

# **THE CHANGING ROLE OF QUANTITY SURVEYORS IN THE GREEN BUILDING DEVELOPMENT IN SOUTH AUSTRALIA**

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## **ABSTRACT**

Green buildings have been promoted by the Construction Industry. There are changes in design, procurement, and management processes in order to integrate the principles of sustainability into buildings.

Most industry professionals have experienced challenges in moving from traditional design and construction process to a new delivery method suitable for the Green Building Development. Professional Quantity Surveyors are of no exception, they have to move with the new trend of green buildings. A question has been raised: "are there any changes to the traditional functions of Quantity Surveyors, under the new wave of the Green Building Development?"

Based on questionnaire survey and interviews conducted in South Australia, the findings indicate that the traditional roles of Quantity Surveyors have developed to accommodate green buildings in conjunction with new roles. These changing roles in relation to green buildings include sustainability strategy development, life cycle cost appraisal, consulting on green star system, advising on engineering services solutions, and valuing sustainability of a property.

In order to deliver cost advisory services for green projects effectively to clients and other industry professionals, Quantity Surveyors are required to progressively develop their skills, and knowledge. It has been revealed that understanding of green products and materials is one of the key advantages for Quantity Surveyors to remain sustainable in the profession.

*Keywords:* Quantity Surveyors, Green Buildings, Life cycle cost

## **INTRODUCTION – GREEN BUILDINGS IN AUSTRALIA**

It is widely evident that the recent climate changes and the continuous consumption of natural resources have had significant adverse impacts on our built environments. As a result, many industries around the world are turning towards sustainable developments and products. In the

construction industry, the development of green buildings is trying to balance between economic progress and environment conservation. Statistics have proven that green buildings not only have to deal with climate change issues and running out natural resources but also to provide a healthier environment for humans to live, work, and enjoy.

The awareness of the Green Building development (GBD) has grown continuously since 2004. It not only provides signals to the industry professionals but also impacts upon the public and developers/owners. In the first survey of the green building market in Australia conducted by Green Building Council of Australia (GBCA 2006), there was approximately 84% of industry stakeholders involved in green buildings. Initially, the government sector and major corporate building tenants and owners had concerns on the full benefits of greening buildings. The collected data of this report indicates that there were about 43% of residential projects belonging to green development. It made this sector a leader in the green movement even though it is not a priority in the green development.

Table 1 below illustrates the number of green buildings certified per year in Australia from 2004 to 2012.

Table 1:

<b>Year</b>	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>No.</b>	1	8	23	41	124	212	292	393	519

Source: Green Building Council 2012

The content showed that the number of buildings certified as green buildings has risen steadily since its first introduction in Australia in 2004. In 2012, the total number of green buildings certified was over and above 500 buildings. Table 2 below demonstrates the allocation of green buildings across each State in Australia.

Table 2:

<b>States</b>	TAS	SA	VIC	WA	ACT	NT	NSW	QLD
<b>No.</b>	6	50	155	36	35	5	121	111

Source: Green Building Council 2012

South Australia is the State that had 50 certified green buildings in 2012 and was in the fourth position in Australia, just behind Queensland (QLD), New South Wales (NSW), and Victoria (VIC).

## THE CHANGING ROLES OF QUANTITY SURVEYORS

As applying principles of sustainability into buildings there are many changes in design, procurement, and management processes that have been generated (Chau et al, 2010). Since then, industry professionals have experienced challenges in moving from the traditional design and construction processes to a new method of delivery suitable for the Green Building Development (GBD). Professional quantity surveyors (Qs) are of no exception; they have to keep up to pace with the new trend of the GBD. In fact, Quantity Surveyors have since then provided services in relation to green buildings in order to respond to this new market. Table 3 provides a list of completed green building where quantity surveyors are the named project cost consultants:

Table 3:

	<b>Green Building</b>	<b>Building Type</b>	<b>No. of Stars</b>	<b>Quantity Surveyors</b>
1	Ingkarni Wardli	Educational	6	Currie & Brown
2	The advertiser	Office	4	WT Partnership
3	400 King William Street	Office	5	RLB
4	151 Pirie street Adelaide	Office	4	RH Terotech
5	60 Light square Adelaide	Office	4	WT Partnership
6	70 Franklin Street	Office	5	DLS
7	9-21 Gouger Street	Office	5	RH Terotech
8	Worldpark Adelaide - A	Office	5	RLB
9	SA Police HQ	Office	5	WT Partnership
10	VS1	Office	6	RLB
11	New Building Maw.L	Educational	5	RLB
12	Flinders Medical Centre	Health	5	RLB

13	City Central Tower 1	Office	5	Davis Langdon
14	Innova21	Educational	6	Aquenta

Source: Luu (2012)

From the perspective of quantity surveying profession, a question has been asked: "under the new wave of the Green Building Development, are there any changes to the traditional functions of quantity surveyors?"

