Embodied Carbon, Scope 3, ESG, Energy Efficiency, Hydrogen, and Climate Risk. Debbie has a Bachelor of Science in Civil & Environmental Engineering from Duke University and a Masters in Civil & Environmental Engineering from Stanford University. She is a licensed Professional Engineer in the state of California.



# TOPICS & SPEAKERS

**DAY 2:** The Built Environment Ecosystem and its role in Sustainability



**Ms Elke Kornalijnslijper**  
Head of Energy and Sustainability Services, SEA, JLL

**Ms Elke Kornalijnslijper** is the Head of Energy & Sustainability Services (ESS) for Southeast Asia. Her responsibilities include leading the SEA team, working closely with investors and occupier clients to understand and refine their energy and sustainability challenges and solution needs, promoting ESS service offerings across the region, and driving JLL's overall Sustainability Ambition. Elke has over 16 years' experience in the energy, sustainability and cleantech industry in commercial, product and innovation roles. She has deep knowledge of the demand and supply side of energy, gas and cooling and worked with a broad range of (smart) building technologies such as HVAC optimization, fault detection, energy management, etc. and has a broad network. Elke uses her knowledge to drive the built environment to Net Zero Carbon and Healthier workplaces – from developing a strategy to taking the actions to realise the targets.



## Panel Discussion on Sustaining the Sustainability Journey

**Mr Vincent Low**, Co-Founder & Vice President, G-Energy Holdings

The session aims to be an interactive, exchange of thoughts and ideas amongst industry leaders on green building design towards a low-carbon and sustainable built environment. The panel discussion will highlight the importance and ways of achieving an integrative, sustainable urban systems from multidisciplinary perspectives.



## LEARNING JOURNEY



Photos credit: Patrick Bingham-Hall

### Kampung Admiralty

Kampung Admiralty is Singapore's first integrated public development that brings together a mix of public facilities and services under one roof. The traditional approach is for each government agency to carve out their own plot of land, resulting in several standalone buildings. This one-stop integrated complex, on the other hand, maximises land use, and is a prototype for meeting the needs of Singapore's ageing population. The close proximity to healthcare, social, commercial and other amenities support inter-generational bonding and promote active ageing in place. The Community Plaza is a fully public, porous and pedestrianised ground plane, designed as a community living room. Within this welcoming and inclusive space, the public can participate in organised events, join in the season's festivities, shop, or eat at the hawker centre. The breezy tropical plaza is shaded and sheltered by the Medical Centre above, allowing activities to continue regardless of rain or shine.



# PROGRAMME HIGHLIGHTS



Friday  
**2**  
SEP 2022

## DAY 3: SUSTAINABILITY BEST PRACTICES: OPTIMISING DESIGN TO MAXIMISE ASSET VALUES OF BUILDINGS

With internationally recognised green building rating tools in place, participants will hear from multidisciplinary firms on how stakeholders each play a significant role in integrating sustainability into their practices. These in turn, help to strengthen firms' capabilities and create opportunities to contribute towards climate action agenda; covering these learning outcomes:

- Recognise various US green building standards and certifications;
- Identify industry best practices and strategies to support sustainability development of ASEAN Smart City Network; and
- Explore Singapore's tallest building, Guoco Tower, on its sustainable features which help to attain both prestigious BCA Green Mark Platinum and LEED Platinum rating.

<b>Venue</b>	<b>BCA Braddell Campus 200 Braddell Road, Singapore 579700; Block C, Level 2, Room C2-5</b>
<b>Dress Code</b>	<b>Smart casual attire with comfortable walking shoes</b>
<b>9:00am</b>	<b>Recap of Day 2 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>Best Practices with Sustainability at Heart</b>	
<b>9:15am</b>	<b>US Green Building Standards &amp; Certifications</b> <ul style="list-style-type: none"> <li>• Ms Elizabeth Beardsley, Senior Policy Counsel, US Green Building Council; and</li> <li>• Ms Elaine Tan, ESD Leader (Climate Services &amp; Sustainability), Arup Singapore</li> </ul>
<b>10:15am</b>	<b>Tea Break</b>
<b>10:45am</b>	<b>Commitment towards Net Zero through Integrated Planning and Innovation</b> <ul style="list-style-type: none"> <li>• Mr Praveen Hassan Chandrashekar, Head of Sustainability and Resilience Office, Surbana Jurong Consultants</li> <li>• Ms Elizabeth Heider, Founder &amp; CEO, Heider Sustainability Advisors, LLC</li> </ul>
<b>11:45am</b>	<b>The Journey Towards the First Zero Energy Commercial Building: Keppel Bay Tower</b> Mr Samuel Ng, President (Singapore & Regional Investments), Keppel Land Limited
<b>12:15pm</b>	<b>Lunch break</b>
<b>1:15pm</b>	<b>Sustainable Homes: Concept to Action, Making the Difference</b> Ms Farizan d'Avezac de Moran, Founder, GreenA Consultants
<b>1.45pm</b>	<b>Environmental Sustainability Design: Holistic Assessments of Evolving Green Building Design &amp; Operation Strategies</b> Mr Chen Wenjie, Associate Director, Building System & Diagnostics Pte Ltd
<b>2:15pm</b>	<b>Coach ride to Guoco Tower</b>
<b>Learning Journey to Singapore's Tallest Building</b>	
<b>2:45pm</b>	<b>Learning Journey to Guoco Tower by GuocoLand Limited</b>
<b>4:00pm</b>	<b>Tea Break</b>
<b>4:30pm</b>	<b>Wrap Up of Day 3 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>5:00pm</b>	<b>End of Day 3</b>



# TOPICS & SPEAKERS

**DAY 3:** Sustainability Best Practices: Optimising Design to maximise Asset Values of Buildings



## US Green Building Standards & Certifications

**Ms Elizabeth Beardsley, P.E.**, Senior Policy Counsel, US Green Building Council, Washington, D.C.

**Ms Elaine Tan**, ESD Leader (Climate Services & Sustainability), Arup Singapore

Weaving in projects representing different building types and certifications, we will highlight the roles of the project team and show how the owner's priority goals inform the selection of key practices and strategies. Through these examples, we will provide information on advanced concepts in green building including different metrics and the carbon balance approach to emissions and net zero; accounting for embodied carbon and construction phase emissions, and "whole life" carbon; all-electric buildings; and others. We will conclude by reviewing how the project team + clear goals + certification system = drive results.



