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Green Buildings** · p6

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Building and Construction Authority 

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

**Experts Back the 2<sup>nd</sup>  
Green Building Masterplan** · p3-5

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BCA has formed an International Panel of Experts (IPE) for Sustainability of the Built Environment. The IPE, comprising leading experts in green buildings and environmental sustainability, was created in support of the Inter-Ministerial Committee on Sustainable Development's strong commitment to developing a sustainable development framework for Singapore. The IPE is co-chaired by BCA's CEO Dr John Keung and BCA Board Member, Er. Lee Chuan Seng.

# Experts Back the 2<sup>nd</sup> Green Building Masterplan

On 29 and 30 September, the International Panel of Experts for Sustainability of the Built Environment convened its inaugural meeting at the Regent Hotel, which was awarded BCA Green Mark Gold<sup>Plus</sup>. For two days, the Panel engaged in rigorous discussions with BCA and key representatives from the private and the people sectors and the public to review the initiatives outlined under the 2<sup>nd</sup> Green Building Masterplan.

For highlights of the IPE discussions,  
please refer to the next page

## Highlights of the IPE discussions

### ***Success of the 1<sup>st</sup> Green Building Masterplan***

The Panel noted that the 1<sup>st</sup> Green Building Masterplan, formulated in 2006, was successful in creating a 'green wave' in Singapore.

### ***Focus on Existing Buildings in the 2<sup>nd</sup> Green Building Masterplan***

The Panel acknowledged that raising the building and energy performance of existing buildings continues to be a major challenge in Singapore. It noted that BCA was formulating the 2<sup>nd</sup> Green Building Masterplan to step up efforts to 'green' existing buildings.

### ***Government to Lead in Green Procurement***

The Panel recommended that the government should take the lead by practising green procurement with bulk purchase of green products and services.

### ***Disclosure of Building Energy Data***

There should be sufficient actual building energy data to develop useful energy benchmarks for various building types. The Panel recommended that Singapore should consider mandating the submission of building energy information in Singapore by building owners.

### ***More 'Green' Incentives for Existing Buildings***

The Panel noted that there was a need for incentives to jump-start the 'greening' process and motivate building owners to make the effort and financial commitment to retrofit their buildings.

### ***A Vision for Singapore***

Efforts towards environmental responsibility could also be extended beyond Singapore to share experiences in best practices with the region.





## 2<sup>nd</sup> BCA Breakfast Talk for CEOs

The International Panel of Experts also built in some time to share their knowledge with the industry at BCA's 2<sup>nd</sup> Breakfast Talk for CEOs and the 'Leadership in Green Building Lecture Series' held on 2 October.

The guest speaker at the Breakfast Talk was Panel Member, Ms Maria Atkinson – Global Head of Sustainability, Lend Lease – who spoke on 'Value of Green Buildings'. The talk was well-attended by CEOs and top management of developers, consultant and contracting firms, as well as prominent corporate and social leaders.

Dr Mohamad Maliki Bin Osman, Parliamentary Secretary for National Development was the Guest-of-Honour. Joining Ms Atkinson and BCA's CEO Dr John Keung at the panel discussion were Mr Dennis Yeo, Managing Director of Colliers International, and Mr Liak Teng Lit, CEO of Alexandra Hospital.

## The intangible benefits of 'green' buildings



### *Highlights of Ms Atkinson's Breakfast Talk Presentation*

Ms Atkinson shared that people were beginning to put a hard dollar value against the soft benefits of improved health and productivity as a result of the impact of good indoor environmental quality.

Citing a case study done in Australia, she said that good indoor environment quality resulted in an encouraging 39% reduction in average sick leave days per employee per month, a 44% reduction in the monthly average cost of sick leave and a 9% improvement in the average typing speed of secretaries and a significant improvement in overall accuracy.

Taking another example from Europe, Ms Atkinson highlighted that Energy Performance Certificates were required on all buildings whenever a building was constructed, rented or sold, as stipulated under the EU Directive. Such Certificates were broadly similar to the labels now provided with domestic appliances such as refrigerators and washing machines. Its purpose was to record how energy-efficient a property was as a building.

