

# PILLARS

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment | MARCH 2017

INAUGURAL  
SUMMIT TO DRIVE  
PRODUCTIVITY

BUILT  
ENVIRONMENT:  
LOOKING AHEAD

BREAKING  
GENDER  
STEREOTYPES

EDUCATING  
FUTURE  
PRACTITIONERS

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### DEAR READERS,

There has been a lot of worrying developments on the world stage in recent months that may adversely affect the economic outlook for 2017.

Allow me to alleviate this sense of gloominess in this issue of *Pillars*. As most of you are aware, Minister for Finance Mr Heng Swee Keat recently announced that the government will bring forward S\$700 million worth of public sector infrastructure projects in the fiscal year of 2017 and 2018.

BCA estimates that the total value of construction contracts that will be awarded this year will reach between S\$28 billion and S\$35 billion. Even at the lower end, the value is higher than last year's preliminary estimate of S\$26.1 billion.

Specifically, the public sector construction demand is estimated to be between S\$20 billion and S\$24 billion\* this year, higher than the S\$15.8 billion last year. It is expected to make up about 70% of the total construction demand in 2017 and will be spread across a mix of buildings for residential, commercial, industrial and institutional use as well as civil engineering projects.

Looking ahead, we forecast that public sector construction demand will be between S\$18 billion and S\$23 billion per annum from 2018 to 2021, and will be supported by infrastructure projects such as new MRT lines (Jurong Regional Line, Cross Island Line) and various associated infrastructure developments for Changi Airport's Terminal 5.

So, let's stay positive. Companies that are prepared to change, innovate and transform to stay at the forefront of technological innovation, process re-engineering and productivity improvement are more likely to sustain their growth and competitiveness despite the headwinds under challenging economic conditions. This is also an opportune period to build up the capabilities of your staff to prepare them for new challenges and projects in the near future.

**Dr John Keung**  
*Chief Executive Officer*



\*BCA'S PROJECTED CONSTRUCTION DEMAND HAS ALREADY FACTORED IN THE S\$700 MILLION PUBLIC SECTOR INFRASTRUCTURE PROJECTS THAT HAVE BEEN BROUGHT FORWARD IN THE FISCAL YEAR OF 2017 AND 2018.

# SINGAPORE GREEN BUILDING WEEK 2016

*Comprising 23 green building events and attended by more than 26,000 people from over 50 countries, the latest edition of SGBW was another feather in BCA's cap.*



Left: Guest-of-Honour Mr Lawrence Wong (centre), BCA CEO Dr John Keung (far left), BCA Chairman Mr Lee Fook Sun (second from left), President of Reed Exhibitions South East Asia and Australia Ms Debbie Evans (second from right), and President of Singapore Green Building Council Mr Chia Ngiang Hong (far right) launching the event.

Below: Mr Wong visiting one of the exhibits.

The eighth edition of the Singapore Green Building Week (SGBW) was held from 5–11 September 2016 at Marina Bay Sands Expo & Convention Centre. BCA played host to more than 26,000 international green building experts, policy makers, academics, built environment practitioners, tenants, as well as end-users and students.

BCA sought to engage the last two groups of participants as it wanted community — not just industry — engagement.

### Opening Ceremony

The event was officially opened on 7 September by Minister for National Development and Second Minister for Finance Mr Lawrence Wong. In his speech, Mr Wong

acknowledged that Singapore has made good progress in greening the built environment. “Today, around one-third of our buildings are green. Our Green Mark certification schemes are used in over 80 cities around the world. And Singapore is recognised as one of the leading cities in the world for our green building efforts,” he reported. However, he highlighted three areas that the industry should continue pursuing:

- Step up green building efforts as part of the overall global effort to tackle climate change
- Invest in R&D and harness new technologies to advance the green building agenda
- Conduct more outreach and educational programmes — particularly those that target the young — to change mindsets



Right: Mr Wong cutting the ribbon at the opening ceremony of SGBW.



### International Green Building Conference

One of the anchor events of SGBW is the International Green Building Conference (IGBC). Themed ‘Build Green: The Next Decade’, this edition of IGBC focused on empowering the community to get involved in sustainability efforts and issues. “Moving to the next decade, there is a need to shift from top-down government initiatives to the pioneering of ground-up initiatives to move the needle in the green building industry,” said Dr John Keung, BCA’s CEO. The conference took place from 7–9 September.

Two trade exhibitions were held in conjunction with the conference: Build Eco Xpo (BEX) and Mostra Convegno Expocomfort (MCE) Asia 2016. They brought together more than 450 exhibiting companies representing 27 countries, while visitors — comprising green building experts, policymakers, academics and built environment practitioners — numbered around 12,000.

### BCA’s Breakfast Talk for CEOs

IGBC 2016 culminated with a breakfast talk for senior management personnel on the final day of the conference. They included major developers, building



owners and tenants, who were joined by the Guest of Honour, then-Senior Minister of State for Home Affairs and National Development Mr Desmond Lee. He, too, stressed community involvement. “We need to change behaviours by building ground-up partnerships — from students to the man in the street,” he said.

### Green Living Expo

A more consumer-focused event of SGBW 2016 took place from 9–11 September. The Green Living

Expo aimed to introduce consumers to companies that provide green products and services. Those who attended saw more than 100 brands of eco-friendly products for various categories, ranging from sustainable homes to transportation. In addition, the exhibition housed two showrooms to showcase smart and sustainable home technologies, furnished by brands such as IKEA, Bosch and Lutron.

For more information about SGBW, visit: [www.bca.gov.sg/events/sgbw](http://www.bca.gov.sg/events/sgbw)

**Above and circle inset: Then-Senior Minister of State for Home Affairs and National Development Mr Desmond Lee addressing the crowd and interacting with the participants of the BCA Breakfast for CEOs.**

# RAISING PRODUCTIVITY WITH INNOVATIVE SOLUTIONS

*The annual showcase of productive and smart construction technologies grows from strength to strength.*

More than 8,000 participants came together at the 6th Singapore Construction Productivity Week (SCPW) in October 2016 to exchange ideas and explore the latest technologies and solutions that improve construction productivity.



Guests observing a demonstration at the Skilled Builders Project, which featured the installation of a curved roof, MEP systems, air con fabric duct, and architectural finishing works like drywall and laminated flooring.



Minister for National Development Mr Lawrence Wong being introduced to the multi-touch interactive table showcasing local projects that have adopted DfMA technologies during a guided tour of BuildTech Asia.

Themed 'Transforming the Way We Build Through Innovation', this edition of SCPW encompassed 16 events, including BuildTech Asia Exhibition, Build Smart Conference, and Skilled Builders Project.

Adding to the mix are new events such as the SCAL Productivity & Innovation Awards Competition, which showcased

innovative construction solutions by industry firms, and an Experiential Workshop on the adoption of Prefabricated Pre-finished Volumetric Construction (PPVC) for the Nanyang Crescent Hostel at Nanyang Technological University.

Besides engaging industry professionals, SCPW also drew keen interest from more than 800 tertiary students, who participated in workshops, tours and competitions to learn more about construction productivity concepts.



Guests giving their full attention to a speaker at the Build Smart Conference, where 23 local and international speakers touched on the latest construction productivity technologies, concepts and projects across various countries. About 300 people attended the conference.

Below: Participants of the Experiential Workshop on PPVC viewing a mock-up PPVC unit during a site visit.



