

Introduction

This submission addresses the Productivity Commission's Draft Recommendations 7.2 and 7.3, in relation to the residential sector, detailed in their Draft Report on Energy Efficiency. We believe that the "residential sector" has been made to bear a disproportionate burden in relation to reductions in greenhouse gas emissions and its impact on the built environment.

In terms of the introduction of new energy efficiency regulations, the major impact on the Victorian Timber Industry has been on the suspended timber floor (STF) market. This construction method is utilised by around 20% of the new home Victorian market for many reasons; but particularly it is the preferred option:

- on sloping sites, to minimise excavation and the impact on the landscape and to reduce drainage and retaining wall costs;
- in low lying areas, to raise the occupants and their belongings above potential flood levels; and
- for a host of other practical and beneficial reasons.

To the Victorian Timber Industry, the STF market is estimated to be around \$70M.

The Timber Industry is fully supportive of efforts to reduce greenhouse gas emissions and the need to improve the energy efficiency of homes. The political decision to introduce a 5 Star standard¹ in Victoria however, has caused a major issue for the timber industry in terms of its capacity to offer 'affordable' solutions determined using the current design software packages *NatHERS* and the SEAV's *FirstRate*.

The focus on energy efficiency as the means of reducing greenhouse gas emissions from the residential sector focuses on one element to the detriment of broader environmental issues. A shift in focus to address other aspects such as material embodied energy, maintenance, disposal – the whole of life cycle analysis – may in fact reverse the marketplace impact energy regulations have imposed on timber based products.

COMMENTS – DRAFT RECOMMENDATIONS

DRAFT RECOMMENDATION 7.2

Before the States and the Northern Territory mandate energy-performance ratings for existing dwellings at the time of sale or lease, the Ministerial Council on Energy should commission an independent evaluation of the ACT rating scheme that has operated since 1999. The evaluation should include an assessment of:

- ***the accuracy of home energy ratings in predicting the actual energy performance achieved by home buyers and tenants; and***
- ***the costs, benefits and effectiveness of the scheme, taking account of the diverse preferences and financial circumstances of individual home buyers.***

SPECIFIC COMMENTS – DRAFT RECOMMENDATION 7.2

The TPC agrees with the sentiments of Draft Recommendation 7.2.

First Dot Point

There is a zealous push for the implementation of mandatory reporting of energy ratings on the sale (or lease) of housing. An independent evaluation of the ACT rating scheme would seem logical prior to any adoption of such a scheme nationally. There appears to be reluctance by regulators to investigate whether or not the introduction of such regulations will validate their original intentions! This reluctance makes open and factual discussion difficult and relies on theoretical modelling using hypothetical assumptions to ESTIMATE the net benefits. But what about the real impact in the marketplace; the penalty imposed on sellers whose homes rate poorly as well as the environmental benefits - if any?

¹ The "Comparative Cost Benefit Study of Energy Efficiency Measures for Class 1 Buildings and High Rise Apartments in Victoria" concluded that "A 4 star level offers superior cost to benefit ratio than a 5 star level."

Second Dot Point

Again, there is “lip service” given when trying to identify the actual “costs, benefits and effectiveness” of introduced regulations; and in this case a rating scheme.

In some respects it is understandable that regulators would wish to mandate some form of rating on existing dwellings. In Victoria, between 35,000 - 40,000 new homes per annum are constructed as compared to the existing 1.8 million housing stock that incorporates limited (if any) energy efficiency measures. But even so, what would be the REAL gain in greenhouse gas reductions if mandatory reporting were implemented? A thorough, independent review of such a proposed scheme needs to be undertaken prior to its adoption.

DRAFT RECOMMENDATION 7.3

New or more stringent energy efficiency standards for residential buildings should not be introduced until existing standards have been fully evaluated. The evaluation should be commissioned by the Australian Building Codes Board to:

- ***consider whether defining building standards in terms of simulated heating and cooling loads is an effective way to raise actual energy efficiency;***
- ***investigate whether weaknesses in energy-rating software distort the housing market in favour of particular building designs that are not necessarily the most cost effective, particularly over the longer term as innovations are made in building design;***
- ***evaluate costs and benefits in a way that takes account of the diverse preferences and financial circumstances of individual home buyers;***
- ***assess how effectiveness and compliance costs differ between the deemed-to-satisfy and performance-based standards;***
- ***analyse the distributional impacts of standards on different socioeconomic groups, including first-home buyers and less-affluent groups; and***
- ***examine the process used to set the stringency of standards in the Building Code of Australia, including the impact of any increase in stringency by individual States and Territories.***

SPECIFIC COMMENTS – DRAFT RECOMMENDATION 7.3

The TPC agrees with the sentiments of Draft Recommendation 7.3.