# LEADERSHIP IN GREEN BUILDINGS

The second session of the 'Leadership in Green Building Lecture Series', held on 2 October at The Regent Hotel, was attended by some 250 participants. It was held in conjunction with BCA's **International Panel of Experts Meeting** programme.

In his keynote address, Mr Kevin Hydes, Chair of the World Green Building Council, felt that fragmentation in design and delivery acted as a barrier to the green movement in the construction chain. He also noted that Asia is at the forefront of innovative green building activity and the percentage of firms involved in the green movement was expected to reach 73% by 2013.

The key session of the Lecture Series focused on presentations by four distinguished guest speakers who enlightened participants with topics ranging from green building initiatives in Japan to energy-efficient buildings in Germany.

#### The four guest speakers were:

- Professor Joachim Luther - CEO, Solar Energy Research Institute of Singapore
- Professor Kazuo Iwamura - Professor at the Faculty of Environmental & Information Studies, Yokohama's Musashi Institute of Technology
- Mr David Nelson - Head of Design, Foster & Partners
- Mr Sam Sparta - Senior Vice President, HOK Group



Other highlights of the second lecture series included a forum discussion chaired by Mr Cheong Yew Kee, Chair of Singapore Institute of Architects Green Committee. Panelists included Mr Peter Head, Director, Arup; Mr Ang Kian Seng, Deputy Director, BCA's Technology Development Division and all four guest speakers.

The 'Leadership in Green Building Lecture Series', jointly organised by **BCA Academy** and the **Autodesk Asia** aims to motivate the industry towards environmental sustainability in buildings. It provides a platform for practitioners to gain insight from exemplary projects with international award-winning designs.

# A CLEAR PATHWAY IN CAREER PROGRESSION

BCA Academy has introduced the National Building Qualification (NBQ) as a new qualification for graduates of its supervisory training programmes. The NBQ provides an overall progression guide to enable the Academy's graduates to enjoy better prospects upon graduation. The Project Supervision course, the first training course under the NBQ framework, started in July 2008.

The new NBQ framework is a tiered training progression path providing opportunities for trainees with different academic qualifications and working experience to progress from a lower to a higher level of training.

Under this framework, there are three levels of training and qualification – NBQ for courses at entry level, Higher NBQ for courses at intermediate level and Advanced NBQ for courses at advanced level. Trainees may enrol at any level, depending on whether they meet the entry pre-requisites for their desired level of training.

To encourage continual upgrading, the NBQ framework provides a top-up scheme. This scheme

requires trainees to attend a certain number of additional modules as they progress from one level of training to the next higher level. This allows all trainees to obtain Advanced NBQ qualification within two years.

The NBQ framework allows trainees with lower formal education an opportunity to pursue a training course to upgrade themselves. NBQ provides them with a clear and articulated pathway for career development. With its tiered learning progression path, NBQ reduces the attrition rate among weaker learners. The qualification is also recognised as a technical qualification for BCA workhead registration and the Ministry of Manpower's 'S' Pass application.

## The Workforce Development Agency's Employability Skills System (ESS)

### Entry Requirement for Direct Qualification Path

- 3 O Levels : English (Gr1-7)
- 3 O Levels : Any subjects (Gr1-8)
- 2 O Levels : Any subjects (Gr1-8) or
- 2 3N Levels \*: Any subjects (Gr1-5) or
- ESS Level 5 for Literacy & Numeracy
- ESS Level 4 for Literacy & Numeracy with 1 year experience

### Direct Qualification

Masters	
Degree	Professional Level
Diploma	Supervisor Level

NBQ framework

Advanced NBQ	2.0 yrs (direct entry) 0.5 yr (after H.NBQ)
Higher NBQ	1.5 yrs (direct entry) 0.5 yr (after NBQ)
NBQ	1.0 yr

Skill Certificate	Tradesman Level
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# FRIENDLY BUILT ENVIRONMENT WEEK



It was a week devoted to increasing public awareness of BCA's efforts to shape a friendly built environment and to cater to the needs of a diverse population in Singapore.