Above: Parliamentary Secretary Mr Baey Yam Keng joining tertiary students competing in the Productivity Race as they assembled mock PPVC modules to form a three-storey building.

Left: Senior Minister of State for the Environment and Water Resources Dr Amy Khor with representatives from Lian Soon Construction, winner of the SCAL Productivity & Innovation Awards Competition. The firm impressed the judges with its innovative iDrain — The Durable and Reusable Earth Control Measures (ECM) Drain.

# YOUTH WITH A VISION

*Students unleash their creativity while learning about Universal Design.*

Imagine an inclusive living built environment for everyone in Singapore, then design buildings or public spaces for people of all ages and abilities. That was the challenge set out for the students who participated in BCA's second Project BUILD Competition, which ran from May to September 2016.

Using materials found in their daily lives, more than 65 teams, comprising 300 students from secondary schools to institutes of higher learning, created miniature models of their ideal buildings, developments or public spaces.



They were encouraged to show how Universal Design features such as ramps, handrails and braille could shape a built environment that everyone — including the young, the old and people with disabilities — could enjoy.

A total of 13 winning teams got to showcase their visions of an inclusive Singapore at the Project BUILD Exhibition, held at the National Library from 25–30 November 2016. At the launch of the exhibition, the winners also received prizes worth between \$500 and \$3,000 from then-Senior Minister of State for Home Affairs and National Development Mr Desmond Lee.

Comprising 11 zones, the exhibition showcased Universal Design features present in many award-winning developments across Singapore. Through mock-ups such as a park and an apartment, visitors got to experience how inclusive designs could make a difference in people's lives.

For more information about Universal Design, visit: [www.bca.gov.sg/friendlybuilding](http://www.bca.gov.sg/friendlybuilding)

**Guest-of-Honour Mr Desmond Lee (second from right) and BCA CEO Dr John Keung (far right) interacting with members of the winning team from Singapore University of Technology and Design (SUTD).**



**Mr Lee and Dr Keung aligning building blocks to launch the exhibition.**



# WINNING DESIGNS



Clinching the top prize for the SUTD team, UNICA is a green public plaza that caters to patrons with disabilities. Friendly, accessible features of this design include:

- An 'Invisible Helping Hand' — so called because it uses minimal space — near the plaza's entrance to help those who are wheelchair-bound move up the steep slopes
- A multi-purpose escalator for both normal patrons and wheelchair users
- Bookshelves in the library that can be rotated vertically, giving wheelchair users easy access to books on higher shelves



The team from Beatty Secondary School took home the second prize for their vision of a "melting pot" playground in a park, where people of different age groups and abilities can mingle and have fun. It features:

- A spiral pentagonal ramp for wheelchair users and people with varying mobility (including the visually impaired) to reach the top of the piano-tile slides; music is produced as they slide down
- A swing for wheelchair users
- A tactile footpath and ramps for the visually impaired



The ITE College Central team won the third prize with this model of a Universal Design public toilet by a sandy beach. The unique design incorporates features that encourage people of all ages to spend time at the beach:

- A tree-like structure in the middle of the building that acts as a shower area for children
- A slanting basin that everyone can use; children can wash their hands at the lower end
- Washrooms for people with disabilities and ramps at entrances to washrooms



# BUILT ENVIRONMENT: LOOKING AHEAD

*Amid economic slowdown and political uncertainty in numerous parts of the world, what are prospects for the built environment sector in 2017? Industry players attended a seminar to find out.*

**Close to 500 people gathered at Orchard Hotel on 6 January 2017 to gain some insights on the construction and property markets for the next few years. These industry players had signed up for the BCA-REDAS Built Environment and Property Prospects Seminar.**

#### **Questions amid worldwide turmoil**

In the past couple of months, the UK gave notice of its intention to leave the EU. Closer to home, Asian economies, including China, are all slowing down. What does it all mean for the built environment sector for Singapore in 2017?

Where are the opportunities

available and what strategies should companies adopt in light of this uncertainty? A panel of distinguished professionals sought to address these concerns at the seminar.

Speakers and topics included:

- Ms Selena Ling, Head, Treasury Research & Strategy, OCBC Bank

**Dr Keow Yeong Ming (holding microphone), BCA's Deputy Group Director of Manpower Strategy and Planning Group and Assistant Managing Director of BCA Academy, chairing a panel discussion in the morning.**





**Our companies will need to develop capabilities to Design for Manufacturing and Assembly (DfMA) as there will be more of these types of projects in the future.**



**Mr Desmond Lee**  
Then-Senior Minister of State for Home Affairs and National Development



**The overall construction demand prospects over the medium as well as the long term will continue to be bolstered by a strong pipeline of public sector construction projects.**



**Dr John Keung**  
Chief Executive Officer Building and Construction Authority

*'Economic Outlook 2017: Risks & Opportunities'*

- Dr Lee Nai Jia, Director, Head (Southeast Asia) Research, Edmund Tie & Co (SEA) Pte Ltd  
*'Industrial Market Update & Outlook'*
- Ms Alice Tan, Director & Head, Consultancy and Research, Knight Frank  
*'Residential Property Market Update & Outlook'*

**Ray of light**

Piercing through this cloudy picture was a ray of sunshine from the BCA. It announced that the total value of construction contracts that will be awarded this year is projected to reach between S\$28.0 billion and S\$35.0 billion, higher than the preliminary estimate of S\$26.1 billion in 2016. This is largely due to a projected increase in public sector construction demand to between S\$20.0 billion and S\$24.0 billion; last year, the figure was S\$15.8 billion.

While the private sector construction demand is expected to remain rather quiet, the public sector is expected to make up about 70% of total construction demand, boosted by an anticipated increase in building and civil engineering works.

Beyond 2017, the average construction demand is projected to be between S\$26.0 billion and S\$35.0 billion per annum in 2018 and 2019, and between S\$26.0 billion and S\$37.0 billion per annum in 2020 and 2021.



**Where are these public works in 2017?**

The following is not an exhaustive list:

- **Residential projects:** HDB will continue upgrading old flats and building new ones; pockets of government land have been set aside for development at Siglap Road, Martin Place and Anchorvale Lane
- **Commercial projects:** redevelopment of Funan, Digitalife Mall, Golden Shoe Carpark and CPF Building
- **Industrial projects:** Defu Industrial City; Logistics Hub @ Gul
- **Institutional projects:** National Cancer Centre at Outram Campus; Integrated Intermediate Care Hub at Jalan Tan Tock Seng

- **Civil engineering projects:** Deep Tunnel Sewerage System (Phase 2); the North-South Corridor; extension of the MRT's Circle Line

**Assurances from the top**

"The overall construction demand prospects over the medium as well as the long term will continue to be bolstered by a strong pipeline of public sector construction projects," said BCA CEO Dr John Keung. "Companies that are prepared to change, innovate and transform to stay at the forefront of technological innovation, process re-engineering and productivity improvement are more likely to sustain their growth and competitiveness despite the headwinds under challenging economic conditions."