There is a common perception that when green building materials and/or components are to be used, it will involve life-cycle costing techniques for comparisons. As quantity surveyors are construction cost consultants, it is logical to assume that they will be involved in these types of services. Is this necessarily true? Likewise green buildings will definitely involve new skills and technologies, are quantity surveyors able to cope with the new skills and knowledge in providing the costing on the green building development?

The central point of promoting green projects is balancing the triple bottom lines of the sustainable development. That means economic benefits are not the only factors to be considered. In green buildings, these financial factors are balanced with environmental and social factors. They bring benefits not only to project developers and owners but also to occupants and the natural environment. Particularly, industry stakeholders have collaborated to create a green building that produces less construction waste to landfill, uses more environmental-friendly materials, and consumes energy over its life cycle more efficiently. Therefore, professional QSs, who have been considered as construction cost experts in the industry, are likely to be the most suitable professionals to conduct the feasibility and cost planning of the sustainable developments (Holmes, 2009; Seah, 2009).

Macaluso and Walker (2011) believe that QSs should be engaged at the early stage of a green project. This is due to the QSs are the only professionals who determine the cost of a project. The earlier the QSs join the green project team, the more cost effective the project would be.

In a green project, QSs provide not only advices to clients/developers to establishing their sustainability targets, but also the comparable information of alternatives to the design team. This is significantly important in selecting the most cost effective option for a sustainable design. QSs' contributions also present in the later stages of the project including the preparation of tender documentations, pre-qualification of tenders and tender evaluations. These traditional tasks conducted in sustainability perspective play a major part in choosing the most suitable contractor for a green project. With the expertise in cost management,

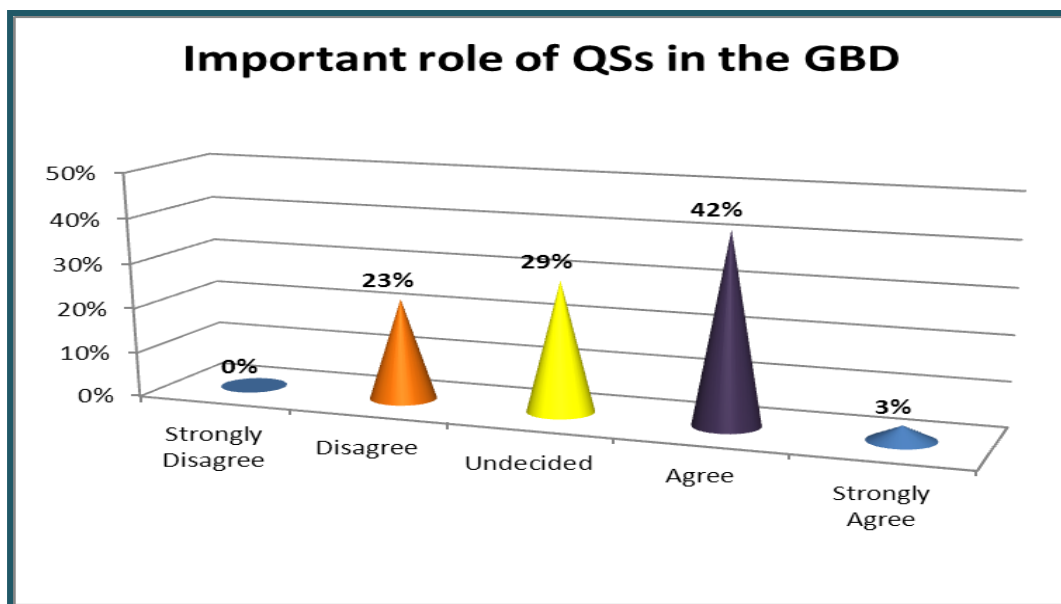
and knowledge of construction methodologies, Qs are in an important position to assist clients in achieving their sustainable objectives over the life cycle of a green project. The aim of this paper is to elucidate if there are any changing roles of quantity surveyors with the new trends of green buildings.

## QUESTIONNAIRE SURVEYS AND ANALYSIS

In order to understand the Qs's perception about their role in the GBD questionnaire surveys were collected in South Australia from the quantity surveying firms. 110 copies of the survey in the form of emails and in person were despatched and a total of 31 responses were received, representing a response rate of 28%. Among all the questions asked, Figures 1 to 3 indicated the summaries of the relevant questions and responses.

