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Building Plan and Management Division

1 August 2013

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Dear Sir/Madam

## **CIRCULAR TO PROFESSIONAL INSTITUTES / ASSOCIATIONS**

### **NEW MINIMUM BUILDABLE DESIGN SCORES AND CONSTRUCTABILITY SCORES FROM 1<sup>ST</sup> SEPTEMBER 2013 TO ENHANCE CONSTRUCTION PRODUCTIVITY**

#### **Objective**

1 This circular is to inform the industry of the new higher buildability and constructability requirements to drive further productivity improvement in the built environment sector. The Buildable Design Appraisal System (BDAS), from which the buildable design score of a building design is derived, is also revised to encourage simple building designs and adoption of a wider range of buildable designs and productive technologies to reduce reliance on construction manpower.

#### **Effective date**

2 The Building Control (Buildability) (Amendment) Regulations 2013 are being gazetted and shall come into operation on **1<sup>st</sup> September 2013**.

#### **Background**

3 To raise productivity in the construction industry and reduce its reliance on foreign workers, BCA had, since 2001, implemented buildability legislation for all building projects and progressively raised the mandatory requirements for adoption of buildable designs over the years. A project with higher Buildable Design Score (B-Score), will need less manpower to build and thus achieve higher productivity. This legislation has had the effect of changing

some of the design practices in the industry, for example, the switch to more flat plate designs, dry walls, precast construction and prefabrication.

4 While the B-Score requirements ensure that upstream designs by architects and engineers consider productivity concepts early to bring about greater productivity improvements, it is equally essential that contractors implement improvements in the downstream construction methods. Thus, BCA introduced the new constructability requirements in 2011, for new projects, to steer builders towards adopting more labour-efficient technologies and methods to improve productivity at the construction stage.

### **Raising Minimum Buildability and Constructability Requirements to Boost Productivity**

5 With a more aggressive reduction in foreign worker supply (cumulative 45% cut in man-year entitlements from July 2013), it is necessary to increase much more the adoption of buildable designs upstream and efficient construction technologies downstream so that projects can be delivered using less manpower.

6 To drive for higher productivity, the following are the new mandatory measures to move the industry to construct more buildable buildings and adopt more productive methods of construction.

#### ***A. Higher Mandatory Requirements Across All Projects***

7 From 1<sup>st</sup> September 2013, the minimum B-Scores and Constructability scores (C-Scores) for all new building projects with GFA of 2,000m<sup>2</sup> or more which are submitted for planning permission on and after this date will be raised by 3 points each. By 1<sup>st</sup> September 2014, these minimum scores will be further raised by another 2 points for all categories of developments. Please refer to Annex A and Annex B for the new minimum B-Scores and C-Scores respectively from 1<sup>st</sup> September 2013 and 1<sup>st</sup> September 2014.

#### ***B. Requiring Private Sector Projects to Meet Even Higher Requirements through Government Land Sales (GLS) including Industrial GLS***

8 For building works relating to any building on land sold under the Government Land Sales (GLS) Programme on or after 15<sup>th</sup> October 2013, even higher B-Score and C-Score than the new minimum mandatory requirements as stated in paragraph 7 shall apply. These new requirements will be stipulated as part of the land sales conditions. The minimum scores for such building works are also shown in Annex A and Annex B.

## **Revised Buildable Design Appraisal System (BDAS)**

9 To move the industry towards higher buildability standards, the BDAS is revised with the following key changes:

(a) Encouraging more industry-wide standardization. As greater degree of industry-wide standardization would lead to higher productivity on site, industry standard building components / design parameters will be given bonus buildability points.

(b) Requiring projects with complex designs/forms to be equally buildable. Recently, building designs appear to be more complex (e.g. buildings with voids, tilts, bends and twists). While such designs help to create a more distinctive built environment, they are more labour intensive to construct. The BDAS has been fine-tuned to balance aesthetics and buildability.

(c) Promoting wider range of productive designs and systems. To encourage designers to adopt a wider range of labour-efficient designs and newer technologies, the scope of BDAS has been broadened to include more buildable features and technologies. These include buildable M&E systems like prefab pre-insulated air conditioning ducting and flexible sprinkler dropper.

### **Additional Submission Requirements**

10 Currently, both the Qualified Persons for Architectural and Structural Works (QPs) are required to declare and submit the B-Scores for their projects, together with the building plans for approval. For builders, they are required to submit the C-Score for their projects when they apply for the permit to commence work.

11 With effect from 1<sup>st</sup> September 2013 when the new minimum B-Scores and C-Scores are implemented, the following information is required to be submitted in addition to the B-Score and C-Score computation forms.

(a) For the submission of B-Score, this needs to be accompanied by a Buildability Detailed Design and Implementation Plan. This plan serves to substantiate the B-Score computation and shall include the following:

- The floor plan of every storey, the elevation plans and sectional plans showing the types and extent of use of each structural system, wall system and buildable features clearly marked out; and
- Where applicable, the dimensions of building components, the type and extent of repetition of precast components, the connection and details of precast components, the details of prefabricated reinforcement and

the locations of all buildable features to be constructed for the building works etc.