Meanwhile, in his opening address as the Guest of Honour, then-Senior Minister of State for Home Affairs and National

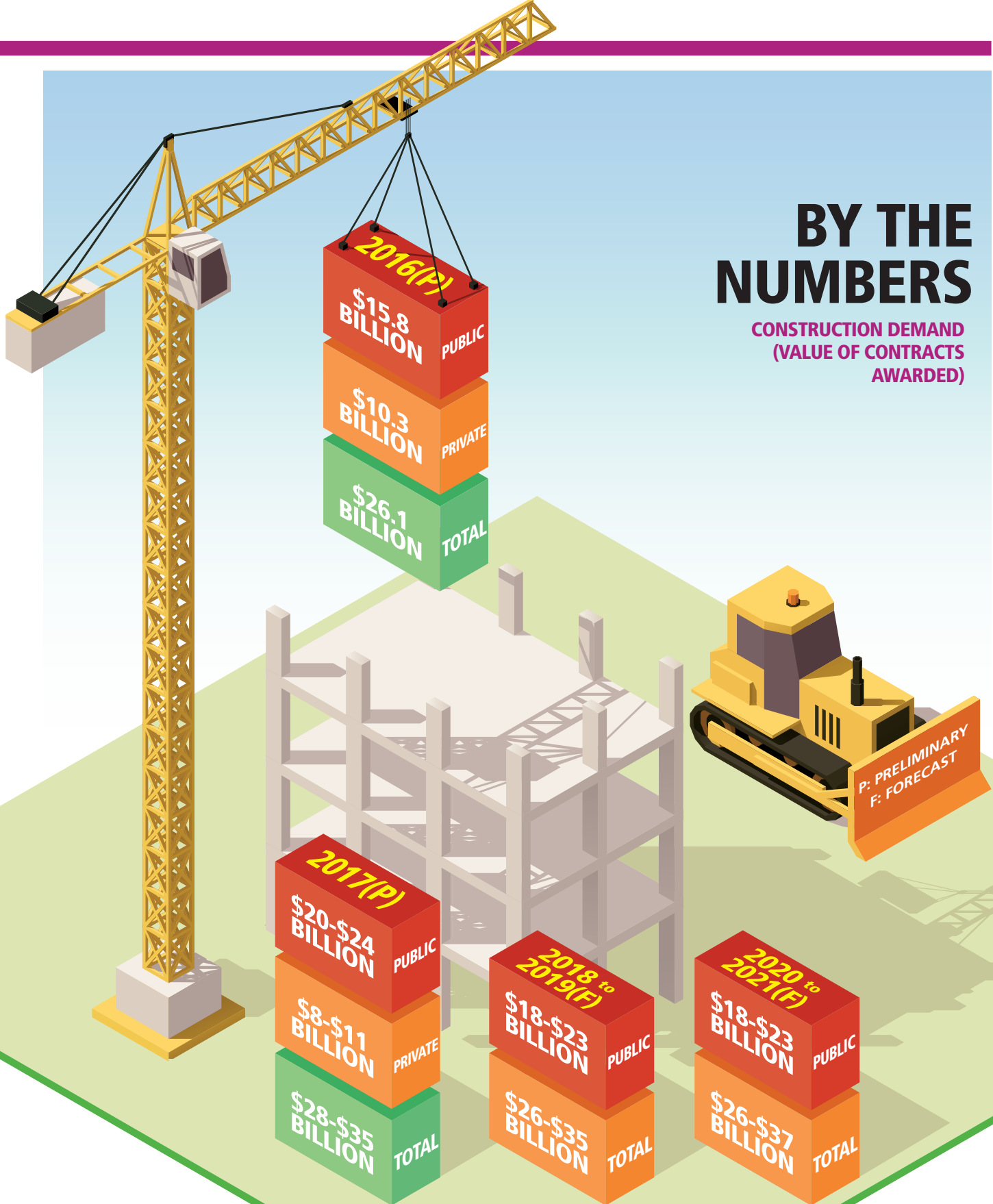
Development Mr Desmond Lee added, "The Government is doing what it can to ensure that there is sufficient demand for construction work during this period. We do have many projects that we need to undertake, and this will help pick up the slack."

Mr Lee also encouraged industry players to upgrade their skills to better face the challenging times ahead. "This means investing in both training as well as innovation," he said.

He also advised companies to be ready to seize opportunities that open up domestically and overseas. "Our companies will need to develop capabilities to Design for Manufacturing and Assembly (DfMA) as there will be more of these types of projects in the future," Mr Lee said. "Look further afield at regional and even global opportunities. It will increase the scope for our companies to succeed."

# BY THE NUMBERS

CONSTRUCTION DEMAND  
(VALUE OF CONTRACTS AWARDED)



# BREAKING GENDER STEREOTYPES

*Meet two ladies who are helping to normalise the presence of females in this industry.*

**BCA is continually attracting young locals into the built environment sector and supporting workforce upgrading through scholarship and sponsorship programmes.**

On 19 September 2016, BCA gave out the BCA-Industry Built Environment Sponsorship Awards to 210 students and in-service personnel for pursuing built environment courses at postgraduate, undergraduate and diploma levels. The sponsorships were awarded by BCA in partnership with firms in the built environment sector.

One of the 10 recipients of the postgraduate sponsorship was 26-year-old Ms Teoh Pei Ling, who was also a recipient of the undergraduate sponsorship. She has since completed her bond with ECAS Consultants Pte Ltd, and is an up-and-coming design engineer

there. ECAS recognised her potential for growth and partnered BCA to co-fund her part-time study at Nanyang Technological University for a Masters in Civil Engineering.

Another young lady, 21-year-old Erni Farisha Binte Nor'Azhar, received the BCA-Industry Built Environment Diploma sponsorship that day. She is currently serving her bond as a project supervisor with Tiong Seng Contractors (Pte) Ltd. Having graduated from Singapore Polytechnic with a Diploma in Civil Engineering, Erni is currently one of only four women at her firm involved in the planning of construction projects.

**Below: Pei Ling receiving the postgraduate sponsorship award from BCA Chairman Mr Lee Fook Sun.**



“  
More than half my team members at work are ladies! Don't let stereotypes get to you and you'll do just fine.  
”

Ms Teoh Pei Ling

### Why civil engineering?

"I was always into Lego when I was a kid, and I built little houses for my toy cats," reveals Erni. "As I grew older, I was always snapping photos of beautiful skyscrapers in Singapore, especially those with intriguing designs. I'm not strong in design and drawing, so I decided on civil engineering instead." It was not always easy for her. "Many friends questioned my decision," she says. "Engineering is not an easy industry, especially for girls. Many looked down on me, but it didn't stop me from continuing this course."

While Pei Ling was not into building things as a child, she says, "My parents gave me the freedom to choose my course of study and career. They are very supportive even though neither works in the industry." She feels blessed to have such indulgent parents, because "I'm glad to be where I am now". What she likes about studying part-time is that she gets to apply classroom knowledge on real-world situations.

### Rolling up their sleeves

You know these ladies are serious about their careers in the built environment sector when you understand the nature of the projects they are involved in now, and their aspirations for the near future.

"I'm currently working on a PUB project to provide potable water," Erni says. "What excites me most is that this project involves the Tunnel Boring Machine (TBM), which I learnt about during my polytechnic days but never actually had hands-on experience. Some of the challenges include space constraints and the fact that there are many services underground." She is keen to further her studies after serving her bond. "I feel that it's good exposure for us ladies. We have more chances to be outspoken and better adapt to the environment."



Above: Erni with Mr Andrew Khng, one of the Directors from her sponsoring firm Tiong Seng Contractors (Pte) Ltd.