On 14 October, BCA launched its Friendly Built Environment Week to a 260-strong audience at the BCA Academy of the Built Environment. The Guest-of-Honour was Dr Mohamad Maliki Bin Osman, Parliamentary Secretary for National Development.

The launch was followed by a seminar on 'The Key to a Friendly Built Environment', during which speakers from the United States, Hong Kong and Japan shared best practices on Universal Design with industry professionals. Two other workshops were organised – one on 'Inspiring the Young with Universal Design' and the other on 'The Hurdles and Rewards in Creating Environment that Works for all People'.





# A Day with Voluntary Welfare Organisations



A further outreach programme included a Friendly Built Environment Day on 18 October for about 40 members from three Voluntary Welfare Organisations (VWOs) to visit the BCA Gallery and the Sensory Garden. The guests were from The Society for the Physically Disabled, Disabled People's Association of Singapore and the Handicaps Welfare Association.

"The guided tour really allowed me to learn a lot more about BCA," commented Patrick Ang, a member of the Handicaps Welfare Association, on the visit. "The efforts which BCA has made for the disabled community make me feel confident that they have the ability to further enhance the level of accessibility in Singapore."

At the Universal Design exhibition, the guests from the VWOs also tried out new products designed to cater to their needs.

## Coming up next...

The Friendly Built Environment Roving Exhibition will be at the **Yishun Office of Sembawang Town Council** (Blk 290 Yishun Street 22) till 12 December.

*See you there!*

# Accessibility Upgrades Get More Funding

Private building owners who want to upgrade their facilities with barrier-free accessibility features can now make use of BCA's enhanced funding support, which has increased by two-fold.

Before the enhancement, the \$40 million Accessibility Fund provided building owners with up to 40% funding for a basic accessibility package that covered a minimum set of barrier-free features. With the enhancement, the level of support has been raised to up to 80% for the basic accessibility package.

The Accessibility Fund has also been extended to provide 40% funding for additional barrier-free accessibility features beyond the basic tier. The maximum value that can be granted under the enhanced incentive package would also be increased from \$150,000 to \$300,000 per building.

The aim of the enhancements to the Accessibility Fund is to encourage more owners of buildings built before 1990 to provide greater barrier-free accessibility to their buildings. Owners of several buildings have since made use of the funding to offset the cost of constructing these basic features. Some of these projects are Paradiz Centre at Selegie Road, OG@Orchard Point and Friven & Co at Tanglin Road.

**For more information on the enhanced Accessibility Fund package, please contact:**

**Joan Mok**  
**Tel: 6325 8651**  
**Email: joan\_mok@bca.gov.sg**



## New Friendly Built Environment Portal

Log on to **www.friendlybuildings.sg** for one-stop information on Universal Design and accessibility catering to the needs of different user groups.

BCA recently launched this Friendly Built Environment Portal, which includes an accessibility rating of buildings. These buildings are categorised numerically – from 1 to 4 – according to their level of accessibility and friendliness. A rating of 4 would be accorded to a building with features beyond BCA's current Accessibility Code.

The accessibility rating also provides other useful information, such as the types of accessible features and their locations in a building. From these details, users can search for buildings according to level of friendliness, types of accessible features, buildings and user groups.

The Portal also allows the visually impaired to view the information with larger fonts, while users with colour deficiencies can enjoy brighter colours and increased visibility. The hearing impaired can also access the information via a talking browser.

**For more information on the Friendly Built Environment Portal, please contact:**

**Thomas Goh**  
**Tel: 6325 8652**  
**Email: thomas\_goh@bca.gov.sg**

# SAFER

## UNDERGROUND BUILDING WORKS

Underground building works have a greater impact on safety as compared to other types of building works, in particular, on the safety of surrounding properties and structures, as well as the people working in them. To minimise the risks associated with underground building works, the Building Control Act has been amended to provide additional safeguards for such works.