First Dot Point

The effect of “*defining building standards in terms of simulated heating and cooling loads*” has been to shift the focus away from the real greenhouse gas reduction efficiencies that could be made (through improved appliance efficiencies, energy (infrastructure) generation as well as power transmission efficiencies) on to one group of end users; resulting in increased costs for the residential building fabric and the homeowner. Given that the residential sector accounts for only 1.6% of total greenhouse emissions², it would appear to be a disproportionate burden placed on this sector when, with little effort, targeting the larger energy use sectors, much greater gains would result.

Second Dot Point

In Victoria we have seen a clear “distortion” in the housing sector that has caused great concern for the timber industry and sections of the building industry. Victorian coastal builders predominantly build houses on sloping sites utilising suspended timber floors and views to the south. They struggle to comply with the current 5 Star energy rating; in many cases struggling to achieve 4 Stars. The preference in the use of suspended timber floors in coastal as well as regional Victoria is due the lower costs of construction. A suspended timber floor's light footprint means reduced excavation costs (limited cut and fill) and environmental site impact, particularly on sloping sites. Lower construction costs are due to the readily available timber materials compared to concrete as well as not requiring extensive retaining wall and drainage systems.

² National Greenhouse Gas Inventory 2002 - AGO

The market distortion, which has been directly influenced by the existing software outputs, is only now being addressed through changes to the NatHERS (AccuRate) model. The timber industry welcomes these corrections.

Third Dot Point

There are always disagreements as to the true construction cost impacts of energy regulations. The RIS³ indicated that the weighted average increase in construction costs for climate zone 6 (Melbourne) was \$3.45/m² (Table 5.6). This equates to an increase of \$690 for a 200m² house. This is a figure that has been bandied about in Victoria by various government agencies. It may be true for the largest volume builders that build concrete slabs on relatively flat sites but it is definitely not true for the vast majority of builders. The TPC conducted its own builder survey (TPC, November 2004 – *refer Attachment 1*). It indicated that the real average cost increase was around \$5,600. In Victoria this additional cost, to meet the 5 star standard, would result in an additional \$224,000,000 in construction costs to the Victorian community based on 40,000 new homes per year. We understand that a joint HIA / Victorian Building Commission survey (unpublished) of 600 builders has indicated an increased construction cost in excess of \$5,600. At \$5,600 this equates to a weighted average increase in construction costs for climate zone 6 closer to **\$28/m², not \$3.45**.

Last Dot Point

The TPC's concern with the process used to set the stringency of standards in the Building Code of Australia is that they have been based on theoretical modeling, with no validation against reality. For a building materials supplier whose markets are being directly affected, this is highly unsatisfactory. Much more effort needs to be focused on providing real-life justification of proposed stringency measures and validation of the models used. The timber industry does not seek to abrogate its responsibilities but does seek to have its product treated equally, fairly and without prejudice. The timber industry would be more supportive of the proposed energy efficiency measures if cost benefit validation work was undertaken.

CONCLUSION

The TPC strongly supports the Productivity Commission's draft recommendations in relation to the residential sector detailed in their Draft Report on Energy Efficiency; and in particular Draft Recommendations 7.2 and 7.3 and Draft Findings 7.2 and 7.3. We have outlined our views on some of the key findings and have provided supporting details where available.

We believe that the residential sector is made to bear a disproportionate burden in relation to its greenhouse gas emissions and impact on the environment. This translates to increased costs and reduces housing affordability.

³ Regulation Impact Statement – Proposal to Amend the Building Code of Australia to Increase the Energy Efficiency Requirements for Houses (RD 2004-02), ABCB, 24 March 2005

Attachment 1

TIMBER PROMOTION COUNCIL

IMPACT OF 5 STAR STANDARD

BUILDER SURVEY

SUMMARY OF DATA TO END NOVEMBER 2004

IMPACT OF 5 STAR STANDARD

BUILDER SURVEY

SUMMARY OF DATA TO END NOVEMBER 2004

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Introduction

This preliminary survey was conducted by the Timber Promotion Council as an exploratory research project to gauge the current take-up of the new 5 Star Energy Standard by Victorian builders.

