

PILLARS

FEB
2018

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

06

SCPW HIGHLIGHTS

The best of Singapore
Construction Productivity
Week 2017

08

CONGRATULATIONS, BCAA GRADUATES!

Changemakers in our midst

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GREENING THE FUTURE

Greening the way,
in Singapore and beyond

REDEFINING CONSTRUCTION BY 2025

A glimpse into the new age
of construction.

/02



WE ARE GOING DIGITAL!

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Building and Construction Authority

CEO'S MESSAGE



Hugh Lim

Chief Executive Officer
Building and Construction Authority

DEAR READERS,

The Construction Industry Transformation Map (ITM) was launched in October 2017, where BCA, together with Industry and Academia, put forth the vision of a vibrant and successful built environment sector, with strong and capable firms, adopting leading building technologies and creating good jobs for built environment industry professionals. I would like to thank everyone who has been supporting our transformation efforts, and had contributed to the ITM over the past year.

I am glad to note that the outlook for the year ahead is promising. At the BCA-REDAS Built Environment and Property Prospects Seminar in January this year, BCA shared the anticipated pickup in construction demand of up to \$6.5 billion for the year. This boost will come from both the public and private sectors, which are expected to contribute up to \$3.5 billion and \$3 billion more respectively.

Let's continue the momentum in building Singapore and achieving our ITM vision. Continuous learning and advancement remains a key focus for BCA. We work very closely with schools and Government agencies, and train individuals through our education arm – BCA Academy (BCAA). Our latest batch of BCAA graduates, including the pioneer cohort of professionals trained in four ITM-related courses, received their diploma and specialist diploma certificates last November. Congratulations to these new graduates. I look forward to their contributions to the built environment sector!

On the environmental sustainability front, BCA has been encouraging Singapore firms to take the lead in harnessing green technologies in buildings. Many firms have stepped up to the challenge and some have achieved multiple BCA Green Mark Platinum ratings for their projects. We are featuring two BCA Young Leaders, who were part of the teams involved in the BCA Green Mark Platinum projects; as well as two local firms with exemplary green building expertise which have gone international in their efforts to advocate and supply green building technologies and services. May their stories inspire more firms to embark on their own green journeys and extend their reach beyond our shores.

As our city matures, it is also important to look at proper maintenance of our infrastructure. The Real Estate ITM was launched in February this year, with a focus on transforming the property transactions and facilities management (FM) sectors. BCA has been tasked to form a team to coordinate the overall development of the FM sector and will work closely with other agencies involved in building design and maintenance. The goal is to transform the way we maintain our infrastructure for added efficiency and cost savings.

I count on all stakeholders to do our part to uplift the industry. With your continued support, I am confident that we will be able to transform the way we *Build Singapore* together!

WELCOMING THE FUTURE OF CONSTRUCTION

What's in store for Singapore's built environment, as mapped out by the Construction Industry Transformation Map (ITM)?

Imagine a world where high-quality buildings are created with minimal manpower and disruption to the surroundings. Where project stakeholders work in perfect tandem, from anywhere they are. One where you can detect infrastructure errors before a building actually exists, deeming costly reworks unnecessary. The best part? This may be your world by 2025.

40%
DfMA adoption rate in Singapore'

And the answer lies in Design for Manufacture and Assembly (DfMA). Using the DfMA approach, the bulk of labour-intensive construction takes place in controlled factory environments. In other words, building units are constructed offsite before being brought onsite for assembly. This enables builders to complete their projects faster, safer, cleaner, quieter, and with better quality. **Adoption of such technologies is targeted to increase by up to four times by 2020. That's 40% of all building projects, up from the current 20%!**

Construction ITM: Our Vision
Advanced and Integrated Sector

Progressive and Collaborative Firms

Good Jobs for Singaporeans



How will we make this happen?

a) Generate lead demand in both public and private sectors through:

- Establishing the Productivity Gateway Framework (PGF) to boost construction productivity for public projects
- Raising the weightage of the productivity component in public sector procurement evaluation
- Encourage continual innovation through the Building Innovation Panel (BIP)
- Funding for projects which voluntarily adopt DfMA technologies
- Government Land Sales (GLS) sites with appropriate DfMA conditions
- Establishing Public Sector Construction Productivity Fund (PSCPF) to provide targeted funding to support DfMA adoption for Government Procuring Entities (GPEs)

b) Build up supply capabilities and capacities through:

- Rolling out up to 10 Integrated Construction and Prefabrication Hubs (ICPHs) by 2020. Today, there are three ICPHS in Singapore in operation.
- Launching a series of guidebooks on DfMA technologies in the Singapore context
- Organising industry outreach programmes such as Construction Productivity Awards, publications, local seminar series as well as overseas learning journeys



BY 2025, You May See....

A new way of constructing: It's all in the cloud!

Building and construction projects often involve many different parties – developers, builders, sub-contractors facilities managers, architects, engineers and more. Integrating and digitalising the construction value chain is an important strategy to transform the industry. Integrated Digital Delivery (IDD) focuses on the greater use of digital technologies and Building Information Modelling (BIM) throughout all four stages of the project lifecycle (i.e. design, manufacturing and fabrication, construction and facilities management). This fosters better communication and collaboration among the project stakeholders and helps to achieve a more integrated value chain. The outcome: minimised reworks, more production and delivery coordination of building parts, a faster and safer construction process, reduced disruption to the surroundings and better means to maintain and retrofit the building in future.

How will we make this happen?