**Ms Elaine Tan** leads the sustainability team in ARUP Singapore to deliver regional projects across Southeast Asia. With a background in Engineering, Elaine brings a wide range of sustainability expertise to clients. Her strength lies in building performance and her knowledge of total design delivery, working across multi-disciplinary teams to deliver efficient and practical solutions. Through her career, she has delivered multiple award-winning sustainability projects including CapitaSpring, Paya Lebar Quarter and Guoco Tower.

## Commitment towards Net Zero through Integrated Planning and Innovation

New climate model analyses, and methods combining multiple lines of scientific evidence has led to the conclusion that human intervention has a greatest influence on a wider range of climate variables, including weather and climate extremes. The climate change has greatly impacted the nature cycles and has presenting a serious existential threat to the whole world. The presentation focuses on some of the key international and regional strategies and mitigation measures to fight climate change. The presentation shall cover the key action plans towards decarbonization roadmap. Lastly, Mr Praveen will share the sustainability and multidisciplinary consultancy services, and innovative technologies, as demonstrated through some of the used cases from Surbana Jurong's projects across the region.



**Mr Praveen  
Hassan**

**Chandrashekar**  
Head of Sustainability  
and Resilience Office,  
Surbana Jurong  
Consultants

**Mr Praveen Hassan Chandrashekar** is leading his team to push the boundaries of Sustainable Design and have spearheaded the Net Zero Energy and Super Low Energy designs in Surbana Jurong. He possesses a strong passion for sustainability and environmentally conscious Passive and Active Design and has more than 10 years of experience in the field of environmentally sustainable design and building performance assessment. Prior to this, Praveen has worked as a Mechanical Engineer for 6 years and involved in many high-profile projects. Praveen is a Certified Green Mark Accredited Professional, LEED Accredited Professional and EDGE Expert with experience ranging across different typologies for projects including in Singapore and across the region. He was part of the design team that oversaw the planning, design and supervision of Asia's first high-rise rotatable laboratory located at BCA Academy. He played a key role and lead the ESD, Mechanical and BMS design. The project received "2017 Minister's Award" and "IES Prestigious Engineering Achievement Award 2017". He was the project lead for formulating the new standards on "Design for maintainability" involving Govt. agencies, designers, and built environment stakeholders.

# TOPICS AND SPEAKERS

**DAY 3:** Sustainability Best Practices: Optimising Design to maximise Asset Values of Buildings



## Commitment towards Net Zero through Integrated Planning and Innovation

**Ms Elizabeth Heider**, Founder & CEO, Heider Sustainability Advisors, LLC

Realizing the Net Zero future we urgently need will take more than commitment, it will take action by all stakeholders across the building and infrastructure market. From policy makers, to developers, designers, builders, planners, researchers, to researchers, innovators and investors along the entire supply chain. This session will explore actions taken and progress made against “green” and Net Zero commitments, looking at lessons learned, useful tools and promising approaches to inspire your own work.



**Mr Samuel Ng**

President (Singapore & Regional Investments),  
Keppel Land Limited

## The Journey Towards the First Zero Energy Commercial Building: Keppel Bay Tower

This session explores the challenges and breakthroughs in transforming the 20-year-old Keppel Bay Tower into Singapore’s first Green Mark Platinum Zero Energy commercial building, with insights into piloting innovative technologies and energy efficient systems under BCA’s Green Buildings Innovation Cluster (GBIC) programme and best practices that will help the industry move towards a greener built environment. The presentation will also illustrate how Keppel Land is pushing the envelope of environmental sustainability to achieve business goals and address climate change.

**Mr Samuel Ng** has years of professional experience in project management, business development, procurement, sales & marketing and P&L roles, spanning industries such as real estate, hospitality, manufacturing, information technology and telecommunication. Appointed as the President (Singapore & Regional Investments) in February 2022, Samuel leads Keppel Land’s operations in Singapore and regional markets, driving smart and sustainable strategies for business development, investment, nearshore solutions and residential developments. Samuel has started his career at Keppel Land in March 2011 in its China operations, handling the investment, development, marketing and sales/leasing of diverse projects across Beijing, Chengdu, Kunming, Shanghai, Tianjin and Wuxi. Prior to his current role, he was President (Indonesia), heading the company’s operations in Jakarta and Bintan for the residential, commercial, hospitality and golf developments.



**Ms Farizan d’Avezac de Moran**

Senior Partner,  
GreenA Consultants

## Sustainable Homes: Concept to Action, Making the Difference

As the sustainability agenda peaks, it gets harder to see the difference between reality, perception, and the future. The race to mitigate climate change is of the equal race to contain health outbreaks, famine, and the ever-widening poverty gap. The presentation will look at how collaboration, clear planning, and leadership string together ready opportunities that can bring concepts to action. The presentation will focus on sustainability in the housing sector and stakeholder management challenges.

**Ms Farizan d’Avezac de Moran** is Senior Partner of GreenA Consultants, a sustainability building consultancy firm based in Singapore and Africa. She has worked with many organizations as an independent consultant; GIZ, UN Habitat, ICF through USAID programme, Green Global Growth Institute on various works of energy codes and capacity building. She is also instrumental in many government-to-government collaboration in sustainability knowledge management which sees the launch of the Green Minimum Compliance for Rwanda, and Eco protocol for City of Panama. She was conferred the Green Advocate of the Year for BCA-SGBC Green Building Individual Awards in 2015, and currently is a Board Member of Singapore Green Building Council and Vice President for Singapore Inst of Building Limited. She is also a LEED, WELL AP, Living Future AP, Green Mark Advanced Accredited Professional (GMAAP) and EDGE Expert.



# TOPICS & SPEAKERS

**DAY 3:** Sustainability Best Practices: Optimising Design to maximise Asset Values of Buildings



**Mr Chen Wenjie**  
Associate Director,  
Building System &  
Diagnostics

## Environmental Sustainability Design: Holistic Assessments of Evolving Green Building Design & Operation Strategies

Designing right from the start makes a huge difference - it facilitates project teams to avoid over-designing systems and adding to wasted resources, energy and costs. Hence, having early involvement throughout the project phase - from planning & design to operation and maintenance, is essential. Find out how green buildings could garner tangible and intangible benefits with building analyses studies.