This research is exploratory in nature and on-going and therefore definitive conclusions cannot as yet be drawn from the results, however, the results do identify a number of areas that require further in-depth research in order to quantify the impact of the introduction of the 5 Star Standard

A range of builders was surveyed by telephone. The builders consisted of a mix of small, medium and large firms; both in rural and urban areas.

The table below shows the number of homes/units constructed by each of the surveyed builders to date (the building company names have been removed for confidentiality).

Builder		Number of Homes/ Units built 2003/04
Urban	1	72
	2	447
	3	289
	4	1,567
	5	83
	6	142
	7	353
	8	45
Rural	9	132
	10	176
	11	8
	12	6
	13	24
	14	7
	15	3
	16	7
	17	12

NOTE: The results presented in this report are a summary of work to date (end of November 2004). The research will be on going with new data continually added.

Methodology

Sample

Victorian builders.

Respondents were selected from current database on Victorian builders:

- size;
- location (urban, rural);

To date, eight urban builders and nine rural builders have responded to the survey.

Interviewing

Builders were interviewed by telephone during business hours.

Results

(Q. 1) Current building practices employed to meet 5 Star Standard

An observation of the builders method of currently taking up of 5 star provides some interesting results.

Current Practices	Total	Urban	Rural
5 Star in the Building Envelope	29%	37%	22%
4 Star + Solar Hot Water Service	18%	25%	11%
4 Star + Rainwater Tank	70%	62%	78%

Table 1 Current practices employed to meet 5 star standard.

Only 29% of builders surveyed were currently looking at trying to achieve 5 star in the building envelope, with more urban builders (37%) pursuing this approach than rural builders (22%).

Most builders were currently utilising the transition option, 4 star + rainwater tank, it being the most popular choice with 70% of builders overall adopting this method. This method understandably was also more popular in the country (78%) where rainwater tanks are still a way of life, however, they were also reasonably well represented in the urban areas (62%), suggesting that concern over the State's on-going water problems is starting to hit home in the city; as well as being the lower cost option.

4 Star + Solar Hot Water Service was the least popular choice from those surveyed with 18% of builders adopting this method. The usage in the urban areas (25%) was however higher than that in the rural areas (11%).

The builders were also asked what they thought was the easiest way of achieving the 5 Star standard, the table below shows the percentage responses to each of the various options.

Current Practices	Total	Urban	Rural
Concrete Slab	76%	100%	60%
House Orientation	41%	29%	50%
Double Glazing	47%	29%	60%
Reduce Window Size	24%	14%	20%
Change House Design	35%	43%	30%

Table 2 Current practices employed to meet 5 star standard.

Raw data results for question one are located in appendix A.

The majority of builders interviewed responded that the simplest approach would be by simply building on a concrete slab (76%). This was the preferred option particularly for urban builders. Some of the builders reported that they had already started changing their designs to make it easier to build on slabs so that they can meet the standard. The slab option was also quite high amongst rural builders who found it the simplest option when on flat ground.

Of note was the number of urban builders who felt that they had to change their house plans in order to facilitate building on slab. Some stated that they did this through having split-levels with sloping sites.

In terms of house orientation rural builders suggested that they had more flexibility in this regard and utilised this wherever they could. Urban builders found it much more difficult to utilise the house orientation option due to the size, position and nature of the typical urban house blocks.

Double-glazing was suggested as a possible future option to be taken up by builders. However, most believed that the cost might make this option prohibitive compared with alternative approaches; a number of them also raised other issues in relation to their weight and handling (O.H. & S.). Some builders also suggested that they would only put in enough double glazed windows to get them to 5

stars, rarely would they supply an entire house with double glazed windows. Reducing window sizes where possible was also common amongst respondents.

(Q. 2) Materials utilised to meet 5 Star Standard

Interviewees were asked what materials they utilised to meet the 5 Star Standard. The most common response was to increase R-value insulation. With wall insulation builders generally increased the R-value from 1.5 to 2.0. With ceiling insulation builders opted for insulation with R-values of 3.3 plus.

Floor insulation was being utilised by a number of rural builders, none of the urban builders were currently pursuing this approach. However, issues were raised in relation to guarantees and possible moisture related problems particularly during construction. In one instance a builder stated that after installing floor insulation he had to rip it out because it filled with water after rain.