- a) Pioneer 40 to 60 IDD projects
 - Funding for project teams to adopt IDD in their projects
 - Developing IDD blueprint for future projects
- b) Develop IDD Eco-System, Solutions and Standards
 - Work with industry to identify a ready suite of IDD solutions
 - Showcase IDD solutions in the Centre for Lean & Virtual Construction (CLVC)
- c) Ramp up IDD readiness of firms
 - Develop IDD competency through courses at BCA Academy and Institutes of Higher Learning
 - Develop an IDD Readiness Framework for the industry



Buildings that power themselves

Currently, more than one-third of the buildings in Singapore, by gross floor area, meet the green building standards. Apart from strengthening our efforts on achieving the nation's target of greening 80% of Singapore's buildings by 2030, BCA is focusing on ensuring that these green buildings perform optimally when in operation. Taking a life cycle approach to buildings, considerations for facilities management (FM) and elements of super low energy (such as passive building designs that minimise heat entering the buildings, as well as energy efficient air conditioning and lighting systems) will be incorporated upstream at the design stage. At the same time, greater emphasis will be placed on building end-users and occupants by spurring greener and healthier workplaces for everyone. Collectively, these strategies will help Singapore to create good jobs for Singaporeans and meet our climate change commitments.

How will BCA make this happen?

One of our key initiatives include partnering the Health Promotion Board to develop a joint Green Mark scheme to encourage upstream infrastructure changes and provisions ("hardware") and softer workplace programmes ("software") that promote environmental sustainability and occupant well-being.



BCA GREEN MARK

More and better built environment industry jobs

There will be about 80,000 personnel trained in DfMA, IDD and Green Buildings by 2025, up from about 33,000 today. This significant increase will ensure that the built environment sector is supported by a highly capable workforce equipped with the right skills to transform the industry.

How will we make this happen?

- a) Create quality jobs for Singaporeans
- b) Generate higher-skilled jobs, more competitive salaries and better working environments
- c) Encourage continuous training and upgrading of workforce
- d) Build core competencies and skills through professional development pathways such as:
 - Pre-employment training (PET)
 - Internships
 - Early job training
 - Continuous Education and Training (CET)

3 THINGS WE LEARNT AT SCPW 2017

BCA's seventh Singapore Construction Productivity Week (SCPW) brought over 12,000 members of the built environment sector closer to the future of construction than ever before. *Pillars* gives you a summary of insights from the event.



Ribbon-cutting ceremony by Minister Desmond Lee and BCA CEO, Mr Hugh Lim to launch BuildTech Asia 2017 on 24 October 2017

01

The foundation has been laid.

Now, it's up to us to make it even stronger.

We know about the cutting-edge solutions that can help us build better, faster, smarter and safer. It's now time for the next step – making these innovations the norm.

At SCPW 2017, built industry professionals saw productivity-enhancing innovations come to life. There was a site visit to The Wisteria (a shopping and residential development), where over 90 participants witnessed an actual Prefabricated Prefinished Volumetric Construction (PPVC) project unfold. At the Singapore EXPO,

event attendees saw how mechanical, electrical and plumbing (MEP) modules are put together offsite before being delivered to the job site for safe, efficient and high-quality assembly. There was also the Build Tech Asia 2017, which featured advanced construction technologies by over 120 companies from across the world. Workshops on PPVC and Design for Manufacture and Assembly (DfMA) further enhanced attendees' capabilities in taking such innovations to the next level.



Launch of the Construction by tripartite partners

02

We're building tomorrow's builders.

Youths are the answer to our future, and what better time to help build their skills than now?



Participants of the National BIM Shoot-Out receive their prizes during SCPW 2017

At SCPW 2017, 152 participants from Institutes of Higher Learning (IHLs) attended a Productivity Workshop where they learnt about productivity-enhancing innovations such as DfMA technologies and PPVC.

Two hundred and fifty IHL students put their skills and knowledge to the test in an exciting Amazing Race-style competition. The event also saw IHL students who won top honours in the National BIM Shoot-Out and

Productivity Challenge competitions receive their prizes.

Prizes were also presented to the winners of the SCAL Productivity and Innovation Awards. The top three winners, Koh Brothers Building and Civil Engineering Contractor (Pte.) Ltd (Gold Award), CS Construction & Geotechnic Pte. Ltd (Silver Award) and Straits Construction Singapore Pte Ltd (Bronze Award) were chosen out of 10 finalists, for their simple yet innovative construction solutions.



More than 250 enthusiastic students from five Institutes Higher of Learning participated in the Productivity Race

03

Building smart: The sky's the limit

Anything's possible when great minds get together.



Built Environment Leaders' Dialogue on the newly launched Industry Transformation Map (ITM)

At the two-day Build Smart Conference, close to 900 attendees and over 20 speakers engaged in a vibrant exchange of ideas about embracing innovation to build the future. The event saw the launch of a new Plenary Session where built environment industry experts and practitioners gathered to explore revolutionary thinking and inquiry into the future of Singapore's built environment, potential

challenges, how to resolve them and more. At the SCAL Built Environment Summit, leading experts across the global built environment convened to share their perspectives on their roles in shaping Singapore's future economy. One hundred and ninety-two participants discovered insights into how robotics can transform the way we build, future trends of smart cities and more.

REINVENTING THEIR OWN TOMORROWS

How far will some go to engineer fulfilling futures for themselves? Two outstanding BCA Academy (BCAA) graduates who received top honours for their exemplary achievements in and outside of the classroom share their stories.

Congratulations, Graduates!

More than a thousand graduates received their diploma and specialist diploma certificates at the BCAA Graduation Ceremony on 27 November 2017. The ceremony also saw the pioneer cohort of professionals trained in four ITM-related courses (Diploma in Architecture (Technology), Specialist Diploma in Design for Manufacture and Assembly, Specialist Diploma in Lean Construction and Specialist Diploma in Virtual Design Construction) officially graduating.

Neeky Tan Hui Ying
Quantity Surveyor,
East Asia Engineering
& Construction

Award:
Chairman Award

Heng Wui Meng Winston
Manager,
Chiu Teng Construction
Co. Pte Ltd

Award:
Merit Award



"I left a secure job for a risky one," muses Neeky, a new diploma holder in Quantity Surveying, and recipient of the Chairman Award.

Four and a half years into her civil service job, the then-28-year-old Neeky, who had a marketing degree, decided to make a career switch into the construction sector. She was inspired by her father, who had been working in the construction industry for over four decades. "He was always telling me stories about the houses he built, the buildings and offices he was involved in constructing, the dangers in his course of work, how the industry has evolved, and his work partners who have become their own bosses," she recalls.