**Mr Chen Wenjie** is the Associate Director of Building System & Diagnostics (BSD) who supervises all of BSD's new building projects as well as overseeing projects in China. Wenjie has been a green building engineer since he graduated from Nanyang Technological University (NTU). He has accumulated a wealth of experience in energy efficiency and green buildings codes and design strategies, especially in enhancing Health and Well-being of occupants. He is conversant in local building codes & regulations and other regulatory framework dealing with the built environment. He has provided ESD advisory to buildings and fitouts, for both private and public project Owners; across all building typologies including master plans and districts. His experience in the built environment and knowledge on energy and environmentally efficient designs enabled him to provide advisory in reducing energy and resource consumptions, as well as obtaining green building certification. Being an Earthcheck Auditor, he has also audited and provide advisory to improve the ESG practices of more than 30 hotels under Banyan Tree, Alila, Marco Polo, etc established hotel brands. Wenjie is also a WELL AP, Green Mark AAP and LEED AP.



## LEARNING JOURNEY



### Guoco Tower

Attained the LEED Platinum and BCA Green Mark Platinum (Office and Commercial) award, Guoco Tower is estimated to save more than 30% and 35% in energy and water savings respectively. These are achieved through the implementation of high-performance technologies and solutions. To enhance occupants' health and well-being through the promotion of regular exercises, bike stations are made available in the Tanjong Pagar Park and inside car parking to facilitate users with bicycles. Moreover, changing rooms for bicycle users are provided in each office levels to encourage bicycle usage.



Photos credit: GuocoLand Limited

# PROGRAMME HIGHLIGHTS



Saturday  
**3**  
SEP 2022

## DAY 4: MOVING AHEAD

Participants will get to experience and explore the various green features and innovative technologies within an exemplary Positive Energy (PE) development, as well as visit the world's first high-rise rotatable laboratory for the tropics. A high impact leaders in-conversation forum will also shed light on how policy makers and thought leaders drive changes in advancing sustainability agenda in response to climate change. The learning outcomes will cover:

- the latest cutting-edge technologies in BCA ZEB Plus and how the BCA Skylab allows technologies to be tested under real-world conditions; and
- the importance of working collectively towards greater benefits and opportunities in strengthening our collaboration in areas of climate change and green economy for Singapore, the US, and ASEAN countries.

<b>Venue</b>	<b>BCA Braddell Campus 200 Braddell Road, Singapore 579700; Block C, Level 2, Room C2-5</b>
<b>Dress Code</b>	<b>Business attire (with coat/jacket)</b>
<b>9:00am</b>	<b>Recap of Day 3 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>Learning Journey to Living Lab for the Built Environment</b>	
<b>9:15am</b>	<b>BCA ZEB Plus and Skylab by BCA</b>
<b>10:15am</b>	<b>Tea Break</b>
<b>10:45am</b>	<b>Living Future for All</b> <ul style="list-style-type: none"> <li>• Ms Elizabeth Heider, Founder &amp; CEO, Heider Sustainability Advisors, LLC;</li> <li>• Ms Eden Brukman, Senior Green Building Coordinator, San Francisco Department of the Environment</li> <li>• Ms Elizabeth Beardsley, P.E., Senior Policy Counsel, US Green Building Council, Washington, D.C.</li> </ul>
<b>Concluding Forum: In-Conversation with Green Building Stewards</b>	
<b>11:30am</b>	<b>Pushing the Sustainability Boundaries @ Academic Tower, T1-1</b> <b>Panelists:</b> <ul style="list-style-type: none"> <li>• Mr Tan Kiat How, Senior Minister of State, Ministry of Communications and Information &amp; Ministry of National Development</li> <li>• Ar. Tang Kok Thye, Associate Partner/ President, ADDP Architects LLP/ Singapore Green Building Council</li> <li>• Ms Elizabeth Beardsley, P.E., Senior Policy Counsel, US Green Building Council, Washington, D.C.</li> <li>• Delegate rep from the ASEAN Smart Cities Network</li> </ul> <b>Moderator:</b> Ar. Prof. Tai Lee Siang; Head of Pillar, Architecture and Sustainable Design; Director, DesignZ; Programme Director, Design and Artificial Intelligence, Singapore University of Technology and Design (SUTD)
<b>12:30pm</b>	<b>Certificate Presentation Ceremony and Closing Remarks</b> <ul style="list-style-type: none"> <li>• Mr Tan Kiat How, Senior Minister of State, Ministry of Communications and Information &amp; Ministry of National Development</li> <li>• Ms Helen Santiago Fink, Program Manager (U.S.-ASEAN Smart Cities Partnership), U.S. Department of State, Washington, D.C.</li> </ul>
<b>1:00pm</b>	<b>Networking lunch</b>
<b>2:30pm</b>	<b>Wrap Up of Day 4 Programme</b> Co-Programme Directors; Dr Edward Ang & Mr Vincent Low
<b>3:00pm</b>	<b>End of Day 4</b>



# LEARNING JOURNEY

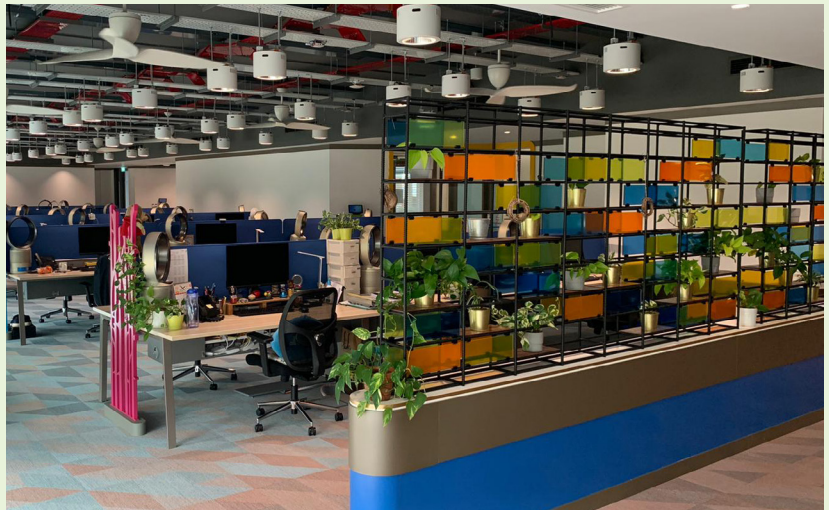
DAY 4: Moving Ahead



## LEARNING JOURNEY

### BCA ZEB Plus

The Zero Energy Building (ZEB) at BCA's Braddell Campus is a 4,500 sqm structure that houses corporate offices and industry training facilities. It is the first ZEB in Southeast Asia that was retrofitted from an existing building and serves as a flagship project that supports Singapore's Green Building Masterplans (SGBMP). After 10 years of net zero energy performance, the ZEB underwent a major upgrading work in 2019 with an aim to achieve significant energy surplus with latest digital solutions. One of the technologies is the hybrid cooling system which introduces additional indoor airflows along with the resetting of indoor air temperature up to 27 degrees Celsius. With the use of personalized environmental control system, the retrofitted ZEB Plus serves as a living laboratory for building technologies and a demonstration of super-low energy buildings in Singapore.