“  
I feel that it's good exposure for us ladies. We have more chances to be outspoken and better adapt to the environment.  
”

Ms Erni Farisha Binte Nor'Azhar

Pei Ling encounters similar challenges in her work. "The most challenging task is evaluating and providing alternative solutions to overcome site constraints." After she finishes her Masters, Pei Ling would like to be involved in projects that employ productive construction methods such as Cross Laminated Timber (CLT) and Prefabricated Prefinished Volumetric Construction (PPVC).

### Women welcome

If you are a lady and keen on civil

engineering or other aspects of the built environment, Erni has some words for you: "Just sign up! You will never know what's in store for you." Pei Ling feels that it is not such a male-dominated industry as before. "More than half my team members at work are ladies!" she reveals. "Don't let stereotypes get to you and you'll do just fine."

For more information about careers in the built environment sector, visit: [www.buildingcareers.gov.sg](http://www.buildingcareers.gov.sg)

# POISED TO LEAD

*A new generation of young professionals is being groomed to propel the built environment (BE) sector to greater heights.*

Introduced in 2009, the Young Leaders Programme (YLP) is one of BCA's key initiatives to proactively engage and retain young professionals to lead and transform the BE sector.

### Fresh talents

Last year, BCA called for new nominations of young, talented BE professionals to join the YLP. To be eligible, the professionals had to meet the following criteria:

- Passionate about BE career
- Had at least three years' experience in BE sector
- Possessed a good track record of project involvements
- Being groomed for management positions

In July 2016, 111 Young Leaders (YLPs) were selected from government agencies, property developers, architectural and engineering consultancies, main and specialist builders, quantity surveying firms and project management consultancies.

Leveraging on the YLPs' expertise and network, BCA has been engaging them in policy formulation and forward planning to achieve innovative solutions to BE challenges. We also tap on their experience and passion to promote careers in the BE sector, and to give back to society through CSR activities.

### Introducing our Young Leaders

**Er. Sharron Ng** is a professional engineer in the civil engineering discipline who is involved in all stages of a project, from design to construction. As a director at ECAS



## GOALS OF YLP

<ul style="list-style-type: none"> <li>• Wide network of peers</li> <li>• Government &amp; private organisations</li> </ul>	<ul style="list-style-type: none"> <li>• Share knowledge/ case studies</li> <li>• Share best practices</li> <li>• Learning journeys</li> </ul>	<ul style="list-style-type: none"> <li>• Emerging technologies, practices, ideas</li> <li>• Innovative solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Career promotion</li> <li>• Mentor young scholars</li> <li>• CSR activities</li> </ul>
Develop relationships	Deepen skill sets	Create new knowledge	Give back to society

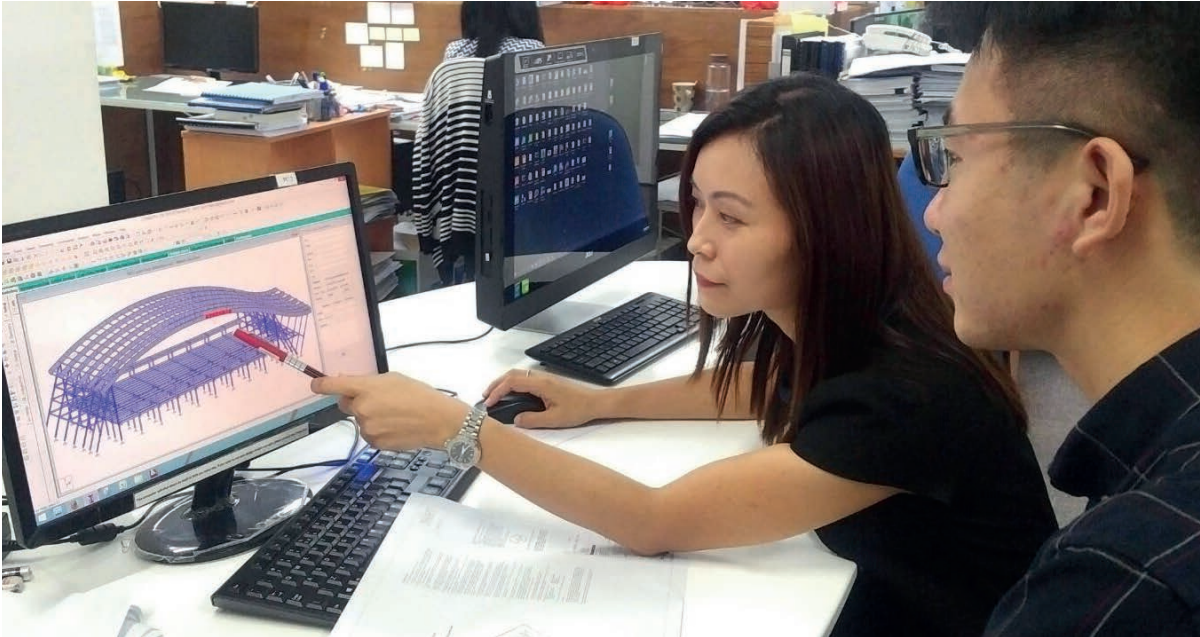
## TO GROOM THE NEXT GENERATION OF INDUSTRY CHAMPIONS

Consultants Pte Ltd, she manages and guides a team of engineers and drafters. She also works with the project team to overcome constraints to meet clients' requirements, and implement solutions when problems arise on-site.

She was the Structural Design Reviewer for the new Nanyang

Technological University (NTU) Sports Hall, which is the first building in Southeast Asia to use specially engineered wood on a large scale. The sense of accomplishment at the completion of a project excites her. What she found even more rewarding was the fact that she had contributed to a physical legacy for her alma mater.





Left: Er. Sharron Ng (left) working on the structural design for the new NTU Sports Hall.

Below: Chua Zi Jun (right) mentoring Nge Zhen Yang (left) of Hwa Chong Institution on the roles architects play in the BE sector.

Sharron believes that the best way to promote engineering is to be a role model for the younger generation, and show them how interesting engineering could be. Since 2014, she has been the chairperson of the Sub-committee for Interest and Promotion at Women in Science, Engineering & Research (WiSER), under the Institution of Engineers, Singapore (IES). Together with her team, she has organised activities such as the WiSER Summit, where female leaders in engineering, science and research were invited to share their experiences.

**Chua Zi Jun** is an architect at home-grown firm DP Architects. In his 11 years with the firm, he has worked on more than 20 building projects, including the Fort Canning Museum and Resorts World Sentosa. He leads a team of architects who are also involved in projects in different countries. As team leader, he is responsible for various aspects of a project, from developing the design concept with the team to working with clients and consultants to realise the design, and going down to the site to supervise construction.



Zi Jun is passionate about nurturing the next generation of architects for the BE sector. He has been mentoring young professionals at DP Architects and students who are interested in joining the sector. Recently, he mentored the 18-year-old Nge Zhen Yang through the BCA Job Shadowing Programme, which introduces junior college students to the various career opportunities in the BE sector, and helps them gain exposure in the industry through job internships. Through this programme, Zhen Yang has affirmed his interest in becoming an architect.

Stay tuned for more events and features on YLs in the coming issues.



Er. Sharron Ng, Chua Zi Jun and other YLs having lunch with BCA's management and then-Senior Minister of State Mr Desmond Lee.