In terms of glazing options, double glazing was the most popular (little interest currently being shown in E-glass or tinting). Those builders that stated that they included double-glazed windows said that they only used them were necessary to get them to 5 stars, as this option was seen as expensive and involved non-standard site practices.

Materials	Total	Urban	Rural
Double Glazed Windows	47%	29%	60%
Tinted Windows/E-Glass	18%	0%	30%
Increase Wall Insulation	88%	86%	80%
Increase Roof Insulation	82%	100%	80%
Floor Insulation	35%	0%	60%
Seals (including fans, etc.)	59%	71%	50%

Table 3 Materials utilised to meet 5 star standard.

Raw data results for question two are located in appendix B.

(Q. 3 & 4) 5 Star Standard's Impact on Business & Implications

Of those builders interviewed, 88% believed that the 5 Star Standard has had an impact on their businesses. The 12% of builders who said that the 5 Star Standard did not impact on their business were all rural builders who were previously building 4 star homes and putting in rainwater tanks through necessity – effectively they were meeting the current standard (4 Star + Rainwater tank) prior to its introduction.

Impacted on Business	Total	Urban	Rural
Yes	88%	100%	80%
No	12%	0%	20%

Table 4 Impact on business.

The table below shows what builders believe are the implications on their business with the introduction of the 5 Star Standard. All have stated that it has cost them more to build their homes, some believe that it has had an effect on their sales. There are builders who also have stated that they are walking away from jobs that they believe are too hard to meet the standard.

Implications	Total	Urban	Rural
Decrease in Sales	24%	14%	30%
Increased Costs	100%	100%	100%
Refuse to take on some jobs	12%	14%	10%

Table 5 Implications of 5 star standard.

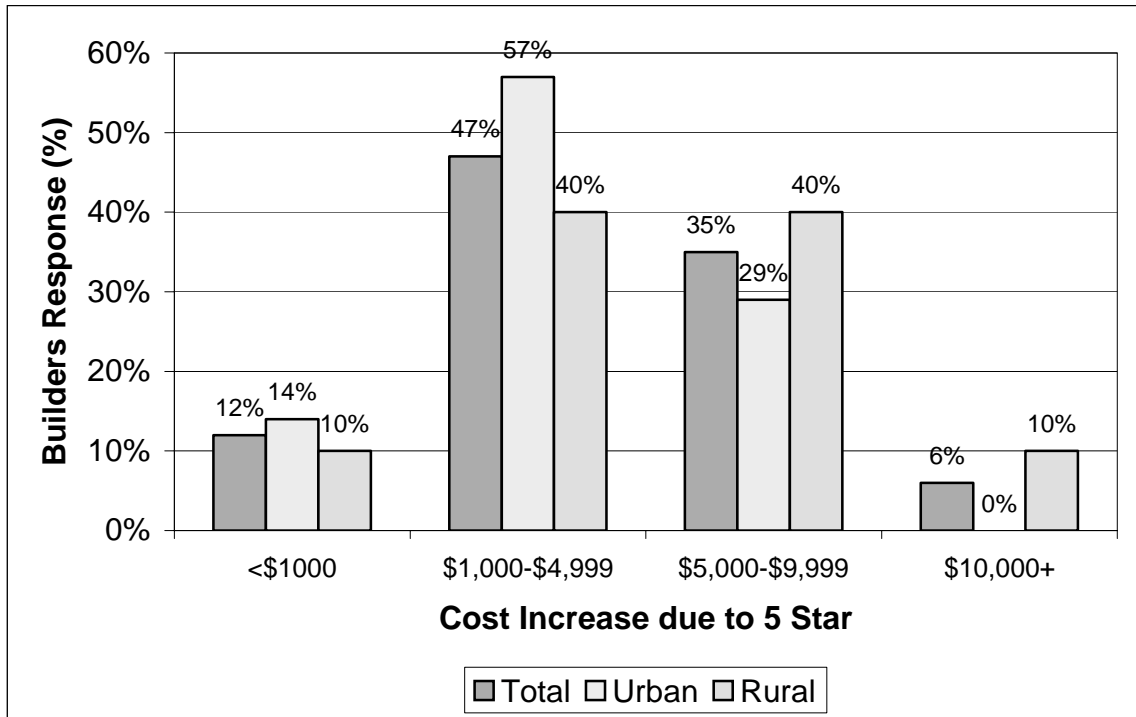
All those that stated that the 5 Star Standard had impacted on their businesses have said that it has added costs to building. The additional costs associated with complying with the 5 Star Standard varied. The table below shows the various responses as to how much extra it has cost builders.