### BCA SkyLab

The BCA SkyLab is an advanced test facility that allows evaluation of building technologies in real-world settings. With its 360-degree rotatable capability and high-precision instrumentation, the SkyLab catalyzes research and innovation of green building technologies, providing comparative testing with reference to codes and standards under tropical conditions. The SkyLab has been widely used by academics and the industry in the region for development of air-conditioning, lighting, façade/window, and control solutions. In collaboration with Lawrence Berkeley National Laboratory, the SkyLab serves as an important open innovation infrastructure that supports the SGBMP.

# TOPICS AND SPEAKERS

## DAY 4: Moving Ahead



### Living Future for All

**Ms Elizabeth Beardsley, P.E.**, Senior Policy Counsel, US Green Building Council, Washington, D.C.

**Ms Elizabeth Heider**, Founder & Chief Executive Officer, Heider Sustainability Advisors, LLC

**Ms Eden Brukman**, Senior Green Building Coordinator, San Francisco Department of the Environment



This session will pull together the learning about green buildings and show how participants can bring these systems home and help create new excitement, inspiration and momentum. The sharing will cover different policy tools can be leveraged to impact new construction and existing buildings, with highlights on approaches such as leadership in government buildings; regulations; and incentives; and discuss factors to be considered in selecting policies. Additionally, on how local governments can use exemplary buildings to help cultivate interest in the private sector; and how green building systems and incentives can facilitate support for better codes and mandates.



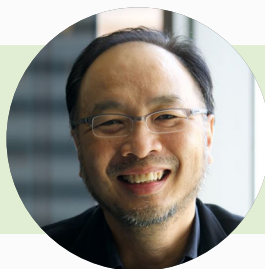
From the policy discussion, the sharing will cover how inspiration gave rise to development of the Living Building Challenge. Unique elements of this program will be highlighted as well as how it has had oversized impact. Finally, to encourage participants to embrace green building at any level and find ways to leverage these proven systems in their policies and local government work.

## Concluding Forum: In-Conversation with Green Building Stewards – Pushing the Sustainability Boundaries

This interactive forum discussion will serve to emphasise the importance of working collectively towards greater benefits and opportunities in strengthening our collaboration in areas of climate change and green economy for Singapore, the US, and ASEAN countries.



**Mr Tan Kiat How**  
Senior Minister of State, Ministry of Communications and Information & Ministry of National Development



**Ar. Tang Kok Thye**  
Associate Partner, ADDP Architects LLP & President, Singapore Green Building Council



**Ms Elizabeth Beardsley**  
P.E., Senior Policy Counsel, US Green Building Council, Washington, D.C.



**Ar. Prof. Tai Lee Siang**  
Head of Pillar (Architecture and Sustainable Design); Director (DesignZ), Programme Director (Design and Artificial Intelligence); Singapore University of Technology and Design (SUTD)

*\*Note: A delegate rep from the ASEAN Smart Cities Network will be invited to join the Concluding Forum as a panelist.*



# PROGRAMME HIGHLIGHTS



Monday  
**5**  
SEP 2022

## DAY 5: IN-DEPTH CASE STUDIES & LEARNING JOURNEY

Participants will visit exemplary projects, ranging from public housing eco-district, office premises to institution, to hear directly from project teams and key corporate representatives on their adoption of sustainable design and practices in operations and maintenance, research and technologies, as well as smart and integrated digital delivery systems.

Venue	Respective Learning Journey Sites
<b>Dress Code</b>	<b>Smart casual attire with comfortable walking shoes</b>
<b>Singapore's First Eco-Town</b>	
<b>9:00am</b> <small>(incl. of tea break)</small>	<b>Punggol Eco Town &amp; Punggol Northshore by Housing Development Board</b>
<b>11:30pm</b>	<b>Coach ride to Samwoh Smart Hub</b>
<b>12:00pm</b>	<b>Lunch break at Samwoh Smart Hub</b>
<b>First Positive Energy Industrial Building in Singapore</b>	
<b>1:00pm</b>	<b>Samwoh Smart Hub</b>
<b>3:00pm</b>	<b>Tea Break</b>
<b>3:30pm</b>	<b>Coach ride to BCA Braddell Campus</b>
<b>An Institution of Innovation</b>	
<b>4:00pm</b>	<b>BCA Braddell Campus Phase 2 by BCA</b>
<b>6:00pm</b>	<b>End of Day 5</b>



## LEARNING JOURNEY



Photo credit: Housing Development Board

### Punggol Eco Town

In 2010, Punggol was selected for development as Singapore's first Eco-Town, to enhance the living environment in its estates and encourage residents to do their part for the environment. Punggol also serves as a 'living laboratory' for HDB to test new ideas and technologies in sustainable development, and integrate urban solutions to create a

green living environment. One of the first eco-friendly housing projects in the town was Treelodge@Punggol. With the success at Treelodge@Punggol, the eco initiatives and solutions were replicated to the rest of Punggol. One of the iconic feature in Punggol is Punggol Waterway. The 4.2km-long Punggol Waterway is now one of the most recognisable landmarks in the town. Residents and visitors can take part in a range of leisure activities along the waterway and enjoy scenic views as they walk along the landscaped promenade. Furthermore, the vision for waterfront living was realised with the development of housing projects along Punggol Waterway such as Waterway Terraces I and II, and Waterway Ridges.

