BCA-NUS PROJECT ON VALUATION OF GREEN COMMERCIAL PROPERTIES

SUMMARY OF REPORT FINDINGS

BACKGROUND

The Inter-Ministerial Committee on Sustainable Development (IMSCD) has set the target of greening 80 % of all buildings in Singapore by 2030. BCA is now implementing the Green Building Masterplan which comprises key initiatives to accelerate and expand green building development and retrofitting. They include our current building control legislation which requires all new buildings to meet the minimum Green Mark standards and also incentives to encourage the building owners into greening the buildings.

The government has demonstrated strong leadership by requiring all public sector building projects with more than 5000 m2 to achieve Green Mark platinum standards. All existing government buildings with more than 10,000m^2 air-conditioned floor area are also required to achieve Green Mark Gold Plus standard by 2020. To ecourage the private sectors to achieve for higher Green Mark ratings (Gold^{Plus} and Platinum), BCA and Urban Redevelopment Authority (URA) introduced the Green Mark Bonus GFA Scheme in the form of additional Gross Floor Area (GFA). A $100 million Green Mark Incentive scheme was introduced to encourage the existing buildings owners to undertake the necessary retrofits to ungrade their buildings. BCA also be introducing the Building Retrofit Energy Efficiency Financing (BREEF) Scheme, to provide financing to building owners and Energy Service Companies (ESCOs) for energy efficiency retrofit, where BCA will 50% of the default risk (see Annex A for details on incentive schemes).

With the abovementioned legislation and incentives in place, we have to–date over 840 green mark certified building projects covering about 25 million square metres or 12% of our total building stock. Green Mark certification of existing

buildings is also starting to pick up momentum. We have to-date 125 existing building projects certified (Table 1).

STRENGTHENING THE BUSINESS CASE – FOCUSING ON VALUE OF GREEN BUILDINGS

However, to achieve the target of at least 80% of buildings in Singapore attaining BCA Green Mark Certified rating by 2030, we would need a stronger business case to further encourage retrofit of existing buildings to be green and energy efficient.

BCA and Department of Real Estate, NUS, (DRE) discussed collaborating on a research study on the valuation of Green Mark commercial properties in February 2011. The aim of the study is to evaluate whether Green Mark rated commercial buildings have an impact on commercial property valuation. DRE would also develop a valuation guideline for green commercial properties that will account for the cost and benefits of newly developed and retrofitted green commercial properties.

Such a guideline, requires the support of the valuation profession in order for it to be recognised and adopted. A committee comprising of the Executive Directors and Managing Directors of valuation departments of the top six real estate consultancy firms – CB Richard Ellis, Chestertons Suntec, Colliers International, DTZ Tie Leung, Jones Lang Laselle and Knight Frank – as well as representatives from BCA and DRE was formed in March 2011.

DATA AND ANALYSIS

The sample of 23 commercial properties, categorized into office, retail, hotel and mix of these uses, was studied. Each commercial property is provided with general description of the property including tenure, use, location (district code), Gross Floor Area, Net Lettable Area, age, number of stories, number of lifts and

escalators, number of tenants/users, green mark award rating and year awarded. Each commercial property is also provided with the energy consumption (before and after retrofit) and the capital expenditure for the retrofit project.

Hotel buildings use a different method of valuation from office and retail buildings as they are valued as a business, not a real estate. Therefore the main findings of this study on increase in valuation does not include hotels, as we do not have information such as hotel revenue, operating expense, gross operating profit, management fee etc.

MAIN FINDINGS

From the data analysis, several main findings from this empirical data set can be made. The findings provided good indications for the cost and benefit analysis of retrofitting existing commercial properties.

Firstly, retrofitting to achieve green mark certification need not be complicated or costly. In terms of retrofitting cost, the average cost works out to be only about 2% of current new build (see Table 2), assuming standard commercial buildings. If the retrofit cost is expressed as a percentage of the current market value of property (see Table 3 and Table 4), it is even smaller – 0.4% for retail and 0.77% for office. It is therefore quite evident that retrofitting existing buildings to achieve energy efficiency and green mark certification need not be costly. There is also no significant disruption to both owners and users in their continuous occupation and operations.