Question 1 - Do you agree that Quantity Surveyors play an important role in promoting green building development?

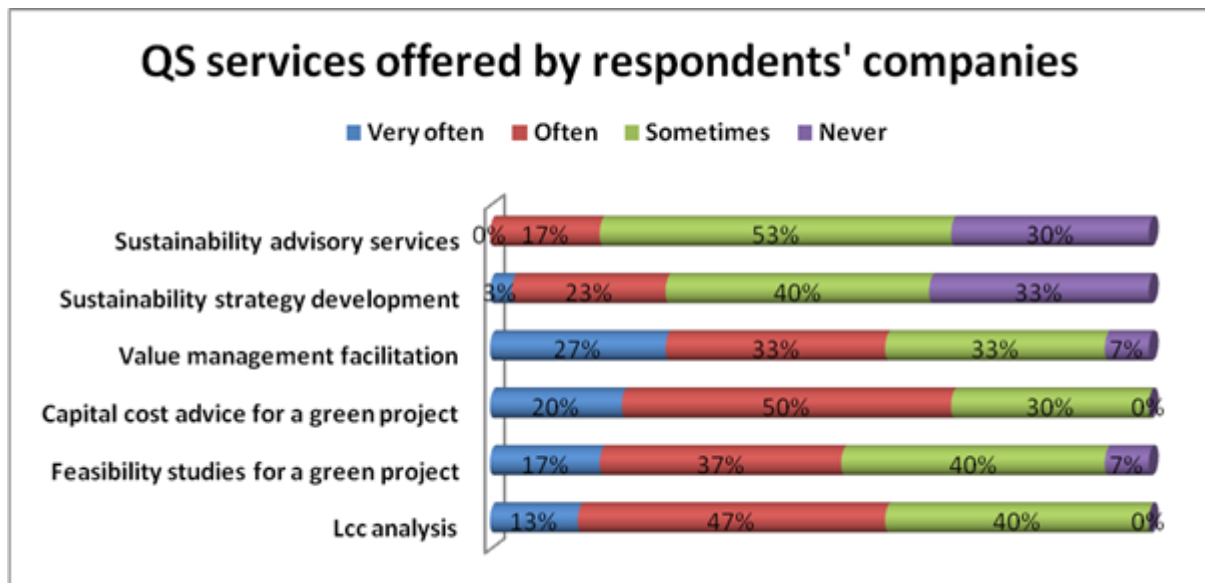
Figure 1:



It is surprising to see that with the increasing demand for green buildings, the awareness of the quantity surveyors on their role in the GBD is not overly positive (only 45% agreed). It seems that over half of the respondents don't see their roles as being important in promoting the green buildings.

Question 2 - What are the services related to sustainable construction that your company is offering to the Industry?

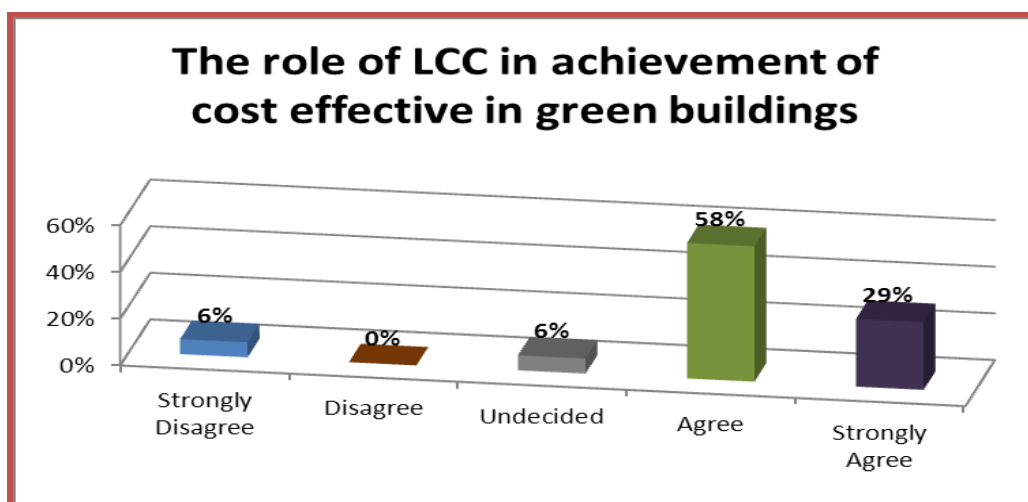
Figure 2:



Among all the services provided by quantity surveying firms, capital cost advice for a green project is ranked the first followed by the life cycle costing analysis. According to the literature and information obtained from the various websites, quantity surveyors have collaborated with other professional to help clients in establishing the desired green levels through the sustainability advisory services.