# LEARNING JOURNEY

## DAY 5: In-depth Case Studies & Learning Journey



Photo credit: Housing Development Board

### Punggol Northshore

In September 2014, HDB unveiled the “Smart HDB Town Framework”, which mapped out how HDB plans to harness Information and Communication Technology (ICT), to introduce the “Smart” element in public housing to achieve a more liveable, efficient, sustainable, and safe living environment for residents. The framework covers 5 key domains: Smart Planning; Smart Environment; Smart Estate; Smart Living; and Smart Community. Punggol Northshore is one of the first smart and sustainable HDB precincts, where HDB’s in-house designers and research engineers worked together to apply new urban solutions to contribute towards stretched Sustainable Development targets and resiliency, bringing about a more liveable, efficient,

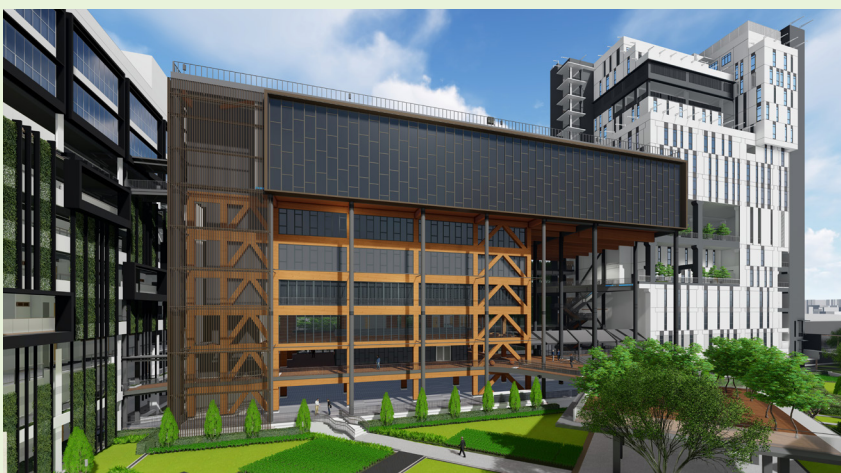
sustainable, and safe living environment for our residents, while at the same time, addresses the need for automation to alleviate the impact of manpower shortages. Smart Environment & Estate is realized through the design and sensor integration into a wide array of systems by HDB engineers. Some sensors capture real-time information on environmental factors to optimize system functions, others collect estate data for analysis to provide insights for improving estate services to minimise inconvenience to residents.

### Samwoh Smart Hub

The first positive energy (industrial) building in Singapore constructed with recycled construction materials which aims to reduce energy consumption to its minimum and offset it with on-site solar power.



An artist's impression of Samwoh Smart Hub



### BCA Braddell Campus Phase 2

Aligned with the three key transformation areas under Built Environment Industry Transformation Map, the BCA Braddell Campus Phase 2 is a campus which exemplifies productivity improvement with adoption of multi DfMA technologies and acts as a living lab that pushes the boundaries of sustainable design in both construction and operation

stages. It targets to achieve the BCA Green Mark awards – Zero Energy and Super Low Energy Buildings; is one iconic development to showcase.



# PROGRAMME HIGHLIGHTS



Tuesday  
**6**  
SEP 2022

## DAY 6: SUSTAINABILITY & GREEN ECONOMY

International Built Environment Week (IBEW) 2022

Zooming into sustainability and green economy aspects, participants will be exposed to world-renowned speakers and leaders on topics such as global issues, best practices and cutting-edge technologies etc. to address emerging challenges at the opening day of the International Built Environment Week (IBEW) 2022, a pinnacle event of the Singapore Built Environment Sector. Participants would be able to interact and network with key firms, practicing professionals and service providers at the event.

<b>Venue</b>	<b>Marina Bay Sands Expo &amp; Convention Centre</b>	
<b>Dress Code</b>	<b>Business attire, no coat no tie</b>	
<b>9:00am</b>	<b>Opening Ceremony</b>	
<b>BE THE CHANGE: THE POWER OF DESIGN IN SHAPING A CLIMATE-FRIENDLY BUILT ENVIRONMENT</b>		
<b>9:45am</b>	<b>Be The Change: The Power of Design in Shaping a Climate-Friendly Built Environment</b> Mr Moshe Safdie, Founder, Safdie Architects	
<b>10.30am</b>	<b>Networking tea break</b>	
<b>11:00am</b>	<b>IN CONVERSATION: Towards A Low-Carbon Built Environment Ecosystem</b> <b>Panellists:</b> <ul style="list-style-type: none"> <li>• Ar Tang Kok Thye, President / Associate Partner, Singapore Green Building Council / ADDP Architects LLP</li> <li>• Ms Esther An, Chief Sustainability Officer, City Developments Limited</li> <li>• Er Yeo Choon Chong, Chief Executive Officer - ASEAN, Surbana Jurong Group</li> <li>• Mr Theo Scherman, Chief Strategy Officer, Hitachi Asia</li> <li>• Mr Anu Rathninde, President, Asia Pacific, Johnson Controls</li> </ul> <b>Moderator:</b> <ul style="list-style-type: none"> <li>• Prof. Jason Pomeroy, Founding Principal, Pomeroy Studio &amp; Pomeroy Academy</li> </ul>	
<b>12.30pm</b>	<b>Networking lunch break</b>	
<b>2:00pm</b>	<b>CUTTING-EDGE GREEN BUILDING TECHNOLOGIES</b> <b>Speakers and Panellists:</b> <ul style="list-style-type: none"> <li>• Mr Yoon Kim, Cluster President, Singapore, Malaysia and Brunei, Schneider Electric</li> <li>• Ms Natalie Craig, Managing Director, C&amp;W Services Singapore</li> <li>• Ms Joy Gai, Founder, Joy of Sustainability and World Green Building Council Asia Pacific Programmes Head</li> </ul> <b>Panellist:</b> <ul style="list-style-type: none"> <li>• Mr Liak Goh, Technical Director, Aurecon</li> </ul> <b>Moderator:</b> <ul style="list-style-type: none"> <li>• Er. Stephen Perkins, Senior Technical Director, Beca Group</li> </ul>	<b>SUSTAINABLE FINANCE SOLUTIONS</b> <b>Speakers and Panellists:</b> <ul style="list-style-type: none"> <li>• Mr Eric Lim, Chief Sustainability Officer, UOB</li> <li>• Ms Nupur Joshi, Chief Executive Officer, REIT Association of Singapore (REITAS)</li> <li>• Ms Marcia Yu, Senior Investment Officer, International Finance Corporation</li> </ul> <b>Moderator:</b> <ul style="list-style-type: none"> <li>• Ar. Benjamin Henry Towell, Executive Director, Sustainability, OCBC Bank</li> </ul>
<b>3.30pm</b>	<b>Networking lunch break</b>	
<b>4:00pm</b>	<b>Be The Future: Innovating a Sustainable Built Environment</b> <ul style="list-style-type: none"> <li>• Er Dr Johnny Wong, Deputy Chief Executive Officer (Building), Housing &amp; Development Board</li> <li>• Mr Nicholas Chan, General Manager, Daikin</li> <li>• Mr Bernard Lee, Vice President, Head of Product Management &amp; Development, ST Engineering</li> </ul>	
<b>5:00pm</b>	<b>End of Day 6</b>	