"I struggled to leave my previous job, but I also felt that I had to take the plunge right then when I had no obligations, no debts, and was truly free to take the risk." Determined to excel in her new career path, she left her job to study full-time at BCAA. "The initial plan was to start a small business with my father where I would learn and work during my three-year diploma programme. However, six months into my course, he decided to retire. So, I applied for a job at East Asia Engineering & Construction Pte Ltd and started working there part-time," she elaborates.

Today, Neeky is a full-time Quantity Surveyor in the company – a position she secured even before graduation. Her stellar achievements include graduating with a perfect CPA of 4.0, demonstrating commendable qualities in school as a class representative, and being proactive in charity work at dog adoption as well as blood donation drives. And these achievements, collectively, led to Neeky being chosen to receive the Chairman Award for the year.



Despite being just a few years shy of retirement age, 58-year-old Winston's dedication towards learning is still going strong. The Valedictorian of the 2017 Specialist Diploma cohort graduated with a Specialist Diploma in Lean Construction, with a Merit Award. In his over-23 years as a project manager in the built environment sector, Winston's spirit of advancement has never waned. To date, he has attended more than 20 courses and seminars at BCAA to keep himself updated on the latest regulations and technologies in the industry.

"BCAA lecturers are highly qualified and their practice-oriented training equips us with very useful skills and knowledge required by the industry. BCAA certificates are recognised worldwide and some graduates were able to go to other countries like the United Arab Emirates after receiving their certificates," he says.

Winston's strong ability to apply what he has learnt contributed to his company's Quality Assurance and Quality Control team achieving a high CONQUAS score. So, what's ahead for this steadfast learner and achiever, now that he has a brand new Specialist Diploma under his belt? "I look forward to implementing lean principles such as some of the Toyota Principles in all my projects!" he enthuses.



MORE THAN JUST CONSTRUCTION

Following the launch of the Construction Industry Transformation Map (ITM), BCA has been tasked to coordinate the transformation of the Facilities Management (FM) sector under the Real Estate ITM.

Against a background of disruptive technologies, rising consumer expectations and slowing manpower growth, the real estate industry is facing various challenges. Therefore, the Real Estate ITM was launched to help the sector provide good jobs and take on challenges and opportunities of the future. This ITM is a collective effort of various government agencies and industry partners in Singapore. It will focus on enhancing property transaction services and facilities management (FM), with BCA being involved in realising the FM vision – that is, ensuring that buildings are well maintained for optimal performance and sustainability.

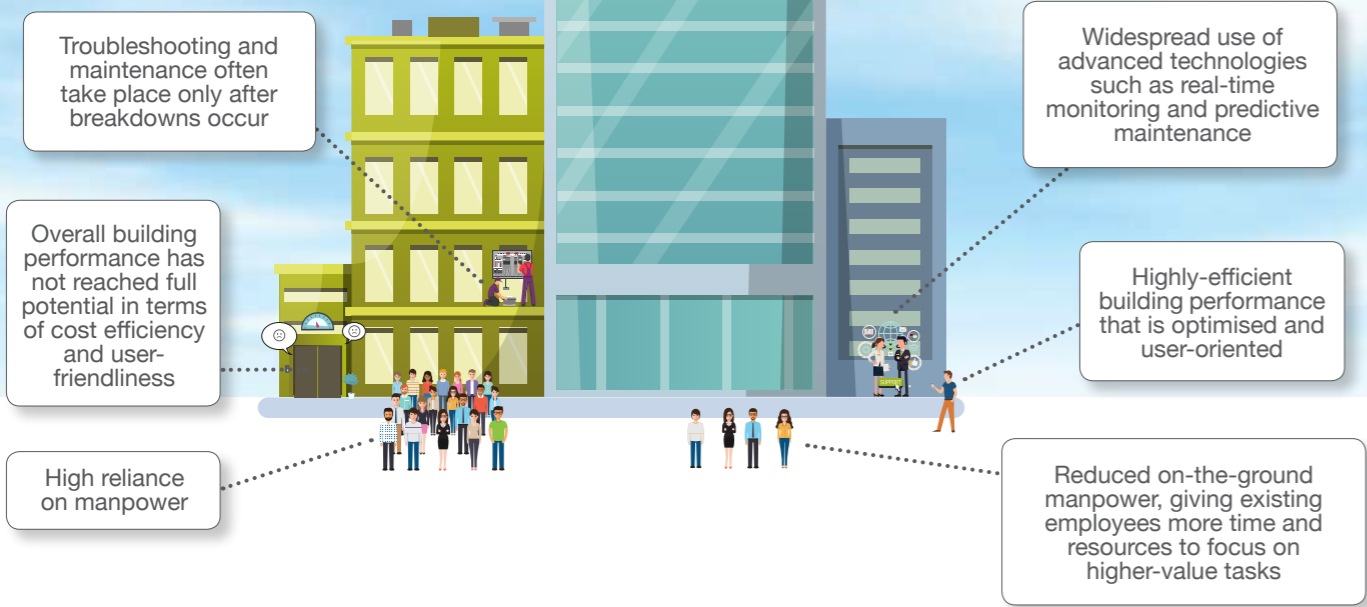


Singapore's Vision for the FM Industry

In the coming years, Singapore will see an integrated and efficient execution of FM, for a high-quality built environment, by a highly-skilled workforce.

