

# **Can programs such as the Master Builder Green Living Program improve the capacity of builders to respond to sustainability issues in construction?**

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## **Abstract**

The increasing importance in the marketplace of sustainability features in both domestic and commercial construction has seen the development of the Master Builder Green Living program to improve the ability of building practitioners to respond to these requirements. In the commercial sector builders are increasingly asked to respond to developer or tender requirements that require them to meet a number of sustainability objectives. At the domestic level many consumers only contact with the building industry is through a builder. The program provides builders with practical solutions on sustainability relevant at all stages of the construction process in an easy to digest format which in turn increases the likelihood of effective implementation.

Consumers interested in addressing sustainability issues during the construction or renovation of their homes can seek out these builders. By bringing together like minded individuals the chances of improved sustainability outcomes for everyone are increased. Through education the Green Living Master Builder becomes a key advocate for the adoption of sustainable solutions. On successful completion of assessment the participants are awarded a nationally recognised unit of competency. Career pathways are opened subsequently for the builder who seeks opportunities in the field of sustainable construction.

This paper explored the ability of programs such as the Master Builder Green Living Program to improve the capacity of builders to respond to sustainability issues in construction. Over 850 building practitioners have been trained by Master Builders Victoria since 2006. In this case, the self reporting received as a part of an accreditation program has shown a range of positive sustainability outcomes from Master Builder Green Living Builders including for the year 2012, a reduction of 523 tonnes of CO<sub>2</sub> emissions and the diversion of 1010 tonnes of waste from landfill.

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## **1. Introduction**

The Master Builders Association of Victoria is a member organisation that represents approximately 9000 commercial and domestic builders. As a registered training organisation it is also responsible for providing industry training to more than 14,000 participants annually. The majority of this training is linked to legislative requirements in the fields of Occupational Health and Safety. In order to encourage and facilitate individual career pathways and development, the majority of courses are linked to accredited outcomes particularly units of competencies and or qualifications from national training packages.

Building and Construction Industry practitioner needs inform the selection and development of the training courses. Many of the participants come from a range of educational backgrounds that range from unskilled construction workers through to tertiary qualified project managers. In the past this has resulted in a general lack of training culture. The diversity of cultural and education backgrounds can also be a challenge and in this case participants are provided with comprehensive training support in the form of a Workplace English Language and Literacy (WELL) program. Participants are also challenged by the realities of tight project timelines and the cost of time release offsite means that there is a need for flexibility such as offering short blocks of half days or days over a period of weeks.

While the majority of this training is linked to legislative requirements there is an increasing awareness that sustainability outcomes are becoming an increasingly important part of the building process. As a result Master Builders Victoria in partnership with a number of State Government entities has developed a multifaceted education strategy. This consists of a full time Sustainability Officer whose broad brief is to 'educate' the industry and help to stimulate the adoption of sustainable practices. This takes a variety of forms including;

- Site visits to provide advice
- Telephone advice
- The development of training programs and units to be incorporated into other training programs
- Research and reports back to members on the findings
- Presentations and question and answer sessions at trade nights and section meetings in regional Victoria.

## **2. Industry sustainability programs**

Often the first point of contact for people contemplating the construction of new houses or renovations is through a builder. Domestic builders and other trades have experienced an increase in questions from their clients about sustainability issues, helping to raise the awareness amongst builders of the importance of incorporating sustainability into their operations. This has subsequently driven the demand for increased information from industry associations that has led to the development of a number of programs.

These associations are most often well placed to present the required information in a format that is accepted by participants that usually do not have a strong academic

background. There is a large amount of information available on improved sustainability outcomes in the construction sector. The challenge is to be able to translate this information from the academic to a series of goals, strategies and techniques understandable to and accepted by builders.

These programs include those that are delivered by builder associations such as the Housing Industry Association's (HIA) GreenSmart program (HIA n.d.) and in the United States, the National Association of Home Builders certified green building professionals program (NAHB 2013). There are also a number of programs delivered by or developed by trade associations and private entities such as the EcoSmart Electricians (National Electrical and Communications Association 2009), the GreenPainters (Green Painters Ltd n.d.) and the Green Plumbers (Green Plumbers n.d.). These programs all provide an incentive by identifying the practitioner as having completed extra training in the sustainability area. They can then use branding to set them apart in the market.

## **2.1. The Master Builders Green Living training course**

The Master Builder Green Living program is designed to provide builders involved in the residential sector with improved management and business skills to enable them to pursue energy innovations in their constructions. These include the necessary tools and information to identify design features of energy efficient structures that not only meet minimum standards but set a new benchmark in the housing sector for energy innovation. The builder is also able to improve their customer service by providing informative advice to clients about sustainable solutions in the design and construction of their dwelling.

This innovative program focuses on sustainability issues relevant at all stages of the construction process from important design considerations through materials selection and site management to interior fit out and health considerations. The information is easy to digest and focuses on common sense, practical solutions that are not necessarily expensive.