The Building Control (Underground Building Works Commencement) Order 2008 came into operation on 1

October 2008. These underground building works would require a geotechnical professional engineer and a specialist accredited checker (AC) for the geotechnical aspects. Temporary structures – namely temporary bridge, temporary decking for a bridge or temporary earth-retaining structures – would have to be submitted for plan approval and permit. Depending on the type of structure, checking by an AC may also be necessary. The criteria on whether an AC is required and the category of AC required are similar to those for permanent works.



### What are Underground Building Works?

- Any excavation or other building works to make a tunnel with a diameter, width or height of more than 2 metres, or a caisson, cofferdam, trench, ditch, shaft or well with a depth of more than 6 metres
- Any building works for constructing, altering or repairing any earth-retaining structure in or for a trench, ditch, shaft or well with a depth or height of more than 6 metres
- Foundation works for buildings of storeys or more

### Requirements on AC checking for both temporary and permanent building works involving excavations

All permanent or temporary building works that involve	Appointments Required	
	Qualified Person	Accredited Checker
Earth retaining structures of concrete or steel to support excavation not more than 1.5 m deep	Plan approval is not required	
Structures for excavation more than 1.5 m deep but not exceeding 4 m deep	Any professional engineer can act as the QP for structural works	No AC is required
Structures for excavation more than 4 m deep but not exceeding 6 m deep	Any professional engineer can act as the QP for structural works	AC to check structural works (which is also the existing procedure for permanent works)
Structures for excavation more than 6 m deep and all underground building works	Any professional engineer can act as QP for structural works, but if he is not a PE(Geo), then the geotechnical aspects of the works has to be prepared by another QP who is a PE(Geo)	AC to check structural works, but if he is not an AC(Geo), the geotechnical aspects of the works have to be checked by an AC(Geo)

## GUIDEBOOK TO THE CHANGES IN BUILDING CONTROL ACT & REGULATIONS 2007/2008

BCA has also introduced a guidebook to provide a comprehensive and easy reference to those interested in finding out about the changes in the Building Control Act and its Regulations. **“A Guidebook to the Changes in Building Control Act & Regulations 2007/2008”** may be viewed at BCA’s website at the following URL:  
[http://www.bca.gov.sg/Publications/BuildingControlAct/building\\_control\\_act.html](http://www.bca.gov.sg/Publications/BuildingControlAct/building_control_act.html)

# Total Approach to QUALITY



The BCA-REDAS Quality Seminar 2008 was held on 21 August 2008, attended by more than 240 participants. This was a continuing collaborative effort between BCA and REDAS to raise quality standards in the construction industry. A mini exhibition was also held to promote products like rectified tiles, dry wall, rebated doors that contribute to good quality workmanship.

In his welcome address, BCA Deputy CEO (Industry & Corporate Development) Mr Lam Siew Wah highlighted how Quality Mark could improve the competitive edge of both developers and builders. He also launched the new BCA publication, 'Good Industry Practices Guide: Design and Material Selection for Quality –Volume 1', the 11<sup>th</sup> in a series of BCA's good practices guides to educate and build the industry's capabilities.

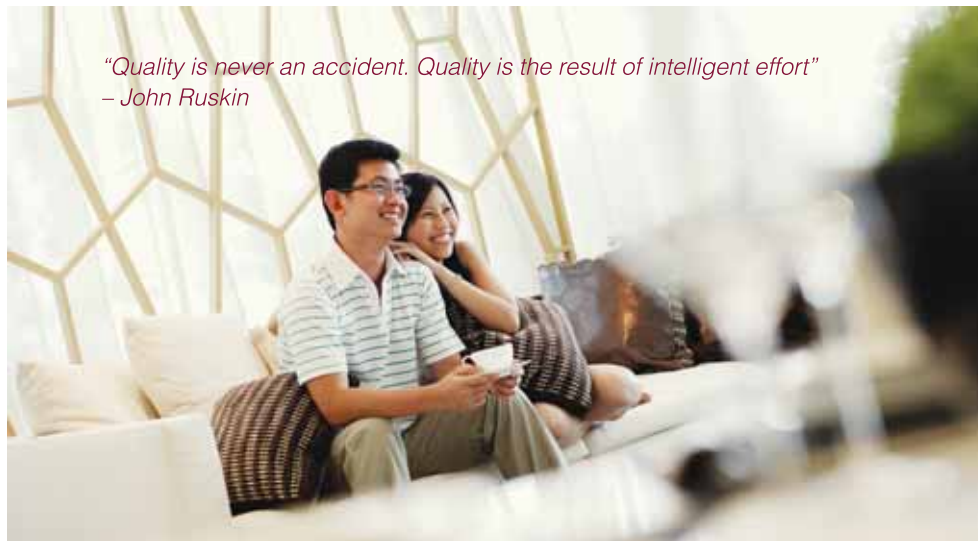
Among the speakers was Professor Marton Marosszeky, Chair of the National Committee for Construction Engineering for Engineers in Australia. He gave an insightful presentation on achieving total quality in all phases of project delivery.