The FM Industry Today

The FM Industry of the Future



Here's how BCA will play a part in realising the Real Estate ITM's vision:

01

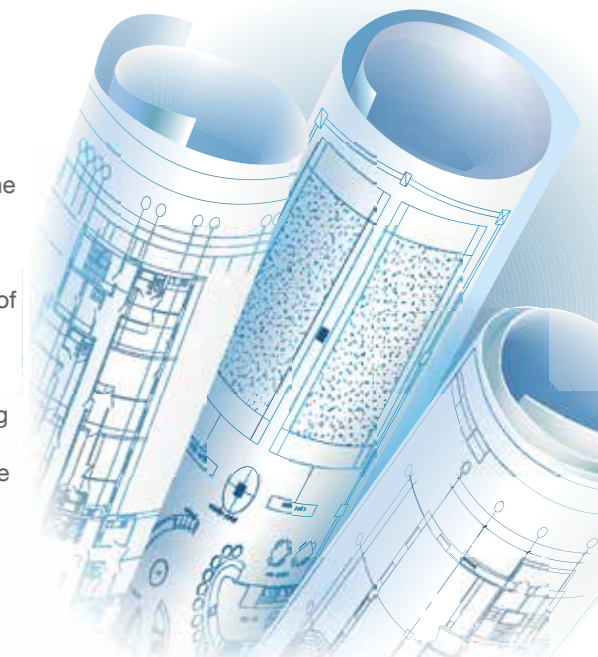
Transform Facilities Management

Ease of maintenance will become increasingly important as new buildings and infrastructure continue to be built. And optimising maintenance efforts through Smart FM solutions and practices across Singapore is a priority. To this end, BCA will be establishing a Tripartite FM Implementation Committee (FMIC) with various agencies. The FMIC will work towards increasing adoption of Smart FM solutions and practices in Singapore which will, in turn, help drive the research and development of FM solutions and nurture innovative enterprises.

02

Work with Various Agencies to:

- a. **Design with Facilities Maintenance in Mind**
 - Advocate importance of "Design for Maintenance" during the planning stage
- b. **Promote Smart Facilities Management**
 - Encourage research and development, as well as adoption of FM-related technologies
- c. **Build a Future-Ready Professional Workforce**
 - Review existing curriculum with Institutes of Higher Learning and FM associations
 - Increase training and development opportunities through the Continuing Education and Training (CET) framework
 - Recognise exemplary businesses through an industry accreditation scheme



LOOKING AHEAD

What's the outlook for Singapore's built environment sector in 2018 and the near future? Over 500 industry players found out at the BCA-REDAS Built Environment and Property Prospects Seminar 2018.



We have to continue to strengthen the foundations for what we hope to see in our future built environment sector. BCA will not be able to do this alone. We need the continued support and sustained efforts of our tripartite partners and our partners in industry. Let us press on together with our transformation efforts in the months ahead.

Mr Hugh Lim

CEO, Building and Construction Authority

Where:
Grand Copthorne Waterfront Hotel

When:
11 January 2018
9.30am to 5pm

About the BCA-REDAS Built Environment and Property Prospects Seminar

How will the built environment in Singapore perform in 2018? What are the opportunities, challenges and prospects for the Singapore built environment? How can innovations such as Design for Manufacture and Assembly (DfMA) transform Singapore's construction sector? What should built environment firms look out for in Singapore and beyond? This annual seminar gathers leading economists, policymakers and industry experts to address burning questions about the built environment and property sectors.



2018 FORECAST

The year ahead looks promising for the property and built environment sectors with a pickup in construction demand expected.

The value of construction projects to be awarded may increase by up to

\$6.5 billion.

2017: \$24.5 billion
(Preliminary estimate)

2018: Between \$26.0 billion and \$31.0 billion



2019 to 2022 Preliminary Outlook

The seminar also shed light on the expected outlook for the next five years.

- 1. A steady improvement in construction demand is expected.**
Demand is projected to reach between \$26 billion and \$33 billion per annum for 2019 and 2020. It could pick up to between \$28 billion and \$35 billion per annum for 2021 and 2022.
- 2. This demand will be led by the public sector.**
Between \$16 billion to \$20 billion per annum is expected to be generated from building projects and civil engineering works. The demand will not just be supported by public housing developments and healthcare and educational facilities. Infrastructure projects such as Changi Airport Terminal 5 and land transport projects such as the Cross Island Line, Jurong Regional Line, Rapid Transit System and High Speed Rail are key driving factors as well.
- 3. Private sector construction demand is expected to increase gradually.**
Demand will be boosted by the redevelopment of en-bloc sale sites, as well as spill-over benefits from the improved performance and outlook in other economic sectors.

A Public sector construction demand may increase by up to \$3.5 billion.

2017: \$15.5 billion
2018: Between \$16 billion and \$19 billion

Reasons:

- An anticipated increase in demand for institutional and other buildings such as healthcare facilities, as well as civil engineering works
- Smaller Government projects that have been brought forward in response to the slowdown in the previous years

B Private sector construction demand will likely rise by up to \$3 billion.

2017: \$9 billion
2018: Between \$10 billion to \$12 billion

Reasons:

- A strengthened overall economic outlook
- The upturn in property market sentiment

With sustained emphasis on construction productivity and quality improvement, projects adopting DfMA technologies have become more prevalent in recent years. Currently, there are more than 40 projects that have adopted DfMA compared to fewer than 10 projects four years ago. This year, another 59 DfMA projects are expected to be tendered out.



Last year was challenging, but we got through it together. This year looks like it will be better, but this should not stop us from pressing on with our transformation so that our firms will become stronger, more capable, more competitive, and better positioned to seize future opportunities. We look forward to working with you as we continue to transform Singapore's Built Environment sector.

Mr Desmond Lee
Second Minister of State for National Development

THE FUTURE'S SO GREEN

Singapore's on the fast track to greening our buildings, and we are also leading the change across the world.

Building Green, Right Here at Home

Numbers don't lie! See our latest survey findings on what people and firms in Singapore feel about green buildings.



Lower Utility Bills:

>88%



Reduced Environmental Impact:

>87%



Better Health Benefits:

>85%

Total Number of Respondents:

2,200



Homeowners

>70% recognised that green buildings have better resale value.

Willing to pay 3-4% more for a home in a green building compared to a non-green one.



Developers

72% would prefer to invest in or purchase a green building over a non-green building.

Willing to pay 5% more.