For more details on Topics and Speakers, please refer to the IBEW website: <https://www.ibew.sg/en-gb/conference/program.html#/sessions>

# OUR PARTICIPANTS

## BRUNEI DARUSSALAM

- **Mr Tang Wee Ho**, Senior Engineer, Head of Section, Public Works Department, Department of Mechanical and Electrical Services
- **Mrs Ruzanna Musfirah Haji Saji**, Acting Senior Architect, Department of Technical Service, Ministry of Development
- **Mr Mohd Farihin Mohd Jaafar**, Acting Senior Architect, Department of Technical Services, Public Works Department, Ministry of Development

## CAMBODIA

- **Ms Proeung Tola**, Deputy Chief of the Office, Department of Reward and Incentive, Ministry of Environment
- **Ms Mun Doung Nimol**, Deputy Chief of the Office, Green Economy, General Directorate of Policy and Strategy/Ministry of Environment
- **Ms Song Leakhena**, Deputy Chief of Bureau, Department of Science and Technology, General Directorate of Policies and Strategies, Ministry of Environment

## INDONESIA

- **Mr Ridho Arisyadi**, Cooperation Analyst, Directorate General of New Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources
- **Mrs Annissa Sri Kusumawati**, Planner, Directorate of Poverty Alleviation and Community Empowerment, Ministry of National Development Planning (Bappenas)
- **Mr Wiwit Widodo**, Intermediate Planner, Directorate of Bilateral Funding, Ministry of National Development Planning (Bappenas)

## LAO PEOPLE'S DEMOCRATIC REPUBLIC

- **Mr Siriphone Inthirath**, Director General of Public Works and Transport Institute, Public Works and Transport Institute (PTI), Ministry of Public Works and Transport (MPWT)
- **Ms Visaphone Inthilath**, Deputy Director General, Department of Housing and Urban Planning, Ministry of Public Works and Transport
- **Mr Saykham Souksavan**, Deputy Director of Building Construction Control Division, Department of Housing and Urban Planning, Ministry of Public Works and Transport

## MALAYSIA

- **Mr Lee Choon Siang**, Senior Principal Assistant Secretary, Highway Planning Division, Ministry of Works Malaysia

## MYANMAR

- **Mr Thet Phyo Wai**, Assistant Director, Building and Central Store Department, Mandalay City Development Committee
- **Mrs Myo Ei Ei Soe Win**, Assistant Director, Building and Central Store Department, Mandalay City Development Committee
- **Mr Ko Ko Kyaw Zywa**, Assistant Director, Urban Environmental Conservation and Cleansing Department, Yangon City Development Committee (YCDC)

## PHILIPPINES

- **Mrs Donna Rillera Tabangin**, City Planning and Development Coordinator, City Planning and Development Office, Local Government of Baguio
- **Ms Quijano, Roma Mae Castillo**, Officer-in-Charge, Environmental, Land Use and Urban Planning and Development, Department of Human Settlements and Urban Development
- **Mr Ryan Paul Serrano Galura**, Officer-in-Charge, Strategic Project Management Department, Bases Conversion and Development Authority

## THAILAND

- **Ms Onnicha Rongviriyapanich**, Civil Engineer, Department of Public Works and Town & Country Planning, Ministry of Interior
- **Ms Chayapa Chongcharoensuk**, Architect, Architecture Bureau, Department of Public Works and Town & Country Planning
- **Ms Chanyaphat Saneewong Na Ayutthaya**, City Planner, Professional Level, City Planning and Urban Development, Bangkok Metropolitan Administration (BMA)

## VIET NAM

- **Mr Nguyen Xuan Thuy**, Deputy Director, Centre for Environmental Information and Data, Vietnam Environment Administration of Ministry of Natural Resources and Environment
- **Mr Vuong Ngoc Hai**, Architectural Lecturer, Department of Interior Design, Hanoi Architectural University
- **Dr Luong Tu Quyen**, Lecturer, Urban and Rural Planning Faculty, Hanoi Architectural University (HAU)



# FEATURED FIRMS

## ARUP



Dedicated to sustainable development, Arup is a collective of 16,000 designers, advisors and experts working across 140 countries. Founded to be both humane and excellent, we collaborate with our clients and partners using imagination, technology and rigour to shape a better world.

<https://www.arup.com/>

## BUILDING SYSTEM AND DIAGNOSTICS



Building System and Diagnostics Pte Ltd (BSD) is a leader in the field of Green Built Environment consultancy. Since 2003, it has been providing specialised advisory services in the fields of sustainable building design, construction and operations, energy optimisation solutions and improving overall sustainable building performance. Over the years, BSD's consultancy teams in Singapore, Malaysia, Myanmar, Korea and China have contributed to more than 500 energy and environmentally sustainable projects. Our strong focus and long history in Green Building applied research and innovation has placed us in the leading position in providing integrated environmentally sustainable engineering solution. BSD's foundation also lies in its in-house capabilities to perform multi-building physics analysis and simulations to improve our built environment. For the last 20 years, we have been performing simulations such as airflow, heat transfers, solar and glare, energy, wind driven rain, thermal comfort, etc building performance simulations to aid city planning and building designs. Being one of the pioneers in Singapore's green building movement, BSD recognises that for a greener future to materialise, there is a need to constantly push boundaries on energy efficiency to achieve best-in-class building energy performance in a cost-effective manner.