Mr Rajendran Ramamoorthy from BCA presented some highlights from the new guidebook which showcased good design practices and material choices by developers, practitioners and contractors in high-quality projects and in particular, residential buildings.

Other speakers included Ms Quek Chay Hoon, General Manager of Wing Tai Property Management and Mr Jerry Lam, Deputy Quality Assurance/Quality Control Manager of Woh Hup.

# TOWARDS BETTER WORKMANSHIP

The Good Industry Practices Guide: Design and Material Selection for Quality – Volume 1



*"Quality is never an accident. Quality is the result of intelligent effort"*  
– John Ruskin

A new BCA publication "Good Industry Practices Guide: Design and Material Selection for Quality –Volume 1" was launched at the BCA-REDAS Quality Seminar on 21 August.

This guide is the 11<sup>th</sup> in a series of Good Industry Practices Guides, which was first introduced in 1999 to define quality standards and help the industry achieve good quality workmanship in construction. These guides have been used as reference standards in quality assessments under Construction Quality Assessment System (CONQUAS) and Quality Mark for Good Workmanship Scheme.

It is possible to achieve high quality standards by following the detailed work processes and methods of installation for various finishing trades. Earlier guides had focused on ceramic tiling, timber flooring and waterproofing works. The new guide touches on proper design or choice of material in upstream decisions that facilitate ease of construction, reduce time, effort and dependency on on-site manpower. This makes achieving quality excellence easier.

Examples of projects with high CONQUAS and Quality Mark scores are featured in the guide. These are projects that adopted good design concepts – such as flat plate/slab, curtain wall, drywall partitions, prefabricated bathrooms and screed-less floor. Industry professionals can learn and apply these practices to their projects for better quality achievement.



# SPOTLIGHT ON INDIA



BCA organised a business mission trip comprising 17 delegates from 10 companies to India, from 3 to 10 September 2008. The business delegation travelled to Bangalore, Hyderabad, Nagpur and Mumbai.

The mission aimed to help delegates learn and understand the culture and business practices in India, as well as to acquire a better knowledge of the Indian economy and assess business opportunities. In addition, the mission explored the possibilities of strategic alliances and project engagement on existing project leads and promoted Singapore's capabilities to the industry there.

The delegation met with potential business counterparts, including land owners, developers and builders of various capacities looking for strategic alliances, architectural designs and master planning. As the Indian market is moving towards building sustainability, early adopters like Ozone Group, K Raheja and GMR are a few of the major industry players warming towards quality improvement programmes and green technologies.

Over 30 potential projects were identified. There were also enquiries on resort planning, service apartment and hotel operations, as well as waste water treatments. Meetings were also held with Nagpur Municipal Corporations on the re-development of the city. The Singapore delegates are currently pursuing the relevant projects with their Indian counterparts and developing long term relationships that are mutually beneficial.

## Details of Upcoming Trip

**India - Seminar in Bangalore & Hyderabad & Follow-up Trip**

13 – 20 December 2008

Please contact Mr Tan Yong Beng at 6325 5191 or Mr Ron Tan at 6325 1110



# SCORING FOR SINGAPORE

## Doing Business 2009

ranks 181 economies on the overall ease of doing business.