Question 3 - Do you agree that Life cycle costing techniques play an important role in achievement cost effectiveness of a green building?

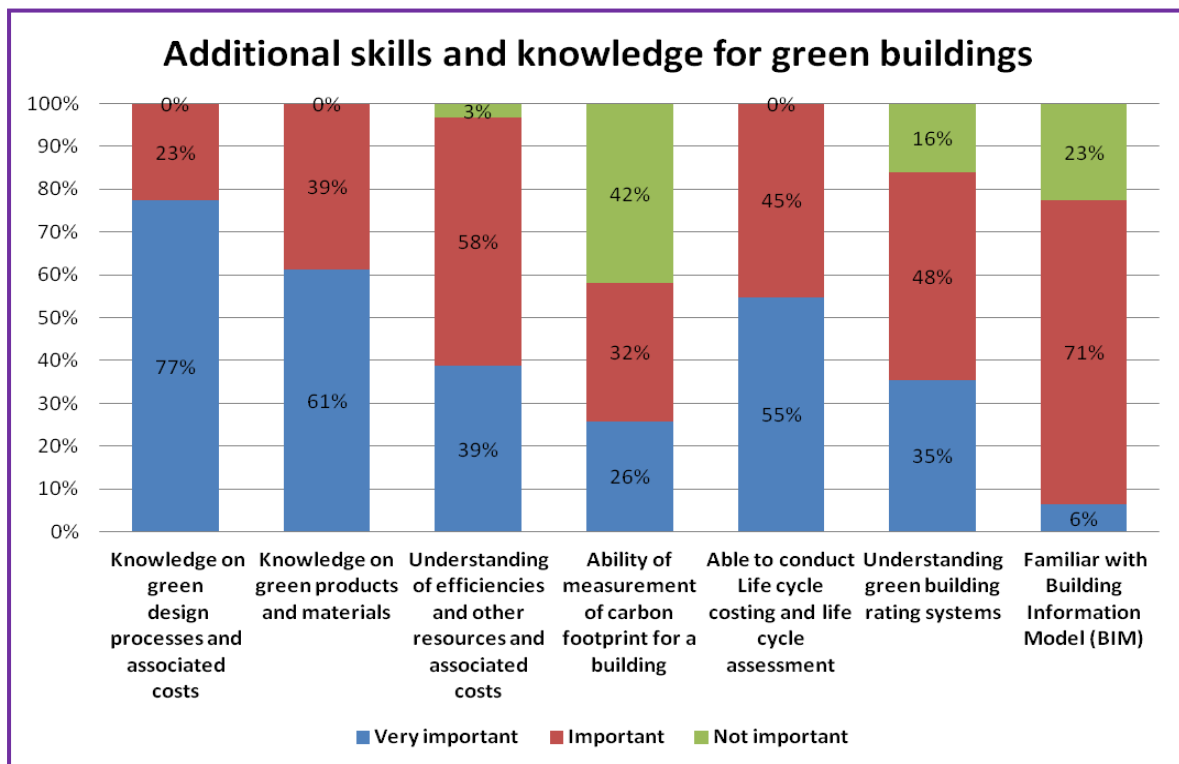
Figure 3:



Majority of the respondents have considered LCC techniques as being important tools in evaluation of alternatives for design, building materials and equipment going to be used in green buildings.

Question 4: What are the additional skills and knowledge a Quantity Surveyor need to achieve under the green development movement?

Figure 4:



As mentioned before, most industry professionals have experienced challenges in keeping pace with the latest procurement demands for green developments, it is imperative that quantity surveyors may need to acquire additional skills and knowledge to sustain their business. The respondents indicated that 'knowledge on green design processes and associated costs' was considered the most important skills followed by the 'knowledge of green products and materials'. It is worthy to note that knowledge of BIM is showing its importance.

## **INTERVIEWS WITH INDUSTRY PROFESSIONALS in SOUTH AUSTRALIA**

In order to fill up the gap between the questionnaire and the literature on this topic of research, interviews were also conducted. The interviewees were selected from medium to large QS firms in South Australia. All of them hold senior positions and have knowledge and experience in Green buildings. The semi-structured questions were set without closed answer options. It attempts to provide a deeper understanding of the issues

rather than the gathering of the instant answers from survey respondents. The interviewee profile is outlined in Table 4 below:

Table 4:

<b>Interviewee</b>	<b>Capacity</b>	<b>Years of QS experience</b>
Interviewee A	Senior Quantity Surveyor in private QS firm	<ul style="list-style-type: none"> <li>• 10 years</li> <li>• Experience in GBD</li> </ul>
Interviewee B	Senior Quantity Surveyor in private QS firm	<ul style="list-style-type: none"> <li>• 10 years</li> <li>• Experience in GBD</li> </ul>
Interviewee C	Senior Quantity Surveyor in private QS firm	<ul style="list-style-type: none"> <li>• 25 years</li> <li>• Indirect experience in GBD</li> </ul>
Interviewee D	Principle Cost Manager in Government sector	<ul style="list-style-type: none"> <li>• 43 years</li> <li>• Good experience in GBD</li> </ul>

Table 5 below illustrated the major questions and answers from the 4 interviewees:

<b>Questions</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
1. Green building services offered by QS firms	Developed from traditional services	Developed from traditional services	Developed from traditional services	Developed from traditional services
2. Use of LCC techniques in Green building	LCC in heating system	LCC in a/c system	LCC in replacement and maintenance	LCC often used in public projects
3. Challenges of QS in Green building projects	Lack of knowledge and skills	Lack of knowledge and skills	Lack of knowledge and skills	Lack of knowledge and skills
4. Ways to increase the knowledge of Green buildings for graduate Qs	-University and professional bodies -Learn from UK - BCIS	University and professional bodies	University and professional bodies	University and professional bodies

The main purpose of the interviews is to find out the challenges faced by Qs under the new wave of green building development and how these challenges can be overcome. There is a consensus among the four interviewees that lack of knowledge and skills is a major challenge to professional QS. They all agreed that the knowledge of green products and materials and their associated prices and getting familiar with



engineering services would be a competitive advantage. In order to provide a more detailed and accurate cost advice to clients, they have suggested the following:

1. QS should upgrade themselves with relevant skills and knowledge in sustainable developments via research and further studies;
2. Attending relevant seminars on green projects;
3. Building up cost database by requesting and recording quotes from sub-contractors and suppliers on green building services and products.

All four interviewees have admitted that the GBD have impacts on quantity surveyors. According to interviewee A, the degree of the influence depends on the economic conditions. At the time of research, the construction industry in SA is relatively quiet. There are only few major green projects from government sectors. Demand of quantity surveying services for green projects is not high. As a result, professional QSs have not had many chances to be involved in green projects. Although green buildings are increasing nationally, higher capital cost is still a primary obstacle.

## **CONCLUSIONS**

Under the growing demand on green buildings, some medium and large Quantity Surveying firms have offered new services to this market. They were identified as including sustainability strategy development, sustainability advisory services, green star consulting, and advice engineering services solutions. However, the findings from questionnaires and interviews indicated that local QS firms have mainly expanded their core traditional services to green projects while the new services are sometimes engaged. Examples of these are feasibility studies, cost planning, and cost managements for green building market. Besides, LCC techniques have been applied widely not only to green projects but also for others to evaluate financial performance of products, building equipment and elements. Quantity surveyors have the potential to be highly involved in measuring sustainable construction especially in areas of life cycle costing appraisal, however, there is not enough evidence to suggest that they are actively doing this.

In order to provide QS services to green buildings successfully, Quantity Surveyors are required to achieve a certain level of understanding of skills and knowledge associated with green project design. Quantity Surveyors are invited to the design team at the early stages of the projects to provide cost advice on alternatives during selection of materials, building components and equipment. The difficulty that Quantity Surveyors in South Australia have to face is no common cost database for reference which is known as Building Cost Information Services (BCIS) in the UK.

Quantity Surveyors can access this system any time and extract cost information related to their projects effectively. In South Australia, QSs have to build up their own cost database by doing research, requesting and recording quotes from sub-contractors, suppliers, and manufacturers.

With the increasing demand on efficiencies assessment, green materials, alternative building components and equipment, professional QSs will have more opportunities in these areas. However, QSs still have to rely on service engineers in major projects to achieve efficiencies purposes and appropriate cost information for green projects. This is due to their limitation of knowledge in building services which are very complex in large projects. These changing roles of Quantity Surveyors are not engaged as often as those of traditional roles at the moment. In fact, most of the evidence suggests that they are just continuing to do what they always do in terms of service provision and this is not necessarily new or especially aligned with green building design. For the future role of quantity surveyors, there is a need to re-consider how existing services could be enhanced to be more specifically aligned with green building design. This challenge calls for transformation in the way QSs function. Whilst it is the responsibility of quantity surveyors to convince and demonstrate value for money to their clients for green buildings at optimum cost, a collaborative approach is to combine the efforts of government agencies, professional bodies and the universities with the hope to produce future graduates to meet the latest challenges in sustainable development.

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