Secondly, the key benefit of green mark certification is the significant reduction in the consumption of energy. The average savings from the sample after retrofitting are about 17% savings (range from 6%-35%) of the total building's energy consumption compared to before retrofitting. If measured by the areas of the buildings where the owners are responsible for the utility payment, the average savings are even higher at nearly 30% (range from 14% - 58%). Hotel buildings

enjoy greater average savings of about 24% of total building consumption as a result of their longer and continuous operating hours. Translating these savings to financial terms, the average payback period is about 5.7 years, assuming $0.20/kWh.

Thirdly, based on the energy savings we analysed the impact on the valuation of the retrofitted green commercial properties. Table 2 and Table 3 show the key parameters of the income approach for valuation of the retail and office properties in the sample respectively. Reflecting the monetary savings from the lower energy consumption, the annual operating expenses will be very much reduced. For retail properties, average savings of 8.6% (range 4% - 14%) of the total operating expenses. These savings in operating expenses will translate into 1.72% increase in capital value.

For office properties, the savings are even higher with the average 13.3% (range from 7% - 30%) reduction of the total operating expenses. These savings in operating expenses will translate into average of 2.66% increase in capital value. The assumptions for this study : there was no change to the rental income and capitalization rate as a result of the Green Mark certification.

The cost and benefit analysis is based strictly on the data sample of the study. Other financial and intangible benefits have not been considered.

CONCLUSION

Although the sample size for this study is rather small (23 buildings), the findings are good indications for the cost and benefit analysis of retrofitting existing commercial properties. It shows that the cost of retrofitting is quite low compared to the value of the properties, while the savings are quite significant and translate to an increase in the capital value. This will be a continuing study with DRE (NUS) as the green building database grows larger.

BCA has been working with Singapore Institute of Surveyors and Valuers(SISV) and they will be incorporating guidelines on green building valuation, in line with the growing influence of green buildings in our real estate landscape. BCA will work with SISV to fine-tune the green building valuation guidelines to keep them up-to-date. The findings of the study were also shared with the industry at BCA's Breakfast Talk for CEOs "BUILD GREEN, CREATE VALUE" on 16 September 2011.

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GM-GFA Incentive Scheme

The GM GFA Incentive Scheme will apply to all new private developments, redevelopments and reconstruction developments[1] submitted on or after the effective date. Developments which have obtained planning approval but have not commenced construction of the superstructure works on site may also be considered for the scheme.

[1] *Reconstruction developments include major additions and alterations to existing building and major retrofitting to existing buildings as deemed suitable for the GM GFA Incentive Scheme by BCA.*

Types of development that are eligible for this scheme are:

Residential	Non-landed, Mixed commercial & residential development and others (approved case-by-case)
Non-Residential	Commercial, office, retail, business parks, industrial, institutional, community building, hotel, hospital, white site development and others (approved case-by-case)

Note: Developers who take up the GM GFA Incentive Scheme will not be eligible for the Green Mark Incentive Scheme (GMIS) .

QUANTUM OF GM GFA

The quantum of GM GFA allowed under the Scheme is up to 1% for Green Mark Gold ^{PLUS} and up to 2% for Green Mark Platinum, subject to a cap of 2,500 sqm for Gold ^{Plus} and 5,000 sqm for Platinum.

Table 1: Quantum of GM GFA for higher BCA Green Mark ratings

Green Mark Rating	**GM GFA Incentive Scheme**
Platinum	Up to 2% additional GFA beyond Master Plan GPR (subject to cap of 5,000 sqm)
Gold ^{PLUS}	Up to 1% additional GFA beyond Master Plan GPR (subject to cap of 2,500 sqm)

The method of determining the GM GFA is based on the following:

$$\text{GM GFA} = \frac{\left[\begin{array}{c}\text{Proposed GFA (sqm)}\\ \text{(subject to MP allowable intensity)}\end{array}\right] \times \left[\begin{array}{c}\text{Prescribed Green}\\ \text{Premium (\$/sqm)}\end{array}\right]}{\text{Land Value (\$/sqm) (determined by proxy using DC rates)}}$$

Note: The additional GFA is subject to payment of DP or DC, whichever is applicable.