## ADVANCING WITH A RETREAT

The Young Leaders Retreat was organised in November 2016 to brainstorm ideas to advance the BE sector. Held at the BCA Academy, more than 100 YLs and BCA officers attended the half-day event.

In his welcome address, Guest-of-Honour then-Senior Minister of State for Home Affairs and National Development Mr Desmond Lee, said, "You represent the future



of the built environment sector in Singapore. Your vision, your effort, your commitment will define the future of our gleaming city. The government is keen to work with you on this journey."

To prepare for the retreat, the YLs were divided into six taskforces to look into the following focus areas:

- Virtual Design and Construction (VDC)
- Design for Manufacturing and Assembly (DfMA)
- Manpower Development
- Green Buildings
- Smart Nation
- SG100/Universal Design

From August to October 2016, the members of each taskforce, led by BCA taskforce leaders, met and brainstormed new ideas for the topics that they are passionate about, then shared their views and recommendations at the retreat. BCA will study the various recommendations and share them with the industry progressively.

Those who attended the retreat appreciated it for being an avenue

Guest-of-Honour then-Senior Minister of State Mr Desmond Lee addressing the retreat participants.



through which all stakeholders in the value chain could air their views and be heard. "The BCA Young Leaders Programme is definitely a good platform where all the stakeholders in the built environment can share and learn from one another," affirmed Lim Su Chuan from City Developments Limited.

"This was a good chance for us to share with the Minister the challenges that we face on the ground," said Er. Sharron Ng from ECAS Consultants. "I strongly believe that, with greater collaboration, we can change the way we work in this industry!"

Teams of YLs taking turns to present recommendations on their respective focus areas.

# INAUGURAL SUMMIT TO DRIVE PRODUCTIVITY

*Amid the economic slowdown, industry leaders came together to discuss growth through productive technologies.*



**More than 150 participants gathered at the first-ever Productivity Leadership Summit on 28 November 2016 to glean insights on productivity improvement from renowned industry practitioners.**

Organised by BCA, the focus of the summit held at the Marina Bay Sands Expo and Convention Centre was on achieving higher productivity through the integration of Building Information Modelling (BIM), Virtual Design and Construction (VDC), with Design for Manufacturing and Assembly (DfMA) technologies. BCA CEO Dr John Keung urged the industry to forge strong partnerships to prepare for future challenges in his opening address.

Leaders from different sectors of the industry shared their respective productivity journeys, and delivered updates on the latest local and overseas developments.

Presentations were made by CEO of City Developments Limited Mr Grant Kelley, Managing Director of DPR Construction Mr Joseph Yau, and Deputy Managing Director of DCA Architects Mr Khoo Poh Bin.

There was also an engaging dialogue session with Guest-of-Honour Mr Desmond Lee, then-Senior Minister of State for Home Affairs and National Development. He was joined by Dr John Keung, the three presenters, and BCA Board

Member Mr Han Fook Kwang, who acted as moderator for the panel.

They discussed with the audience the importance of raising productivity at the national level. Among the topics covered were common obstacles faced in the adoption of DfMA, BIM and VDC, and solutions to overcome those issues. The panel also highlighted the need to build up manpower capability to support the sector as firms adopt new technologies.

**Top: Mr Desmond Lee (third from right), the Guest of Honour, leading the panel dialogue session with (from left) Mr Khoo Poh Bin, Dr John Keung, Mr Grant Kelley, Mr Joseph Yau, and Mr Han Fook Kwang.**



**Left: Mr Desmond Lee pointing out that the government will take the lead in the productivity journey, but success ultimately hinges on support from the industry.**

# EDUCATING FUTURE PRACTITIONERS

*BCA's vision is to shape a future-ready built environment for Singapore, and this needs to be supported by generations of more-than-competent practitioners. Pillars meets three lecturers who believe in nurturing the built environment champions of tomorrow.*



**“They are building the future.”  
“They are extending horizons.”  
“They are preparing the next generation.”**

Those were some of the reasons three BCA Academy lecturers offered when asked why their profession would be worthy of a magazine feature — a cover story, no less! On a more practical note, one of them remarked, “It could be because BCA wants to feature the training that goes into supporting the built environment industry.”

All this emerged during a chat *Pillars* had with the trio in January 2017 to find out what their job entailed and the challenges they faced. They are Ms Jane Ong Yu Zi, Mr M H Rahman and Mr Andell Matthew Tan Li Lye.

The saying “Those who can’t, teach” does not apply to these three lecturers, because they each have had extensive and relevant experience in architecture and construction, which is important for credibility in the eyes of their students.

These three hail from the Academy’s School of Building and Development, which caters to two groups of students. The first group is made up of students studying for full-time diplomas, and they are of polytechnic age. The other group comprises working professionals, the demographic for whom the specialist diplomas were set up. “So they are two very different groups, two very different audiences,” Ong explained.

Ong, Rahman and Tan are also programme managers for the Specialist Diploma in Design for Manufacturing & Assembly (DfMA), Lean Construction (LC), and Virtual Design & Construction (VDC) respectively. “All of us were involved in the launch of three new specialist diploma courses, specifically in three areas of construction productivity,” Ong revealed. “BCA has been pushing very hard to raise the standard of

the construction industry so that course participants do their jobs in a more efficient manner.”

Rahman added, “All these specialist diplomas are in line with BCA’s productivity development drive; they will supplement the supply of competent people to the industry.” Tan chipped in, “These diplomas are meant to inform and educate the industry about new technologies and processes, which will, hopefully, help them achieve these targets.” So what are these targets? “We are supposed to achieve 2–3% increase in construction productivity, an improvement year-on-year by the Year 2020,” Tan shared.

Having students from two very different age groups, work experience and depth of knowledge presents unique challenges. During the Q&A session, Ong, Rahman and Tan shared how they dealt with the dichotomy.



**MR M H RAHMAN  
SENIOR LECTURER  
SCHOOL OF BUILDING  
AND DEVELOPMENT**

**What do you try to impart in your lectures?**

Values and ethics. Engagement is another important thing — letting them [the students] feel interested in the subject. As lecturers, it is our responsibility to motivate them, to

let them feel that things are for the better, that they should take pride in whatever they are doing, especially if it is something for the nation. So we try to engage them, and allow them to make things their own, so that it is their own innovation and idea.



**For the working adults, their motivation is already there. In this case, you are working as a facilitator and learning is a two-way street.**



**Do you find it more difficult to teach younger kids as opposed to working adults?**

For the working adults, their motivation is already there. They want to upgrade, acquire more knowledge, or sometimes they want to switch to a career in the built environment industry. You learn from them, too. In this case, you are working as a facilitator and learning is a two-way street.

The full-time diploma students don’t have any practical experience and are more academic. But for the younger kids, their expectations are totally different. In the old days, students will just follow what teachers say; nowadays, we have to make them feel that it is important to acquire that knowledge, that it can help them for the rest of their lives, whether they are going to be employees or set up their own businesses. So I have to make the subject

something they can relate to. If you can do something that they can relate to, something that they feel is important, then the job is done!

### How long have you been a lecturer with BCA?

I have been with BCA for more than 19 years, but I've been lecturing for about 15 years. This was before the BCA Academy was set up. I started with the Manpower Development Division for four years before I was transferred to the Skills Development Section, the former name of the School of Building and Development. Prior to that, I worked in the construction industry.

### What made you want to move into lecturing?

My father was a teacher. Since I was a child, it was my dream to impart knowledge to students. Subsequently, when I got the chance to work in the Skill Development Section, I grabbed that offer and I've really enjoyed it.