The other benefit for the builder is the linking of the program and work practices with a unit of attainment from the national training system which encourages further training for a nationally recognised qualification. The program was initially developed by the Institute of Sustainable Futures for Master Builders through an Australian Greenhouse Office grant in 2005. Since then the program has been further developed by Master Builders Victoria in response to changing industry needs, techniques and products. Over the last 6 years, Master Builders Victoria over 850 builders have completed the 2 day training program (Table 1). Master Builders Victoria has also assisted other Master Builders to present the program in Western Australia, Tasmania, Queensland and the Australian Capital Territory.

**Table 1: Green Living course enrolments.**

Year	Courses	Numbers
2006	4	39
2007	5	77
2008	8	125

2009	8	150
2010	9	182
2011	12	164
2012	8	120

Associated branding allows builders who have completed the Master Builder Green Living program and become accredited to be identified as builders that view sustainability issues as an important part of their business. This gives consumers interested in addressing sustainability issues during the construction or renovation of their homes the ability to seek out these builders. By bringing together like minded individuals the chances of improved sustainability outcomes for everyone are increased.

The Master Builder Green Living Program consists of a 2 day course, an accreditation system and the provision of a number of resources. It focuses on the often used, reduce, reuse and recycle message and considers the need to reduce impacts, energy consumption and water use in the first place. The program then explores a group of ideas that have a big impact on minimising the environmental impact of the house, without necessarily imposing an increased cost.

The Training Course is structured in a manner that follows the building cycle. It commences with a look a number of environmental issues such as greenhouse gas production and biodiversity loss and the impact of construction on these issues.

It then looks at the importance of project planning by emphasising the importance of thinking about sustainability features right from the beginning of the project. This is where features can be easily incorporated into the building project at minimal additional cost, as they are integrated at the design phase.

The importance of design is then introduced, in particular passive solar design ideas. Once again the focus is on providing ideas that will reduce operational energy use and environmental impact without necessarily introducing additional costs.

The next few topics address the environmental issues to be considered during the construction phase such as on site management, waste management and erosion and sediment control. Materials selection used in the framing and structure and the building envelope becomes important when we consider, where these materials come from, their recycled content and embodied energy. Concepts such as sustainably sourced and grown timber resources are also introduced.

Methods to reduce water and energy use are then explored by focusing on the big users and easy methods to reduce consumption. The importance of design considerations are not forgotten as a series of activities allow the participants to apply the ideas to real plans. These practical activities deliver a number of other outcomes such as group work and the sharing of ideas.

Once the construction of the building is completed the issues to be considered during interior fitout are explored. As well as again looking at the importance of materials selection and embodied energy, indoor air quality is introduced as a topic. The potential health impacts from emissions given off by solvents, glues, carpets and paints used in homes are investigated, as well as the methods to reduce or eliminate them.

The final topic covers business strategy and discusses methods to incorporate what they have just learnt into their day to day operations to make the whole process as easy as possible. In order to sell their increased knowledge of sustainable construction the accreditation process is discussed and a number of ideas of how to best use the brand to differentiate their business from others in the market are introduced.

## **2.2. Resources**

The goal of the program is to increase the chances of builders incorporating sustainability considerations into their developments. A number of resources are issued to participants during the course in order to make this process as easy as possible.

As well as a set of training notes, a checklist is distributed as part of the Green Living domestic builder course. It is designed for the builder to use with their client to determine the range of environmentally friendly options to be incorporated into their development. This not only helps to remind the builder of the options available but also helps to clarify the client's requirements. The checklist follows the construction process and considers outcomes concerned with passive solar design, materials selection (environmental impact and embodied energy), water and energy conservation, recycling and indoor air quality.

All participants are also issued with a list of useful resources which is continually updated on the Master Builder Victoria Green Living webpage ([www.mbav.com.au/training/greenliving.html](http://www.mbav.com.au/training/greenliving.html)). This list of useful suppliers and resources is once again designed to make the process of finding environmentally preferable materials as simple as possible. If the sourcing of a product or service becomes too difficult it is likely to be dismissed by the builder.

Participants are also given a copy of the "Your Home" manual (Department of Climate Change and Energy Efficiency 2010), a technical guide to environmentally sustainable homes. The guide provides participants with additional information that they can read at their leisure or use as a future reference.

Once builders complete the program they continue to be supported through e-newsletters and an annual workshop. The newsletter, which is sent out tri-monthly, is able to keep Master Builder Green Living builders updated on regulatory changes, events that may be of interest and useful new products and resources. A one day workshop is also held annually which includes guest speakers from government who are able to provide insight into proposed regulatory changes, industry speakers and useful product suppliers. This also provides an opportunity for the builders to seek clarity by having their questions answered. Each year a number of builders are also asked to speak about their own developments. This

is often well received by the attendees as they are able to hear from a real builder about some exciting projects, how they overcame various problems and what they found useful along the way.