$100 MILLION GREEN MARK INCENTIVE SCHEME FOR EXISTING BUILDINGS (GMIS-EB)

As part of Singapore's strategies for sustainable growth, the Inter Ministerial Committee on Sustainable Development has set a target of 35% reduction in energy intensity (consumption per dollar GDP) by the year 2030 from 2005 levels. As buildings account for about one-third of total national electricity consumption, the energy efficiency of our buildings will have to be improved if our target is to be achieved. To this end, BCA has already put in place both incentives and regulations under the 1st Green Building Master Plan.

To further accelerate the pace of energy efficiency improvements in our buildings, BCA is now implementing the 2nd Green Building Master Plan. This will focus on existing building, where building owners face many challenges in upgrading the energy performance of their buildings. BCA is therefore introducing the **$100 million Green Mark Incentive Scheme for Existing Buildings (GMIS-EB)** to encourage building owners to undertake the necessary retrofits to upgrade their buildings.

The GMIS-EB provides (a) a cash incentive for upgrading and retrofitting scheme that co-funds up to 35% (capped at $1.5 million) of the costs of energy efficient equipment installed to improve the energy efficiency of existing buildings. In addition, the GMIS-EB also includes (b) a 'health check' scheme; this is an energy audit which determines the efficiency of the air-conditioning plants. BCA will co-fund 50% of the cost for conducting this Health Check and the remaining 50% is borne by the building owner.

EFFECTIVE DATE

The GMIS-EB is effective from the 29 April 2009 and will expire 5 years later on the 28 April 2014 or when the GMIS-EB fund is fully disbursed, whichever earlier. Participation in the scheme will be on a first-come-first served basis, subject to availability of funds.

ELIGIBILITY

In general, the GMIS-EB is applicable to building owners of (a) existing private commercial (non-residential) developments with (b) minimum gross floor area of 2,000 sqm. These buildings must have central chilled water air-conditioning plants or which will be upgraded to have central chilled water air-conditioning plants.

For the complete eligibility criteria for the Cash Incentive for Upgrading and Retrofitting scheme and the Health Check scheme, please refer to the respective application forms and guidelines.

We wish to highlight that for the Health Check scheme, the building owner must apply for Green Mark certification within 18 months of the date of BCA's letter of offer to participate in the scheme.

For the Cash Incentive for Upgrading and Retrofitting scheme, application must be lodged before the start of the energy-related upgrading/retrofitting works.

The scheme will not be applicable to buildings from the public sector as such projects have already being substantially funded by the government.

DETAILS OF THE CASH INCENTIVE FOR UPGRADING & RETROFITTING SCHEME

in order for the eligible buildings to qualify for this incentive, they must first achieve at least BCA Green Mark Certified rating and air-conditioning system efficiency of 0.7 kW/RT or better, with 15% energy savings or higher. The computation of the energy savings can be determined or calculated based on the total building consumption or the total landlord's consumption. The amount of co-funding for building owners will vary depending on the Green Mark rating, air-conditioning system efficiency and energy savings that are achieved. The amount of co-funding rate and cap amount are shown in Table below.

Green Mark Rating	Aircon System Efficiency (kW/RT)	Energy Savings		Co-funding Rate (based on equipment cost)	Cap
		Based on total building consumption	Based on total Landlord's consumption		
Certified	0.7	20%	25%	20%	$150,000
Gold		15%	20%		
Gold^{Plus}	0.65	30%	35%	30%	$500,000
Platinum	0.6	35%	40%	35%	$1,500,000