**Rahman, 50, was born and raised in Bangladesh, where he earned a bachelor's degree in civil engineering. He arrived here in 1998 after being hired by the Construction Industry Training Institute (CITI), the predecessor of BCA Academy. "I have seen a lot of changes, starting from CIDB, then BCA and the BCA Academy," he quipped. He has since earned a Masters in International Construction Management from Nanyang Technological University (sponsored by BCA). Married to a former nutritionist, the father of two sons — one is currently enrolled in NUS, the other is in Secondary 2 — volunteers in groups that cater to the expatriate Bangladeshi community in Singapore.**



**MS JANE ONG YU ZI**  
**HEAD (ACADEMIC PROGRAMMES)**  
**SCHOOL OF BUILDING AND DEVELOPMENT**

### What is your teaching approach for these two groups of students?

For the kids doing the full-time diploma, the challenge is keeping their attention. Youths these days are so used to instant gratification that the challenge is to keep them interested in the lessons. No longer can the lecturer just stand there to talk and talk and talk. We have to engage the kids through training activities, role-play, and hands-on learning through projects. So those are the strategies I use for full-time diploma students.

For the working adults, as they have already had a full day at work, they will have high expectations on the content being delivered. The content has to be something relevant and useful to them; something new that they can upgrade themselves with. The demand for the content is much higher; but as they are adults, you don't have to spend so much time creating engagement activities compared to the kids. Most of them are already self-motivated; for them, what matters more is content knowledge.

### Do you get intimidated by working professionals taking your class?

Not really. If you are well prepared, have industry experience, and are able to share your knowledge on past industry experience plus new

knowledge in areas of productivity, they will be happy to listen to you. But, of course, you have to gain their respect. That's why BCA Academy tends to hire people with industry experience.



**Youths these days are so used to instant gratification that the challenge is to keep them interested in the lessons. No longer can the lecturer just stand there to talk and talk and talk.**



### What motivated you to join BCA Academy?

I joined BCA Academy as a lecturer about two years ago.

After working for a while in the industry, and after I had earned my architect registration, I began to think of what I could do next. Should I continue to be an architect and repeat project after project? I kind of see lecturing as a new challenge. It is still in the field I am interested in, which is architecture, but I also found that one of my interests is to share knowledge.



I am more of a practitioner, so the interesting part about BCA Academy is that they are very close to the industry, and you get to train students to fit the industry. So if you are practising in the industry, then you can better teach what the industry needs.

**How long were you in architecture?**

I was working in private firms for about nine years before I joined BCA. I spent most of that time — about seven years — with CPG Consultants.

**Ong, 36, has a Masters in Architecture from the National University of Singapore (NUS) and is married to a fellow architect. When they go on holiday, rather than doing the usual touristy things, their itinerary consists of checking out buildings designed by their favourite architects. The oldest of three sisters, Ong got into architecture because of her love for art and design.**



**MR ANDELL MATTHEW TAN LI LYE**  
**SENIOR LECTURER**  
**SCHOOL OF BUILDING AND**  
**DEVELOPMENT**

**Do you use different teaching methods for your two groups of students?**

Definitely. I normally share my experiences with them; after all, I

was in the industry for about 10 years.

For the younger generation, I will concentrate on using new teaching methodologies to inform them that the construction industry is not all dirty and greasy. There are new technologies, such as Building Information Modelling (BIM). Traditionally, they used to do their drawings in AutoCAD in 2D. Now it's all about 3D and beyond 3D. It's all about visualisation, and augmented or virtual reality. These are the types of technology youngsters can easily relate to.

For the other student profile, those taking the specialist diplomas, they can be more challenging. That said, this group comes with a determination to pick up new skills, so it is really about informing them how they can further refine their thinking, to pick up additional skills to help them in their work.

**Besides sharing subject matter knowledge, what other values do you hope to impart to your students?**

Passion. It is not merely about knowing how to do a job, but about taking pride in doing a job and doing it well. While jobs in the construction industry can be laborious and repetitive, they can also be challenging. If we can demonstrate to the students the rewards, then that's where passion will start to come.

Because construction projects are long, easily lasting three to five years or even longer, the rewards are not immediate. But if we can work towards sustaining and cultivating their interest in those fields, they will derive greater satisfaction and pride in their work.

**How long have you been a lecturer at BCA Academy?**

I was an architect before. Interestingly, Jane and I were colleagues; in fact, we were sitting

side by side. I joined the Academy in 2012, so it has been almost five years.

I don't really see it as jumping ship. It was something that had been at the back of my mind since graduation [from university]. I didn't foresee myself working as an architect until retirement, much as I enjoyed the process. I've always felt the need to contribute back and this is my way — by cultivating the next generation of designers.



**It was something that had been at the back of my mind. I've always felt the need to contribute back and this is my way — by cultivating the next generation of designers.**



**Like Ong, 44-year-old Tan is also married to someone from the industry — his wife is an interior designer. "We met on one of the jobs we did together," he says. The former St Andrew's Secondary School student was a police officer for five years, a stint that "helped me a lot in my personal development, such as in dealing with the general public, in public speaking, and seeing things from a broader perspective". Tan is passionate about green issues. He elaborates, "I have a Masters in Sustainable Building Design, as well as an Accredited Professional in Leadership in Energy and Environmental Design (LEED)."**

# 'HACKED' TOYS BRING JOY TO SPECIAL NEEDS CHILDREN

*BCA officers and young leaders from the built environment sector play a big part in this CSR programme.*



Left: A little girl in action at one of the carnival stalls.

Below: BCA Officer Mr Aaron Seow and Mr Tan Bing Hui, a Young Leader from the BE sector, presenting the 'hacked' toys to one of the children.

**A large portion of toys being sold in departmental stores are not suitable for children with special needs. This is because many of these toys have switches that are too small for these children to operate.**

A simple modification to such toys will change the situation, restoring the joy of playing for these children while encouraging them to move and improve their motor skills. Hence, about 70 BCA officers and young leaders from the built environment sector learnt how to install larger and more accessible switches on the toys in two Hack-a-Toy workshops.

Held in July 2016, the workshops, a CSR programme initiated by

BCA's Manpower Planning Department (MPD), were organised in partnership with Engineering Good, a not-for-profit organisation.

The modified toys were presented at AWWA's Graduation Ceremony on 11 November 2016 to the children of AWWA Early Intervention Centre, which supports infants and toddlers with special needs. A carnival held on the same day had game booths managed by BCA officers. In addition, BCA sponsored items contained in the goodie bag, such as a laundry bag as well as a storybook.





# BCA'S PRO-ENTERPRISE INITIATIVES

*BCA is championing and driving pro-enterprise efforts to improve the industry's productivity and the ease of doing business.*

## FACILITATING THE RESOLUTION OF CONFLICTING REQUIREMENTS

In the last issue, we introduced you to the BCA-led Inter-Agency Coordinating Committee (IACC), which helps resolve roadblocks for projects at both project and agency level. Since the formation of IACC in July 2011, the multi-agency committee has attended to a total of 43 cases to date.

In this issue, we share a case study that demonstrates the vital role that the IACC plays in addressing conflicting requirements.