### **2.3. Accreditation**

The accreditation process is the main point of difference between the Master Builders Green Living program and other similar program identified previously. The accreditation not only identifies people who have completed the program but those that remain committed by completing an annual reaccreditation process.

Only Master Builders members who complete the two day training program and sign a written commitment are able to refer to themselves as Master Builders Green Living Builders and to use the associated branding. The signing of a written commitment significantly increases the chances of the person putting a verbal commitment into action (McKenzie-Mohr and Smith 1999). The commitment includes:

- submission of an annual report to Master Builders that includes information and details on the total number of residential projects, their NatHERS energy rating and the number of rainwater tanks and solar systems fitted
- an estimate of the amount of material recycled or diverted from landfill
- an assurance that sand, soil, screenings, concrete and chemicals were confined to the building site (completion of annual report declaration).

The annual report is required from the builder in order to continue to maintain their accreditation and is considered to be evidence of sustainable strategies being put in place. On provision of this evidence participating builders can continue their accreditation and also be eligible to receive a nationally recognized statement of attainment for the unit of competency demonstrated - CPCBC4020A Build thermally efficient and sustainable structures.

### **2.4. Other related courses**

With the increased popularity of ecologically sustainable developments and Green Star projects, there is an increased requirement for commercial builders to be more familiar with these concepts. As a result a number of new courses have been developed by the Master Builders Association of Victoria in recent years.

#### **2.4.1. Sustainable Construction – Commercial**

This hands-on course provides guidance on how to understand and respond to developer or tender sustainability requirements and for site managers and contractors to comply with environmental requirements on site. At the end of the course participants will have produced

their own environmental policy and management plan which can then be adapted for other projects.

This program is similar in structure to the domestic program but differs by focusing on issues related to commercial developments. There is more emphasis on site management, environmental policies and site management plans, ratings systems such as Greenstar and uses case studies of commercial buildings. The program is supported by a DVD produced by the Master Builders Victoria.

#### **2.4.2. Certificate IV in Building and Construction (Environmental Management)**

This qualification was developed by Master Builders Victoria and first delivered in 2009. The course was aimed at people with a strong sustainable building focus or people working on building sites, who were finding that complying with onsite environmental requirements was becoming part of their role. The topics covered are similar to those in the Sustainable Construction course, but include more detail around legislation, monitoring and environmental management plans.

### **3. Method**

As stated previously those builders who wish to become accredited Master Builder Green Living Builders must provide an annual report as part of the reaccreditation process. The information collected from this self reporting includes;

- The number of projects completed in the last 12 months
- The number of projects where waste was recycled
- The number of new projects and renovations
- The volume of waste generated
- The volume of this waste diverted from landfill
- The processes put in place to prevent discharges to storm water
- The number and size of rainwater tanks
- The number of photovoltaic systems fitted
- The number of solar hot water systems fitted.

The information from these self reports is collated and the mean values for each category were calculated.

### **4. Results and achievements**

As of December 2012, 863 builders have completed the Master Builders Green Living program, 63 the Sustainable Construction – Commercial program in Victoria and 78 have completed the Certificate IV. Importantly 45% or 387 of those who completed the Master Builder Green Living course have signed a written commitment to incorporate sustainability objectives into their day to day operations and are accredited.

Results compiled from reports submitted by the builders as part of the accreditation process indicate that during 2012;

- On average each of these builders are working on 11 projects per year covering 4137 building sites (11\*387).
- 89% of these sites are recycling 56% of their waste or 1010 tonnes diverted from landfill.
- all these sites are controlling discharges to the storm water system.
- 41% of the sites had rainwater tanks fitted that averaged 12,500 litres in size.
- 39% of these sites have solar hot water and 5% photovoltaic panels.

Five percent of 4137 building sites = 192 photovoltaic panel systems. If we assume that each system is on average 1.5 kilowatts in size and produces on average 6 kilowatt hours of electricity each day, then they produce approximately 420,000 kilowatt hours per year. If we assume each megawatt hour of brown coal fired electricity produces 1246 kilograms of CO<sub>2</sub> (Australian Gas Association 2000) then this equates to a saving of 523 tonnes of CO<sub>2</sub> each year.

## **5. Conclusion**

Feedback from course participants has been excellent indicating that the information is presented in a format that they respond positively to. In evaluations completed at the end of each course 96% of participants rate the course as very good or excellent. There are also numerous comments on how useful they found the discussions and ideas shared with other like minded builders.

Providing training in a practical easy to follow format that is complemented by a variety of tools, ensures that builders feel more confident when discussing environmentally friendly practices with their clients. Providing improved training for builders in a format they are comfortable with and identifying builders, who have an interest in providing more sustainable housing, increases the chances that consumers who want these outcomes make contact with the appropriate person.

This approach results in an improved level of cooperation between client and builder which in turn increases the range and likelihood of these practices being incorporated into new developments. In this case, the self reporting received as a part of an accreditation program has shown a range of positive sustainability outcomes from Master Builder Green Living Builders.

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