<http://bsd.com.sg/>

## DP ARCHITECTS



DP Architects (DPA) practices as a multidisciplinary design consultancy group, with over 900 employees, 18 global offices strategically linked from London to Shanghai, 8 specialist companies, and a reach of 77 countries. Founded in 1967, two years after Singapore's independence, DPA is the architect behind many of the country's important public projects and notable landmarks including Golden Mile Complex, Esplanade Theatres on the Bay, Singapore Sports Hub, River Safari Wildlife Reserve and Sengkang Hospital Campus. Involved in placemaking and urban projects of diverse scales and increasing complexity of functions - some of which are the largest of their type in the world - DP has been shaping cityscapes throughout Asia, the Middle East and beyond. Guided by its founding philosophy to create architecture of excellence that enriches the human experience and uplifts the human spirit, the practice continues to drive innovation and sustainability through its Green-Well-Tech framework to deliver integrated design solutions for a better, greener and healthier built environment.

<https://www.dpa.com.sg/>

## G-ENERGY HOLDINGS



G-Energy Holdings is an energy and sustainable design consulting firm which has been involved in energy and system performance for clients in Singapore and Southeast Asia which helped numerous companies achieved the Building Energy Efficiency Labeling Award by NEA and Energy Sustainability Unit by the National University of Singapore. Named as the Outstanding Energy Services Provider of the Year in 2018 by the Energy Efficiency National Partnership (EENP) which was organised by NEA, G-Energy has assisted the first private developer to achieve the prestigious BCA Green Mark Platinum Award.

<https://generyglobal.com/>

# FEATURED FIRMS

## GREENA CONSULTANTS



GreenA Consultants is a homegrown Singapore Sustainability Consultancy firm founded by Farizan d’Avezac de Moran in 2009. It is headquartered in Singapore with projects in Asia and Africa, catering to the differing needs of clients to achieve their sustainability goals. Providing solutions in both Technical and Strategic Consulting, from Green Building Certification (e.g., BCA Green Mark, LEED, TRUE, WELL), carbon strategy roadmap, eco-protocol development, feasibility studies and environmental audits, GreenA Consultants also help companies strategically map out their decarbonisation journey and seek relevant sustainability-related funding for their businesses. It is Singapore’s only consultancy firm to be listed under the Science Based Target initiative (SBTi) to align emissions reduction targets below a 2-degree Celsius temperature limit. Besides, GreenA Consultants is recognised as ILFI Zero Energy and ILFI Zero Carbon ready. To strive for higher environmental standards, they are also embarking on our Zero Waste journey, TRUE Waste Certification for their office, is part of Advancing Towards Net Zero (ANZ) Collaborators under the World Green Building Council for the Southeast Asia region, as well as a Carbon Pricing Leadership Coalition (CPLC) Singapore Partner as part of the LowCarbonSG initiative.

<https://www.greenaconsultants.com/>

## GUOCOLAND LIMITED



GuocoLand Limited (“GuocoLand”) is a premier regional property company with operations in the geographical markets of Singapore, China and Malaysia. In 2017, GuocoLand marked its expansion beyond Asia into the new markets of the United Kingdom and Australia through a strategic partnership with Eco World Development Group Berhad in Eco World International Berhad. Headquartered in Singapore, the principal business activities of GuocoLand and its subsidiaries (“the Group”) are property development, property investment, hotel operations and property management, and it is focused on achieving scalability, sustainability and growth in its core markets. The Group’s portfolio comprises of residential, hospitality, commercial, retail and integrated developments spanning across the region. As at 31 December 2021, the Group’s total assets amounted to approximately \$11.3 billion. GuocoLand has been honoured with numerous awards and accolades both locally and internationally, in recognition of its portfolio of quality, innovative developments and commitment to business excellence. These include environmental sustainability awards such as the BCA Green Mark Awards and LEED Pre-Certification, as well as real estate awards honouring the best property companies such as the International Property Awards, FIABCI Property Awards, BCI Asia Awards and Southeast Asia Property Awards.

<https://www.guocoland.com.sg/>

## JACOBS



At Jacobs, we deliver impactful global solutions to create a more connected, sustainable world — from intelligence to infrastructure, cybersecurity to space exploration. Our 55,000 employees across 40 countries work every day, challenging the expectations of today to reinvent the way we’ll all live tomorrow.

<https://www.jacobs.com/>

## JLL



JLL is a leading professional services firm that specializes in real estate and investment management. JLL shapes the future of real estate for a better world by using the most advanced technology to create rewarding opportunities, amazing spaces and sustainable real estate solutions for our clients, our people and our communities. JLL is a Fortune 500 company with annual revenue of \$19.4 billion, operations in over 80 countries and a global workforce of more than 102,000 as of June 30, 2022.

<https://www.jll.com.sg/>



# FEATURED FIRMS

## KEPPEL LAND



Keppel Land is a wholly owned subsidiary of Keppel Corporation, a Singapore flagship multinational company, which provides solutions for sustainable urbanisation, focusing on energy & environment, urban development, connectivity and asset management. Keppel Land delivers innovative and multi-faceted urban space solutions that enrich people and communities. Its sterling portfolio includes award-winning residential developments, investment-grade commercial properties and integrated townships. It is geographically diversified in Asia, with China, Singapore and Vietnam as its key markets, while it continues to scale up in other markets such as India and Indonesia.

<https://www.keppelland.com>

## SAMWOH CORPORATION



SAMWOH

Innovate > Sustainable

Growing with Singapore from nation-building days to the present, Samwoh has transformed from a transport and logistics company to a leading integrated construction company. We provide a full suite of engineering and construction services, from the supply of building materials and precast concrete components to development and distribution of green construction products as well as in upcycling construction and industrial wastes into valuable resources. The Samwoh R&D team focuses strongly on developing innovative and sustainable solutions for both regional and international markets, spanning from Malaysia and Indonesia to the Netherlands. Reflecting our commitment to excellence, our products have been adopted industry wide, paving the way for the future development of Singapore and beyond.