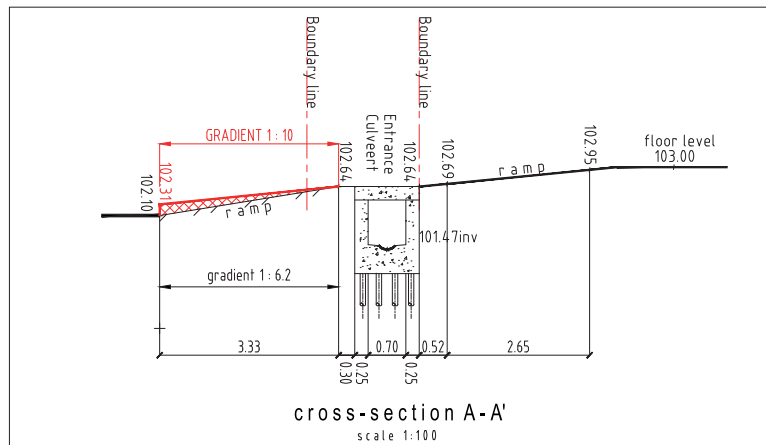
### CASE STUDY: CONFLICTING REQUIREMENTS BETWEEN GRADIENT OF VEHICULAR RAMP (LTA) AND MINIMUM PLATFORM LEVEL (PUB)

The project for a single block residential development was unable to meet both PUB's requirement for minimum platform level and LTA's stipulated gradient for the external vehicle ramp due to existing site constraints. As a result, it was unable to obtain the Certificate of Statutory Completion (CSC) from both agencies.

The IACC stepped in to work closely with LTA, PUB and the project team. After many rounds



Left: The project needed to meet both PUB's requirement for minimum platform level of the entrance culvert, and LTA's required gradient for the external vehicle ramp.



Left: Section drawing of the entrance to the development. The red line denotes the final gradient that met LTA's requirement.

of discussion, the parties involved agreed on a solution that involved resurfacing the road and widening the inlet metal grill of the drain opposite the development. This yielded gradients and levels acceptable to both LTA and PUB. Thereafter, the project obtained CSC.

More initiatives by IACC will be featured in the upcoming issues of *Pillars*. To contact the IACC secretariat, please email to: [BCA\\_IACC\\_SECRETARIAT@bca.gov.sg](mailto:BCA_IACC_SECRETARIAT@bca.gov.sg)



**I am writing this letter to show my appreciation and gratitude. Your department makes a great difference and creates a more business-friendly environment.**



Email from the developer after the case was resolved

## CQM ONLINE: A BETTER USER EXPERIENCE

BCA has revamped its online booking system for quality assessments so that it remains useful, effective and pro-business.

Since its inception in 1989, the Construction Quality Assessment System (CONQUAS®) has served as a de-facto assessment of workmanship quality of new building projects. Separately, the BCA Quality Mark scheme measures and assesses the quality of workmanship in each unit of a newly completed residential building.

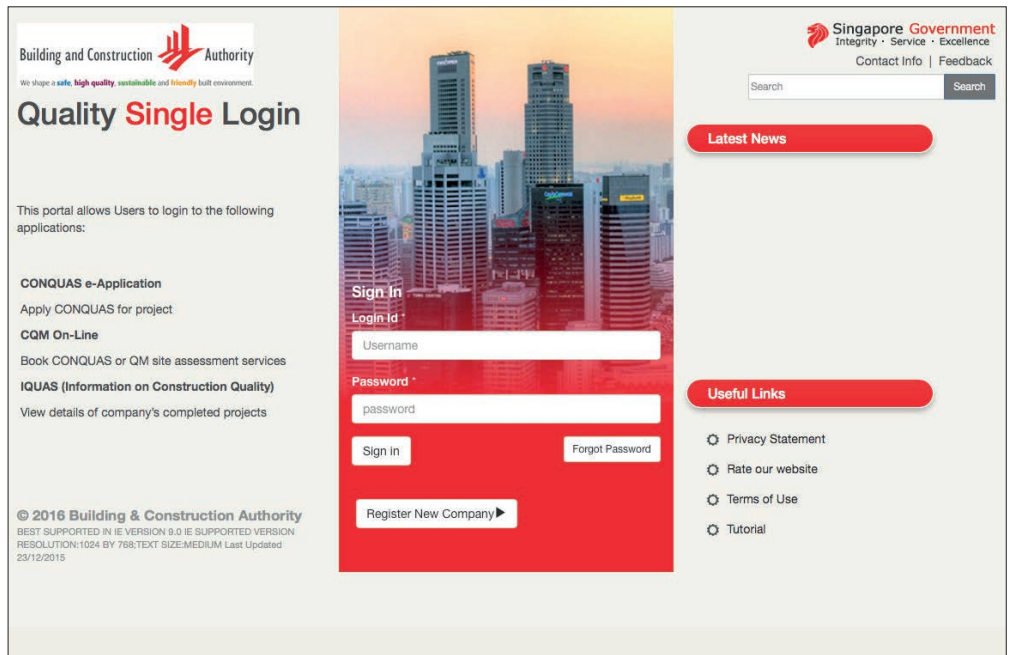
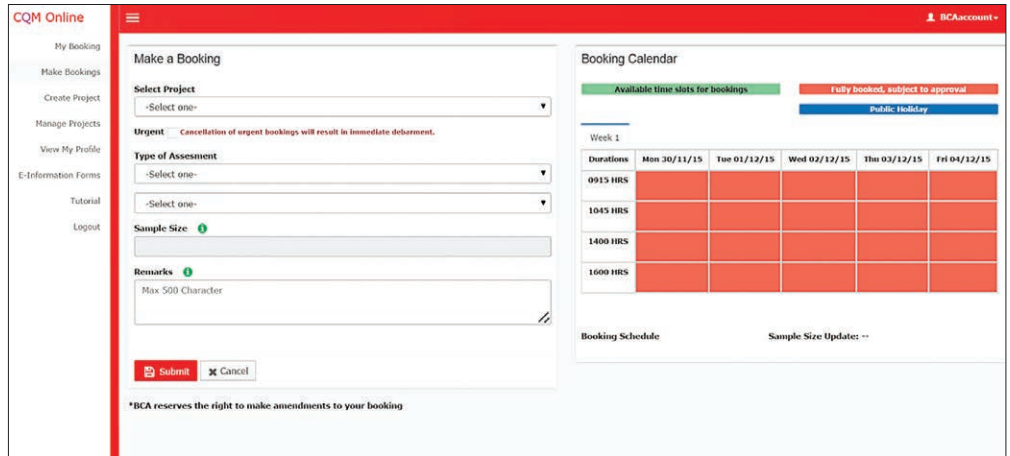
To manage requests for these assessments, BCA developed CONQUAS Quality Mark Online system (CQM Online) six years ago. The system allows:

- contractors to book and manage assessments
- BCA's administrators to assign manpower
- BCA's assessors to carry out assigned assessments via email/internet/SMS

In the recent revamp, BCA updated the system to address issues such as overbookings, excessive cancellation of approved bookings, unproductive deployment of assessors, and laborious manpower allocation.

The booking of appointments on CQM Online will now be accepted on a 'first come, first served' basis. At the same time, users will be able to access up-to-date information on the availability of assessors, and the type of bookings they are making. Also new is the auto-deployment of assessors, a feature that aims to minimise errors and maximise manpower utilisation. The debarment system has been revised to deter overbooking and cancellation.