Property Agents

80% agreed that green buildings have an advantage over non-green ones when it comes to sales



Office Tenants

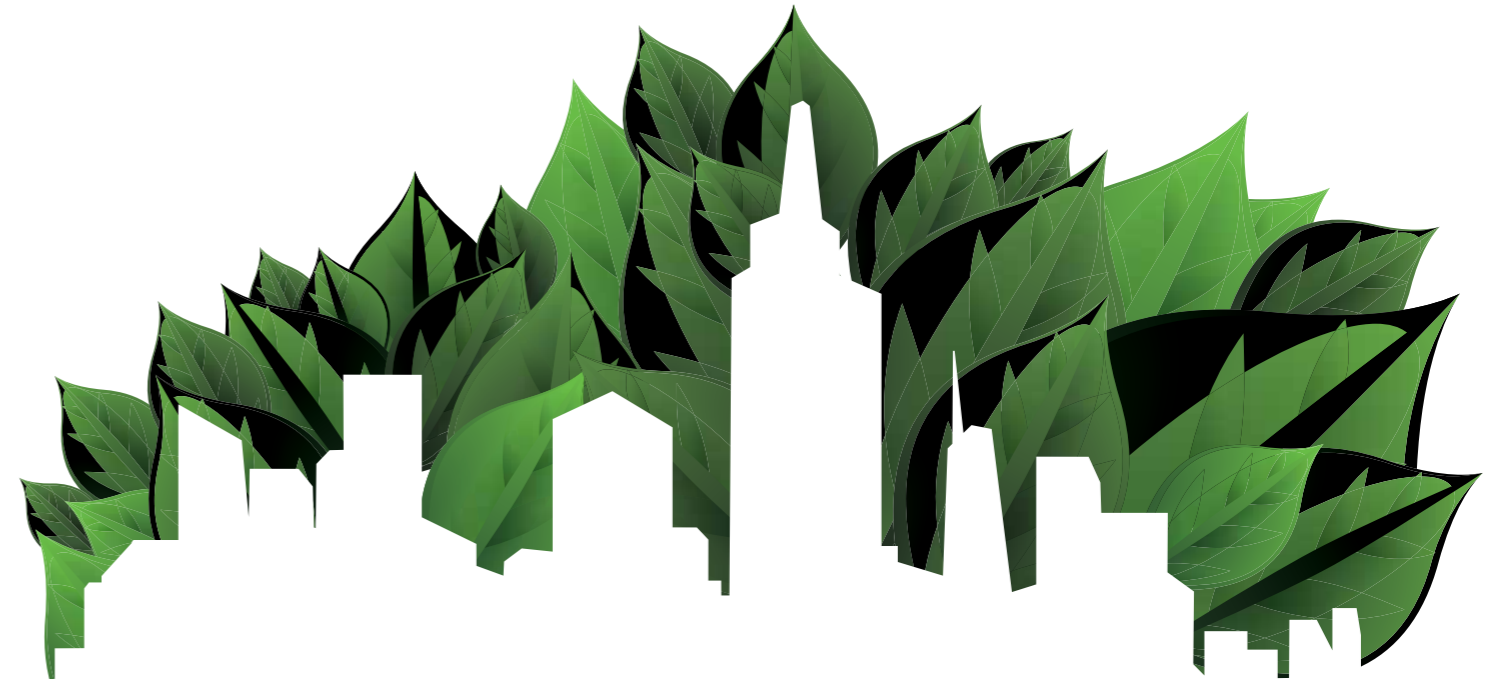
80% felt that working in green buildings improves productivity and efficiency.

86% say that working in green buildings brings along more health benefits for employees.

Willing to pay about 3.5% premium to rent an office in a green building.

Making the (Green) Mark Overseas

Three hundred BCA Green Mark projects in 80 cities – that's how far we, together with Singapore firms, have grown since the BCA Green Mark Standard was launched in 2005. Get up to speed on some of our latest initiatives.



China:

In 2009, we worked with partners in China to establish a green building rating system for the Sino-Singapore Tianjin Eco-City (SSTEC) precinct. Named the Green Building Evaluation Standard (GBES), the system was modelled after our Green Mark Standard. In October 2016, it was officially recognised in China as the first and only district-level standard equivalent to the national green building standard!

Today, local firms such as Surbana Jurong Consultants Pte Ltd and Building System and Diagnostics Pte Ltd are participating actively as green building consultants in various projects within SSTEC.



USA:

In October 2017, we became the first organisation outside of North America to win the *Go Beyond Awards*, for our work in developing the BCA Green Mark for Laboratories Scheme. This awards programme honours advancements in sustainable and high-performance facilities. In its 10 years of existence, this award has been conferred to less than 20 winners under the "individual" category (for persons and organisations).



USA:

After a successful partnership developing the award-winning BCA SkyLab, BCA is embarking on another green project with the Lawrence Berkeley National Laboratory (LBNL). This new collaboration will see BCA working with LBNL on even more Zero Energy Buildings innovations over the next five years.

Turn the page to find how some Singaporean firms are going the distance in their efforts to green the world.



Power to the World!

We shine the spotlight on two local companies which are advocating green cities beyond our shores.

Firm: Elmich Pte Ltd

Headquartered in Singapore, with a network of partners in over 30 countries across six continents.

About the Company:

A firm believer of “Creating Cities Where Urban Meets Nature”, Elmich aims to be a leading provider of products and services in the global architecture, construction and landscape sectors. Today, the firm has built an innovative range of products that contribute significantly to Singapore’s development as a Garden City. It is also committed to managing climate change on the global scale through research and product development.

Project Highlights

Two overseas projects saw Elmich products being installed through their partner, Tournesol Siteworks.

New Orleans Botanical Garden (USA)

Elmich’s green wall system was supplied to the New Orleans Botanical Garden in City Park.



VersiWall® GM Green Wall System at New Orleans Botanical Garden

Cira Green, Philadelphia (USA)

Elmich is also a supplier to the green roof industry in the USA. Another of its successful projects can be seen at residential, retail and office hub Circa Green’s Urban Park. This project is the City’s first blue-green roof for enhanced stormwater performance.



Elmich Intensive Green Roof at Cira Green, a 5,000 sqm Urban Park
Photos Courtesy of Roofmeadow

Australia,
Germany,
Malaysia,
Switzerland
and the
United States

RSP Architects Planners & Engineers Pte Ltd

Headquartered in Singapore, with offices across the world.