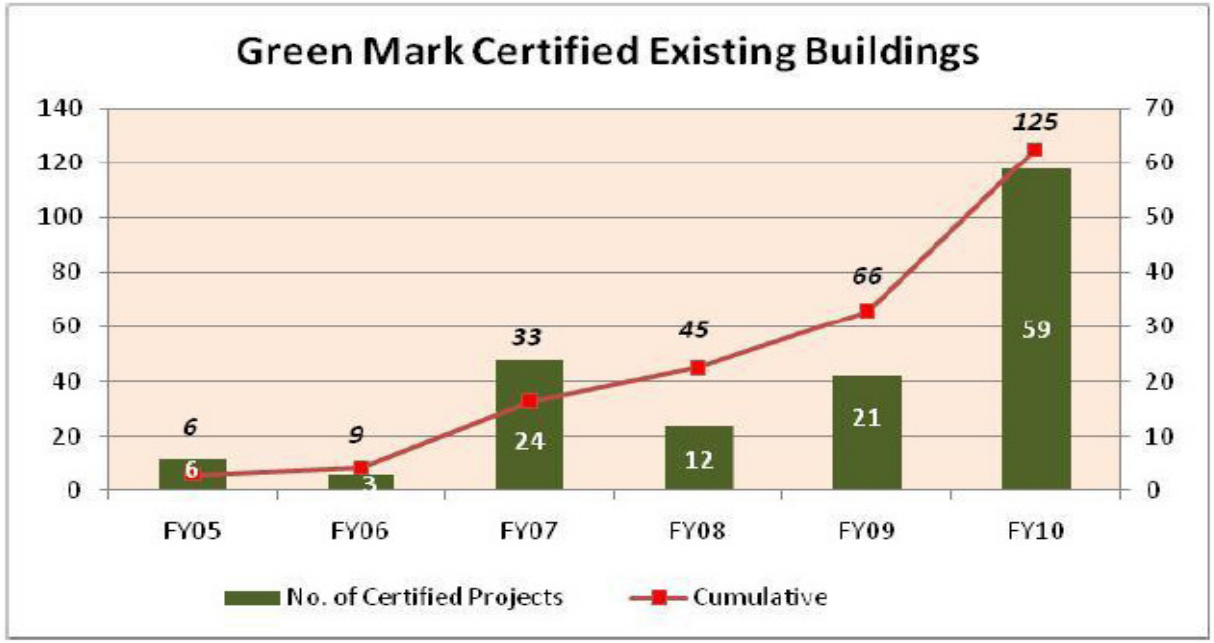
The co-funding rates cover the cost of the approved equipment installed to achieve the energy savings.

The cash incentives would be disbursed over 2 stages:

- The first disbursement is 50% of the approved co-funding will be given out upon completion of the energy improvement retrofits.
- The final disbursement of the approved co-funding will be given out upon Green Mark certification and verification air-conditioning plant system efficiency and the energy savings achieved.

Table 1: Number of Green Mark Certified Existing Buildings

No. of Green Mark Certified Existing Buildings



Platinum – 18 Goldplus – 12 Gold – 61 Certified - 34

Table 2: Comparisons between Retrofitting & New Construction Cost

	Office	Retail	Hotel
Overall retrofit cost per m2	$58.27	$65.91	$77.06
New construction cost per m2	$2,613	$2,801	$3,352
% of retrofit cost/new construction cost	2.22%	2.13%	1.78%

Table 3: Impact of Green Retrofitting on Valuation of **Retail** Properties

s/n	Gross Annual Rent	Operating Expenses (OE)	Property Tax	Yearly Cost Saving	% of Saving on OE	Net Income	Capital Value (CV)	Retrofit Cost	Cost as % of Capital Value	% increase in Capital Value
Ave	41,691,605	6,253,741	4,169,161	537,821	8.6%	31,806,524	636,130,480	2,538,567	0.40%	1.77%

Table 4: Impact of Green Retrofitting on Valuation of **Office** Properties

s/n	Gross Annual Rent	Operating Expenses (OE)	Property Tax	Yearly Cost Saving	% of Saving on OE	Net Income	Capital Value (CV)	Retrofit Cost	Cost as % of Capital Value	% increase in Capital Value
Ave	26,839,024	4,025,853	2,683,902	535,402	13.3%	20,664,671	413,293,420	3,197,673	0.77%	2.66%