With these changes, BCA hopes to better meet the assessment needs of customers, provide greater transparency, and create a more level playing field.



## ACCESS VARIOUS E-SERVICES VIA A SINGLE LOGIN

In an effort to enhance users' experience with its e-Services, BCA's Quality and Certification Department (QCD) has introduced an Integrated Access System — the Quality Single Login (QSL) portal. Customers using the common platform need only one set of user ID and password to submit various applications.

The QSL portal integrates three

e-Services, namely, CONQUAS e-Application (an e-submission system), CQM On-Line (an e-booking system for CONQUAS/ CQM assessment), IQUAS (a one-stop information resource centre on construction quality with defect analytic and benchmarking tool). The portal will progressively be enhanced to incorporate other upcoming e-service systems such as e-ISO, e-SMC, e-GGBS and e-QM.

The portal can be accessed at <https://www.bca.gov.sg/qs1>

**Top: Booking quality assessments is now easier through the revamped CQM Online system.**

**Above: One set of user ID and password is all you need to apply for services through the Quality Single Login portal.**

Tap on SkillsFuture Credit, Study Award or Mid-Career Enhanced Subsidy for our courses!

## MAY 2017

### 4 May 2017

Preparing and Defending Loss and Expense Claims (26th Run)

### 4 May 2017

Tendering for MRT and Major Infrastructure Projects (9th Run)

### 5 May 2017, am

Code of Practice on Buildability

### 9 May 2017

Good Industry Practices – Drywall Installation including Wet Areas Application (7th Run)

### 11 & 12 May 2017

BMSMA for Building Management Personnel (17th Run)

### 11 & 12 May 2017

Design of Concrete Structures – Eurocodes versus British Standards (19th Run)

### 11 & 12 May / 18 & 19 May / 29 & 30 May 2017

Registered Earthworks Supervisor Course

### 15 & 16 May 2017

Managing Project Teams Effectively (16th Run)

### 15–18 May 2017

Certification Course in BIM Management (65th Run)

### 16 May 2017

Good Industry Practices (Timber Flooring)

### 16, 17, 22 & 23 May 2017

Develop a Workplace Safety and Health Management System Implementation Plan (BizSAFE Level 4) (12th Run)

### 16, 18, 23 & 25 May 2017

Obligations and Liabilities in Building Construction Works (5th Run)

### 17 & 18 May 2017

Effective People Management For Construction Professionals (2nd Run)

### 18 May 2017

CONQUAS Training for Developers & Consultants (Re-run)

### 18 & 19 May 2017

BIM Scheduling & Process Management (3rd Run)

### 19 May 2017

Design & Maintenance – Kitchen Exhaust Systems for Hawker Centres (2nd Run)

### 22 & 23 May 2017

BIM Planning Course (Building Developers and Facility Managers) (20th Run)

### 22 & 23 May 2017

CP5 on Low Voltage Electrical Installations (5th Run)

### 24 May 2017, am

Building Control Regulations for Site Supervisors (44th Run)

### 24 May 2017

PSSCOC Contract Administration Essentials (5th Run)

### 24 & 25 May 2017

Develop A Risk Management Implementation Plan (BizSAFE Level 2) (117th Run)

### 24–26 May 2017

Certified QM/CONQUAS Managers Course (56th Run)

### 25 & 26 May 2017

Managing Workflow and Achieving Plan Reliability (4th Run)

### 29 & 30 May 2017

Construction Contract Administration (Re-run)

## JUNE 2017

### 1 & 2 Jun 2017

Sustainable Facility Management Solutions (15th Run)

### 6 Jun 2017

Good Industry Practices (Waterproofing for External Wall) (Re-run)

### 7 Jun 2017

CONQUAS Training for Builders (Mandarin)

### 8 Jun 2017

Best Practices for Green and Gracious Builder – Improving Performance and Site Practices (2nd Run)

### 8 Jun–End Dec 2017

Certification Course for Green Mark Facilities Professional 2017 (Batch 4)

### 8 & 9 Jun 2017

Energy Efficiency for Electrical Systems (4th Run)

### 13 Jun 2017

Good Industry Practices (Timber Doors, Wardrobe & Kitchen Cabinet) (13th Run)

### 15 Jun 2017

CP88 on Temporary Electrical Installations (4th Run)

### 19 & 20 Jun 2017

Design of Steel-Concrete Composite Structures using Eurocode 4 (7th Run)

### 20 Jun 2017

Good Industry Practices (Painting)

### 20, 22, 27, 29 Jun & 4 Jul 2017, evenings

Geotechnical Design using Eurocode 7 (16th Run)

### 28, 29 & 30 Jun 2017 (day)

Internal Audit (QEHs) Course based on Quality ISO 9001, Environmental 14001 and Health & Safety OHSAS 18001 (28th run)

### 28, 29 Jun, 4 & 6 Jul 2017, evenings

Supervision of Piling Works (27th Run)

### 29 Jun–14 Jul 2017 (5 days)

Lift and Escalator Course for Engineers (4th Run)

## JULY 2017

### 3 & 4 Jul 2017

Advanced Concrete Design using Eurocode 2

### 3, 5, 7, 10, 12, 14, 17 & 19 Jul 2017, evenings

Supervision of Deep Underground Construction Works (4th Run)

### 7 Jul 2017

Requirements for Environmental Sustainability in Buildings and The Green Mark Scheme (39th Run)

### 10 & 11 Jul 2017

Design of Steel Structures using Eurocode 3 (9th Run)

### 13, 14 & 17 Jul 2017

Solar Modelling (22nd Run)

## Contact

### BCA Academy

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Web: [www.bcaa.edu.sg](http://www.bcaa.edu.sg)

### Starting on May 2017 (Full-time)

Application closing date: 15 May 2017  
Bachelor of Engineering (Honours) (Civil)\_FULL TIME (1st Intake) (awarded by The University of Newcastle, Australia)

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### Starting in Jul 2017 (Part-time)

Application closing date: 30 Jun 2017  
Bachelor of Construction Management (Building)(Honours)\_PART TIME (4th Intake) (awarded by The University of Newcastle, Australia)

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### Starting in Oct 2017 (Full-time)

Application closing date: 8 Sep 2017  
Bachelor of Construction Management (Building)(Honours)\_FULL TIME (10th Intake) (awarded by The University of Newcastle, Australia)

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[zhuo\\_xiuyun@bca.gov.sg](mailto:zhuo_xiuyun@bca.gov.sg)

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\* Times Higher Education World University Rankings 2015-2016 and QS World University Rankings 2015/2016

\*\* Times Higher Education 'Top 100 under 50' 2014 and QS 'Top 50 under 50' 2014

\*\*\* QS World University Rankings by Subject 2016

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- Construction Productivity (SDCP) – 7<sup>th</sup> Intake
- Design for Manufacturing & Assembly (SDDfMA) – 3<sup>rd</sup> Intake
- Lean Construction (SDLC) – 3<sup>rd</sup> Intake
- Virtual Design & Construction (SDVDC) – 2<sup>nd</sup> Intake

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- Facility & Energy Management (SDFEM) – 31<sup>st</sup> Intake
- Interior & Landscape Design (SDILD) – 28<sup>th</sup> Intake
- M&E Co-ordination (SDME) – 27<sup>th</sup> Intake



SCAN QR Code or visit [www.bcaa.edu.sg](http://www.bcaa.edu.sg) for more details on above programmes