<https://www.samwoh.com.sg/>

## SURBANA JURONG GROUP



Surbana Jurong Group is a global urban, infrastructure and managed services consulting firm, with over 70 years of track record in successful project delivery. Headquartered in Singapore, the group has a global talent pool of over 16,000 across Surbana Jurong and our member companies AETOS, Atelier Ten, B+H, KTP, Prostruct, Robert Bird Group, SAA, Sino-Sun and SMEC, based in more than 120 offices in over 40 countries. They include architects, designers, planners, engineers and other specialists driven by progressive thinking and creative ideas to shape a better future. Our technical experts deliver sustainable solutions that cover the entire project life cycle from planning and design, through to delivery and management. We also provide a full suite of multi-disciplinary consultancy services across a diverse range of sectors including transportation, water, aviation, healthcare, hospitality and renewables, as well as services such as industrial solutions and parks management. Surbana Jurong has built more than a million homes in Singapore, created master plans in more than 60 countries and developed over 100 industrial parks globally. Our tag line "Building Cities, Shaping Lives" expresses how every project or undertaking is, for the Group, an opportunity to fulfil aspirations and enrich lives. By designing and delivering quality housing, work spaces, roads, rail, hydropower, dams, underground and coastal protections and other critical infrastructure needed by our clients, we are redefining cities and transforming them into sustainable and liveable spaces where communities and businesses, present and future, can thrive. The Group was ranked #23 in Engineering News-Record's 2022 Top 225 International Design Firms, #14 in World Architecture 100 2022, and is Asia Pacific FM Technology Provider of the Year 2022, awarded by International Facility Management Association.

<https://surbanajurong.com/>

## WOHA



WOHA is an architectural practice based in Singapore. With built projects throughout Southeast Asia, China and Australia, ranging from apartment towers to luxury resorts, mass transit stations, condominiums, hotels, educational institutions and public buildings, WOHA's practice is guided by environmental principles and a commitment to responsive place-making and to the creation of an invigorating and sustainable architecture.

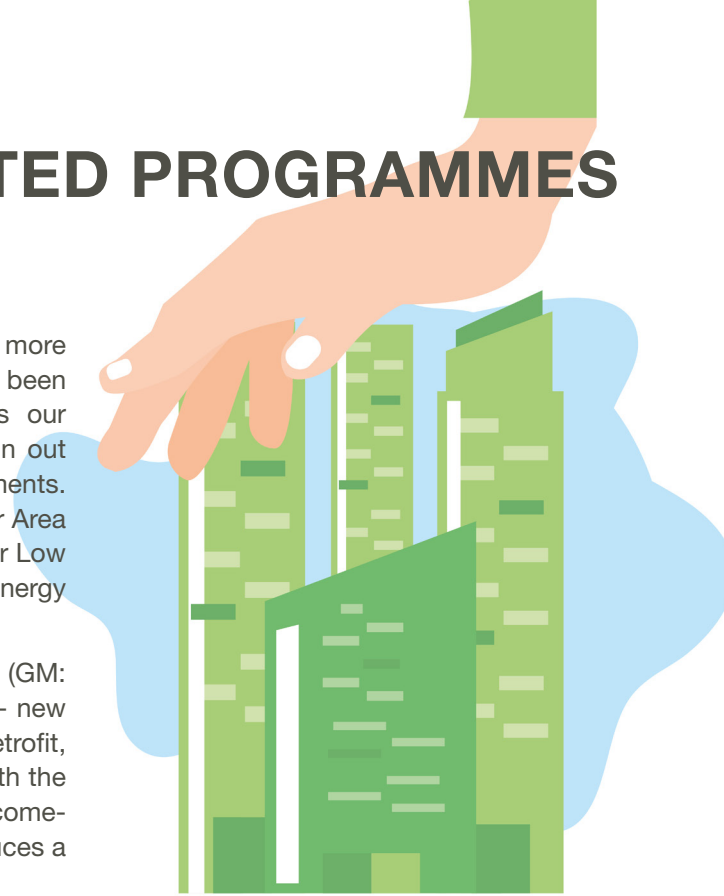
<https://woha.net/>

# SUSTAINABILITY-RELATED PROGRAMMES

Offered by **BCA ACADEMY**

Under the Singapore Green Building Masterplan (SGBMP), more ambitious targets to green the Built Environment sector has been set. The Masterplan, dubbed “80-80-80 in 2030” captures our collective commitment to pursue more ambitious standards in our Built Environment to meet our global climate change commitments. It targets greening 80% of Singapore’s buildings by Gross Floor Area (GFA) by 2030, 80% of new developments (by GFA) to be Super Low Energy (SLE) buildings from 2030, and 80% improvement in energy efficiency to best-in-class green buildings by 2030.

As such, BCA has newly launched the BCA Green Mark 2021 (GM: 2021) framework, where it covers different types of projects – new developments, existing buildings and buildings with major retrofit, which entails the need for industry practitioners to be equip with the various holistic skillsets. Besides, it places stronger focus on outcome-based indicators, covers wider sustainability issues and introduces a new SLE energy efficiency standards for residential buildings.



## Understanding Green Mark 2021

*(Virtual, asynchronous learning; learners may commence to embark on e-learning and learn at own pace (within 1 month from course start date)*

To provide and support continued capability development in the area of sustainability to build a pool of competent Green Specialists, this course aims to keep professionals abreast on the latest GM: 2021 framework. To equip practitioners with latest development of the green building initiatives and BCA Green Mark criteria, keeping industry practitioners abreast on latest initiatives and requirements.

At the end of the course, participants will get the latest update on:

- Singapore Green Plan 2030 and Singapore Green Building Masterplan;
- Key Updates on the Regulatory Requirements on Environmental Sustainability for Buildings; and
- Key Enhancements in GM: 2021 Criteria.

[CLICK HERE FOR MORE DETAILS](#)

## Certification Course for Green Mark Accredited Professional (GMAP)

*(Virtual, synchronous learning)*

The GMAP course aims to equip industry practitioners with knowledge to design and implement efficient & sustainable solutions towards an integrative, adaptable and sustainable urban system.

At the end of the course, participants will be able to:

- apply BCA’s environmental sustainability legislative framework and GM: 2021 requirement;
- determine sustainable design solutions for upstream and downstream considerations; and
- perform sustainable maintenance and audits during operations.

[CLICK HERE FOR MORE DETAILS](#)

## Certification Course for Green Mark Advanced Accredited Professional (GMAAP)

*(Virtual, synchronous learning)*

The GMAAP course curriculum is tailed in tandem with BCA Green Mark 2021 (GM:2021) scheme and implementation, which encourages industry and professionals to collaborate and develop green building solutions.

The course aims to upskill/support capability development in the following areas:

- raising standards in building energy performance;
- increasing emphasis on resilience to address climate change; and
- creating healthier environment for building users.

[CLICK HERE FOR MORE DETAILS](#)



# BCA ACADEMY

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