Malaysia,
India, China,
Vietnam
and the
United Arab
Emirates

About the Company:

A provider of innovative and sustainable design solutions for a wide range of developments, RSP specialises in masterplanning, urban design, architecture, engineering and interior design services.

Project Highlights

China: Zhuhai City Strategic Master Plan

RSP’s people are the brains behind the Zhuhai City Strategic Master Plan, which introduces a comprehensive planning system for city planners to manage intense urbanisation growth while continuing to provide for a liveable environment. The plans focused on long-term fundamentals and infrastructure to support the city’s growth while safeguarding its natural, cultural heritage.



Zhuhai Jinwan District Core Area Urban Design



Innopolis Master Plan

Russia: Masterplan for Kazan Innopolis

Designed to support Russia’s hi-tech sector, Innopolis is envisioned as a cutting-edge self-sustaining satellite town of technology and green innovation. RSP was responsible for designing a model for this self-sufficient hub, based on extensive studies and detailed research on people’s lifestyles and behaviour.

FOOD, FROM THE HEART

Around 50 volunteers got together with Food Bank Singapore on a mission to make a difference by feeding the needy and reducing food wastage. This initiative was led by the then-Group Director Mr Teo Orh Hai of BCA's Building Plan and Management Group.



Around 50 BCA staff volunteered at the Food Bank

Operation 1:
Organise a food donation drive

Location:
BCA office

The volunteers collected non-perishable items such as rice, noodles, biscuits and cereal from BCA colleagues in October 2017. More than 200kg of food was donated over the month-long donation drive!



Operation 2:
Sorting, packing and inventory taking of food from BCA's donation drive and excess food rescued by Food Bank Singapore

Location:
Food Bank Singapore warehouse



Working in small groups over three days in November, there was much teamwork and camaraderie as BCA volunteers took charge of different tasks. Some checked that food was still in good condition and within expiration dates, and threw away damaged items. Others recorded the sorted food into Food Bank Singapore's online inventory system to make it easier for the organisation to keep track of available supplies for distribution to the needy.

BCA staff sorted and took inventory of the food donated at Food Bank Singapore



Did You Know?

Close to 700,000 tonnes of food waste is disposed of in Singapore every year. Some of the food is still safe to consume but may have lost their commercial value due to their approaching sell-by dates, labelling/packaging errors, brand discontinuation, surplus inventory or minor recipe variations. This is where food distribution organisations like Food Bank Singapore come in, to rescue and redistribute food to the needy while reducing food wastage.



About Food Bank Singapore

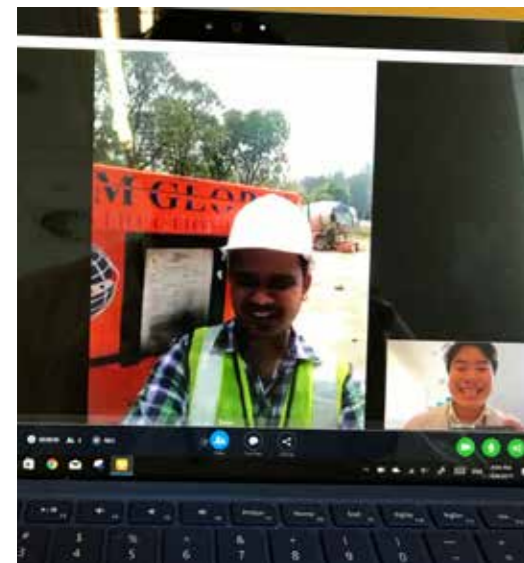
As its name suggests, Food Bank Singapore does "food banking" – it has a warehouse where people can deposit their unwanted food, which will then be sent to the needy. Today, it has more than 130 beneficiary organisations, including family service centres, senior activity centres and other voluntary welfare organisations.

MECH-ING IT BETTER FOR BUILDERS

BCA's Remote Audit System eases and speeds up the audit process for Mechanisation Credit (MechC) scheme's applicants.

Background:

MechC is a scheme under the Construction Productivity and Capability Fund (CPCF) that helps builders defray the costs of adopting productive technologies. Applicants (contractors, specialist subcontractors and subcontractor firms) can apply for MechC funding for the purchase or leasing of productive equipment. To ensure that the funds are used for MechC-supported construction equipment, BCA officers will conduct site audits before disbursing the fund to the applicants.



Seamless communication through a video application



Applicants can now show their MechC-supported equipment to audit officers through smart devices



The application is easy to use and enables us to coordinate schedules and audits with BCA officers more conveniently.

Mr Teo Kian Soon
M&E Manager • Right Construction Pte Ltd



Challenge:

Site audits can disrupt ongoing construction work as builders and contractors may be required to halt some of their operations during the process. They also have to allocate additional resources to conduct safety briefings and site tours for BCA officers.



Solution:

To minimise such disruptions, the BCA team proposed making virtual site visits via video conferencing in early 2016. Named the Remote Audit System, the video-conferencing application enables BCA officers and applicants to conduct audit process via smart devices real time without having to meet onsite. This System was fully launched in September 2016.



Benefits:

Conventionally, a site visit requires about an hour of travelling time and 30 minutes onsite. With the new Remote Audit System, audit durations can be reduced by up to 75%. Time is saved on travelling as well as onsite administrative procedures such as security clearance and safety orientations. Disruptions to onsite work are also minimised. On top of that, the audit process can be recorded, and retrieved for future reviews if needed.