### The top 10 economies:

- 1) **Singapore**
- 2) New Zealand
- 3) United States
- 4) Hong Kong (China)
- 5) Denmark
- 6) United Kingdom
- 7) Ireland
- 8) Canada
- 9) Australia
- 10) Norway

The speed and efficiency in which one could obtain a construction permit could be a major reason why Singapore is an attractive place to do business in. With BCA's and partner agencies' efforts in recent years to streamline this process, Singapore has emerged number one for the third consecutive year as the easiest place in the world to do business, according to a World Bank global ranking. The 'Doing Business Report 2009', which examined regulations and how they affect business, ranked 181 economies on the overall ease of doing business.

In 2007, BCA was tasked as the lead agency to drive improvements with partner agencies to review the number of procedures, duration and costs involved in issuing construction permits in Singapore.

The partner agencies were the Urban Redevelopment Authority, Singapore Civil Defence Force, Land Transport Authority, National Environment Agency, Ministry of Manpower and the Public Utilities Board.

Mr Ong Chan Leng, BCA's Director (Special Functions) was appointed as Chairman of the inter-agency subcommittee to spearhead improvements and reforms in construction permit approvals. It was the Committee's aim to ensure Singapore's top performance in the annual World Bank ranking.

The subcommittee managed to cut down the total time taken for construction approvals from 102 to 46 days. This was achieved through streamlining and parallel processing within various government agencies.

In addition, BCA used the CORENET as a showcase for its commitment to reform. The one-stop electronic submission system allows Qualified Persons to submit applications and plans to Singapore government agencies 24/7 from anywhere in the world. The adoption of information technology and the cooperation at the inter-agency level reflected a broader and more sustained approach to improving competitiveness in the ease of dealing with the issue of construction permits.

BCA and its partner agencies are exploring further improvements to maintain Singapore's top position in the ranking.

# upcoming events

Date	Event	Contact
18-Nov-08	Good Industry Practices (Aluminium Window)	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
18, 20, 25 & 27 Nov-08	Pile Foundations Design and Construction for Engineers	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
27-Nov-08	1/2 day Seminar on Green Building- Design, Maintenance & Retrofitting	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
2, 3, 9 & 10 Dec-08	Controlled Demolition of Building Structures	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
12 & 15 Dec-08	2-Day Course on Sustainable Facility Management Solution	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
17-Dec-08	Conquas Training (for Developers & Consultants)	Marketing Dept DID: 62489843/824 Email: bca_academy@bca.gov.sg
14 Jan 09	Construction & Property Prospects 2009 Seminar	Pauline Goh DID: 63255078 Email: pauline_goh@bca.gov.sg

## Contest

- 1. What are the names and designations of the 2 co-chairmen of the International Panel of Experts for Sustainability of the Built Environment?**
- 2. Name any 2 buildings that have made use of the Accessibility Fund to construct barrier-free features on their premises.**
- 3. When did the Building Control (Underground Building Works Commencement) Order 2008 come into operation?**

Please send in your entries by 25 November 2008 to Editor Pillars, Building and Construction Authority, 5 Maxwell Road, #16-00, Tower Block MND Complex, Singapore 069110. Or e-mail: [bca\\_enquiry@bca.gov.sg](mailto:bca_enquiry@bca.gov.sg) or fax to 63254800. Please indicate your name, designation, company, phone number and address. Selected entries will stand to win attractive shopping vouchers.

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Tel: 6325 7106

### Barrier-free Accessibility

Tel: 6325 8611

### Plan Approval, TOP, CSC

Tel: 6325 2211

### Plan Search

Tel: 6325 8663

### BCA Academy (Courses)

Tel: 6248 9999

### Skills Certification

Tel: 6248 9845

### CONQUAS

Tel: 6730 4485

### BCA Quality Mark

Tel: 6730 4497

### BCA Green Mark

Tel: 6325 5900

### ISO Certification

Tel: 6730 4411

### Contractors Registry

Tel: 1800-2212242

### CORENET (e-submission)

Tel: 6325 5901

### Incentive Schemes

Tel: 6325 5068 (IAS)