(b) For the submission of C-Score, this needs to be accompanied by a Constructability Implementation Plan. This plan serves to substantiate the C-Score computation and shall include the following:

- The types of construction techniques and processes, plant, equipment, innovative methods and systems and materials used for that storey or building; and
- details on the extent of adoption of each construction technique, process, plant, equipment, innovative method and system or material.

12 To facilitate better understanding of the requirements for the Buildability Detailed Design and Implementation Plan, the Constructability Implementation Plan, the revised BDAS and the new minimum B-Score and C-Score standards, the Code of Practice on Buildability 2013 is available from BCA website.

#### **Clarification**

13 If you or your members have any queries concerning this circular, please contact Mr James Lu at 6325 5091 (email: [james\\_lu@bca.gov.sg](mailto:james_lu@bca.gov.sg)) or Ms Jenny Tan at 6325 5073 (email: [tan\\_jenny@bca.gov.sg](mailto:tan_jenny@bca.gov.sg)).

Thank you.

Yours faithfully



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**A New Minimum Buildable Design Score (B-Scores)****A.1 For all new projects**

Year	Raise 3 Points over 2011 scores			Raise 5 Points over 2011 scores		
	from 1 September 2013*			from 1 September 2014*		
Category of Building Work/Development	2000m <sup>2</sup> ≤ GFA < 5,000m <sup>2</sup>	5000m <sup>2</sup> ≤ GFA < 25,000m <sup>2</sup>	GFA ≥ 25,000m <sup>2</sup>	2000m <sup>2</sup> ≤ GFA < 5,000m <sup>2</sup>	5000m <sup>2</sup> ≤ GFA < 25,000m <sup>2</sup>	GFA ≥ 25,000m <sup>2</sup>
Residential (Landed)	63	68	71	65	70	73
Residential (non-landed)	70	75	78	72	77	80
Commercial	72	77	80	74	79	82
Industrial	72	77	80	74	79	82
Schools	67	72	75	69	74	77
Institutional & others	63	69	72	65	71	74

\*based on date of planning submissions made to URA

**A.2 For all new projects built on land sold under the Government Land Sales (GLS) Programme including Industrial GLS**

Year	Raise 8 Points over 2011 scores			Raise 10 Points over 2011 scores		
	from 15 October 2013 <sup>#</sup>			from 15 October 2014 <sup>#</sup>		
Category of Building Work/Development	2000m <sup>2</sup> ≤ GFA < 5,000m <sup>2</sup>	5000m <sup>2</sup> ≤ GFA < 25,000m <sup>2</sup>	GFA ≥ 25,000m <sup>2</sup>	2000m <sup>2</sup> ≤ GFA < 5,000m <sup>2</sup>	5000m <sup>2</sup> ≤ GFA < 25,000m <sup>2</sup>	GFA ≥ 25,000m <sup>2</sup>
Residential (Landed)	68	73	76	70	75	78
Residential (non-landed)	75	80	83	77	82	85
Commercial	77	82	85	79	84	87
Industrial	77	82	85	79	84	87
Schools	72	77	80	74	79	82
Institutional & others	68	74	77	70	76	79

<sup>#</sup>based on date of GLS land sold

**B New Minimum Constructability Score (C-Scores)****B.1 For all new projects**

	Raise 3 Points over 2011 scores		Raise 5 Points over 2011 scores	
Year	from 1 September 2013*		from 1 September 2014*	
Category of Building Work/Development	GFA ≥ 5000m <sup>2</sup>	GFA ≥ 25000m <sup>2</sup>	GFA ≥ 5000m <sup>2</sup>	GFA ≥ 25000m <sup>2</sup>
Residential (Landed)	43  (min 28 points from Structural System)	53  (min 38 points from Structural System)	45  (min 30 points from Structural System)	55  (min 40 points from Structural System)
Residential (non-landed)				
Commercial				
Industrial				
Schools				
Institutional & others				

*\*based on date of planning submissions made to URA*

**B.2 For all new projects built on land sold under the Government Land Sales (GLS) Programme including Industrial GLS**

	Raise 5 Points over 2011 scores		Raise 7 Points over 2011 scores	
Year	from 15 October 2013 <sup>#</sup>		from 15 October 2014 <sup>#</sup>	
Category of Building Work/Development	GFA ≥ 5000m <sup>2</sup>	GFA ≥ 25000m <sup>2</sup>	GFA ≥ 5000m <sup>2</sup>	GFA ≥ 25000m <sup>2</sup>
Residential (Landed)	45  (min 30 points from Structural System)	55  (min 40 points from Structural System)	47  (min 32 points from Structural System)	57  (min 42 points from Structural System)
Residential (non-landed)				
Commercial				
Industrial				
Schools				
Institutional & others				

*<sup>#</sup>based on date of GLS land sold*