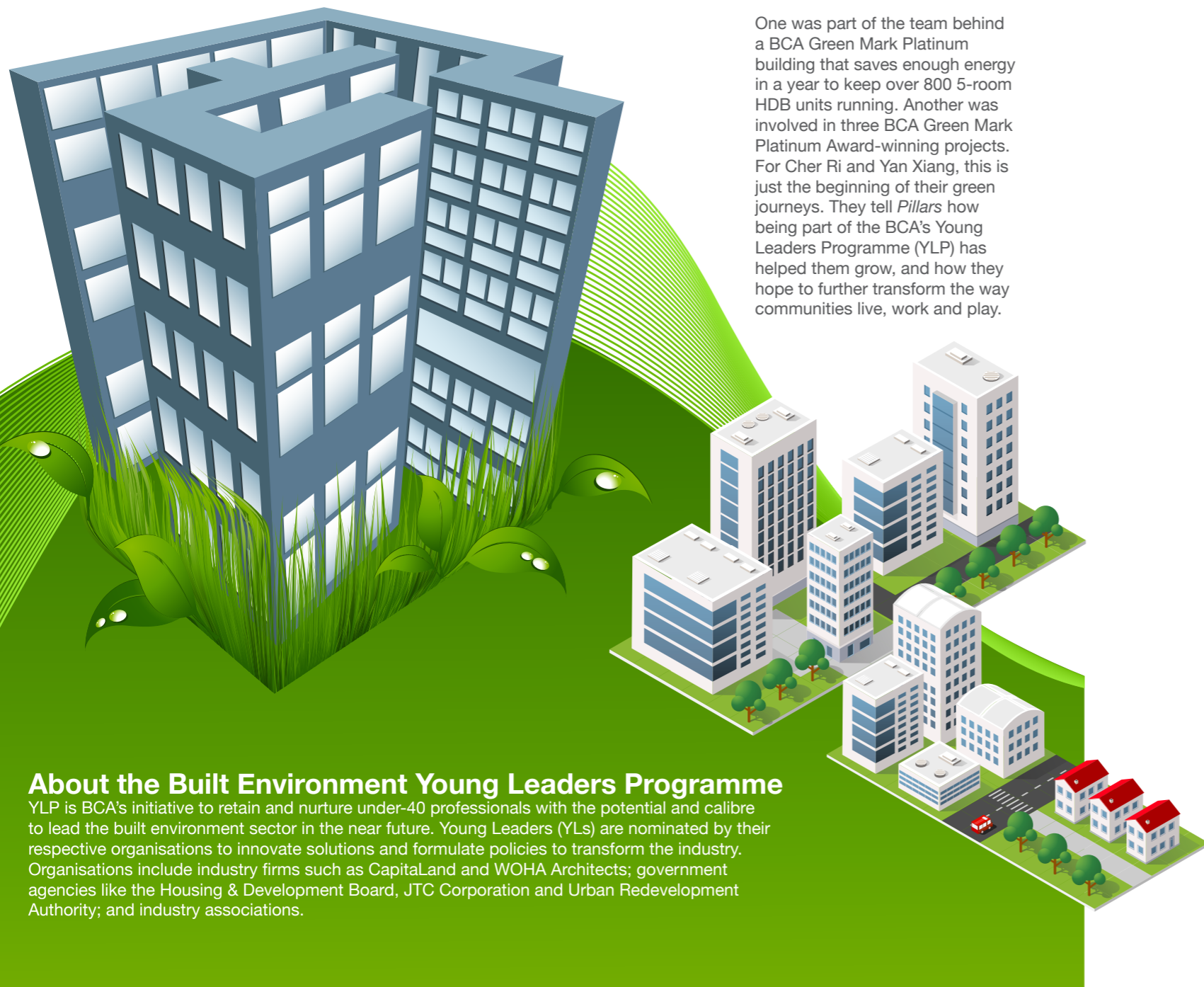


The Remote Audit System has eased our onsite coordination for audit procedures. BCA officers can now audit several of our machines which are located across the island on the same day. This new process is definitely much more productive than before.

Ms Stella Tan
Management Executive (Operations) • Gliderol Doors (S) Pte Ltd

GREEN ASPIRATIONS

See what powers two Built Environment Young Leaders' outstanding achievements in engineering green buildings of tomorrow.



One was part of the team behind a BCA Green Mark Platinum building that saves enough energy in a year to keep over 800 5-room HDB units running. Another was involved in three BCA Green Mark Platinum Award-winning projects. For Cher Ri and Yan Xiang, this is just the beginning of their green journeys. They tell *Pillars* how being part of the BCA's Young Leaders Programme (YLP) has helped them grow, and how they hope to further transform the way communities live, work and play.

About the Built Environment Young Leaders Programme

YLP is BCA's initiative to retain and nurture under-40 professionals with the potential and calibre to lead the built environment sector in the near future. Young Leaders (YLPs) are nominated by their respective organisations to innovate solutions and formulate policies to transform the industry. Organisations include industry firms such as CapitalLand and WOHA Architects; government agencies like the Housing & Development Board, JTC Corporation and Urban Redevelopment Authority; and industry associations.



Ong Yan Xiang, 33
Electrical Engineer,
CPG Consultants Pte Ltd

"Breakthroughs in medical research will be taking place right here!" enthuses Yan Xiang. She was actively involved in the contract administration and electrical works for the Tahir Foundation Building, a structure so green it saves enough energy to power up 845 units of HDB 5-room flats in a year. Located at the NUS Yong Loo Lin School of Medicine, this building and one of its laboratories have been awarded Platinum rating under BCA Green Mark for Non-Residential Buildings and BCA Green Mark for Laboratories schemes respectively.

1

How has being part of YLP helped you grow?

I get to network with different people from the industry outside of the formal settings of meetings and projects. I also had the advantage of seeing new innovations come to life. For example, I attended a live demonstration on Prefabricated Prefinished Volumetric Construction, which helped me understand the technology better. As part of YLP, I also meet up with other YLPs, the senior management of agencies / other organisations as well as political leaders. At these meetings, we discuss common problems related to design, procurement and maintenance, and how we can solve them together to improve our built environment sector.

2

What do you love most about working in the green engineering and building sector?

Green buildings enable communities to be environmentally and socially responsible while improving the quality of life of its building occupants. Being part of a green engineering team enables me to make a difference to the environment. I feel that this makes my job very meaningful!

3

Where do you see yourself in the next 10 years?

I hope to continue contributing to the electrical engineering profession and design green building and infrastructure not just locally, but overseas as well. I also want to inspire younger engineers or even students to take on green engineering and tell them, "You know, this industry can be quite cool too." I feel that my job satisfaction comes from looking at projects which I have accomplished successfully and knowing that the building occupants are reaping the benefits of the green building.



Ho Cher Ri, 33

Associate Director, Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd

Cher Ri is responsible for working with her team to achieve Environmentally Sustainable Design (ESD) targets for projects under her care. Her recent projects which won the higher-tier BCA Green Mark Awards include the Marina One, winner of two BCA Green Mark Platinum Awards – one for its commercial tower and one for its residences, as well as the Nanyang Technology University (NTU). NTU received the BCA Green Mark Platinum Star Champion Award for their efforts in greening its campus. Cher Ri's efforts were showcased at the recent Clean and Green Singapore exhibition in November 2017.



1

How has being part of YLP helped you grow?

YLP has broadened my view of the built environment sector by introducing me to new initiatives and best practices within the sector. The planned visits to construction projects, sharing sessions and task forces were enriching. Regular building industry updates sent by BCA to YLPs were very relevant and insightful. YLP is also a great platform for me to network with various stakeholders within the industry, such as consultants, authorities, developers and contractors.

2

What excites you most about green building technologies?

There is so much potential! Every successful green building technology helps to push the envelope of environmental sustainability a little further, and these new technologies are becoming the norm. For example, when I first started working in the built environment sector, photovoltaics (the conversion of solar energy into electrical power) were rarely installed in buildings. Today, they are quite common, especially in new developments. The constant need to challenge myself to break out of conventional methods and innovate more is exciting!

3

3. What are your hopes for the green building sector in the next 10 years?

I hope to see the green building sector continue to grow and succeed in terms of adopting green building design and technologies. I also hope for building occupants to be more engaged in sustainability efforts – while a green building design facilitates sustainability, it should ideally be coupled with the green lifestyle habits of building occupants throughout the building's lifespan. For example, consultants like myself propose technologies for green building design and 'walk the talk' in my personal life. It is equally important that building owners or facilities management teams continue the green efforts by implementing and maintaining the systems at optimal performance in their daily operations.

BCAA EVENTS

SkillsFuture Credit, SkillsFuture Study Awards, Mid-Career Enhanced Subsidy, Workfare Training Support (WTS), SDF, WTU, e2i and other subsidies available for BCAA courses!

MARCH 2018

23 Mar 2018, am

Integrated Digital Delivery - Are You Ready? (NEW)

27 & 28 Mar 2018

Practical Applications of WSH Legislations in Construction Projects through Case Studies (4th Run)

28 Mar 2018 / 18 Apr 2018

Building Control Regulations for Site Supervisors

28 Mar 2018

Contract Drafting - The Technicalities and Legalities (30th Run)

3 Apr 2018

Good Industry Practices (Waterproofing for External Wall)

5 & 6 Apr 2018

"Energy Efficiency for Electrical Systems (5th Run) (Elective module of GMP & GMFP)"

9 & 10 Apr 2018

Registered Earthworks Supervisor Course (Day class)

9 & 10 Apr 2018

Managing Project Teams Effectively (18th Run)

10 Apr 2018

Good Industry Practices (Timber Flooring)

10, 12, 17 & 19 Apr 2018

Registered Earthworks Supervisor Course (Evening class)

11 & 12 Apr 2018

Effective People Management for Construction Professionals (4th Run)

12 Apr 2018

Integrated Digital Delivery - Are You Ready? (NEW)

12 & 13 Apr 2018

Developing a Lifting Plan for Crane Lifting Operations (NEW)

12 & 13 Apr 2018

Construction Contract Procurement & Negotiations (3rd Run)

12 & 13 Apr 2018

BMSMA for Building Management Personnel (19th Run)

13 Apr to 8 May 2018

Certification Course for UNIVERSAL DESIGN (UD) ASSESSORS (14th Run)

16, 17 & 18 Apr 2018

Essential Knowledge in Local Regulations and Construction Practices (29th Run)

16, 18, 20, 23, 24 & 26 Apr 2018, evenings

Internal Audit (QEHS) Course based on Quality ISO 9001, Environmental 14001 & Health & Safety OHSAS 18001 (29th run)

16, 18, 23 & 25 Apr 2018

Geotechnical Instrumentation for Engineers (21st Run)

17 Apr 2018

Good Industry Practices (Painting)

17 Apr 2018

Preparing and Defending Loss and Expense Claims (28th Run)

17, 19, 24, 26 & 30 Apr 2018

Geotechnical Design using Eurocode 7 (17th Run)

18 Apr 2018

Tendering for MRT and Major Infrastructure Projects (10th Run)

18 Apr 2018

Workshop for Company CEO/Top Management (bizSAFE Level - 1) (46th Run)

Starting on 23 Apr 2018

Specialist Diploma in BIM Information Modelling (19th Intake)

23 & 24 Apr 2018

Construction Contract Administration (Re-run)

23, 26 & 30 Apr 2018, evenings

Site Management of Precast Concrete Construction (25th Run)

27 Apr 2018

Requirements for Environmental Sustainability in Buildings and The Green Mark Scheme (40th Run)

3 May 2018

CONQUAS Training for Developers & Consultants (Re-run)

3 & 4 May 2018

Managing Workflow and Achieving Plan Reliability (5th Run)

3, 4, 7, 8 & 25 May 2018

Certification Course for Green Mark Manager (75th Run)

7 May 2018

The Security of Payment Act – Technicalities and Practicalities (5th Run)

7 - 10 May 2018

Certification Course in BIM Management (74th Run)

10 - 31 May 2018

Lift and Escalator Course for Engineers (8th Run)

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Email: bca_academy@bca.gov.sg

(Full-time - 11th Intake)

Starting in Jul 2018

Bachelor of Construction Management (Building)(Honours)_FULL TIME (awarded by The University of Newcastle, Australia)

(Part-time - 4th Intake)

Starting in Jul 2018

Bachelor of Construction Management (Building)(Honours)_PART TIME (awarded by The University of Newcastle, Australia)

(Full-time - 2nd Intake)

(Accelerated Pathway)

Starting in Jul 2018

Bachelor of Civil Engineering (Honours)_FULL TIME (awarded by The University of Newcastle, Australia)

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