Cost Increase Range	Total	Urban	Rural
<\$1,000	12%	14%	10%
\$1,000 - \$4,999	47%	57%	40%
\$5,000 - \$9,999	35%	29%	40%
\$10,000+	6%	0%	10%

Table 6 Cost increases associated with 5 Star.

Raw data results for question three and four are located in appendix C.

The majority of builders believe that the additional costs range from between \$1,000 to \$5,000. Of note was one builder who stated that he had built two identical homes yet one of the homes cost him an additional \$8,000 of double-glazed windows in order to meet the 5 Star Standard (due to orientation of house). The results reflect a higher cost in rural areas (including coastal) in order to meet the 5 Star Standard.



(Q. 5) Percentage of homes built on Timber Sub-Floors

(Q. 6) Main Reasons for building Timber Sub-Floors

The results from this question show that the majority of homes that are built on timber sub-floors are built on a sloping site. This was particularly evident with rural builders. Those that responded with timber sub-floors being cheaper said that it was cheaper because the sites were generally sloping or that it was too expensive to get concrete and trades (concreters) in the country.

Reasons for Building on Timber Sub-Floors	Total	Urban	Rural
Cost Less	18%	0%	30%
Specified	18%	14%	20%
Sloping Site	65%	57%	70%
Low Lying Area	6%	0%	10%
Other	12%	0%	20%

Table 7 Reasons for building Timber Sub-floors.

Raw data results for question six are located in appendix E.

(Q. 7) Main Reasons for building Concrete Slab

Builders were questioned as to why they built on concrete slabs. The two main reasons why builders built on concrete slabs was that it was cheaper (47%) and it makes it easier to meet the 5 Star Standard (47%), this was particularly the case with urban builders (71%).

Reasons for Building on Concrete Slab	Total	Urban	Rural
Cost Less	47%	86%	20%
Specified	29%	14%	40%
To Meet 5 Star Standard	47%	71%	30%
Other	35%	43%	30%

Table 8 Reasons for building on concrete slabs.

(Q. 8) Timber Sub-Floors & 5 Star Standard

Interviewees were also asked what they had heard in relation to building timber floors and meeting the 5 Star Standard. The majority of respondents that answered this question felt that it was “too hard” and that the new standard made it a “nightmare”. This was particularly prevalent with rural builders.

Builders also heard that it would cost more to build timber floors in order to meet the standard. A large number of them felt that it now made it impossible to build timber sub-floors without some form of floor insulation. This raised another issue by builders as to guarantees by manufacturers of their insulation products. They are finding it difficult to get guarantees on insulation products, particularly those designed for sub-floors. The results are reflected in the table below.

5 Star & Timber Floors	Total	Urban	Rural
Too Hard	35%	29%	40%
Too Expensive	29%	29%	30%
Doesn't Meet 5 Star Standard	6%	0%	10%
Other	12%	0%	20%

Table 9 5 Star Standard and timber sub-floors.

(Q. 9) Views & Opinions on 5 Star Standard

There were considerably mixed views amongst respondents on the 5 Star Standard. The majority of the builders felt that it was good for the environment. However, they were also sceptical about the software and what they believed are biases, which have been introduced into the software.

Some felt that it did not address the real issue of green house gas emissions. They felt that the software forced them to go to concrete yet they believed that the use of concrete creates greater green house emissions than timber.

Some respondents were critical of the software and felt that it had particular biases towards certain products. Some also felt that the 5 Star Standard was politically motivated and that it was influenced by certain companies and associations.

Many felt that 4 Star was sufficient. They also felt that the introduction of the 5 Star Standard was “too quick too soon”. A number of builders felt that there should be an extension of time to come up with 5 Star homes. One builder stated that when the 5 Star Standard is enforced in July 2005 (no 4 star+ option) he would have to leave the industry because “it’ll be too hard”.

The table below summarises the major responses of the builders’ views on the 5 Star Standard. As stated earlier, builders are generally not opposed to the idea of 5 Star homes, but would like more time and options.

Some builders were concerned about the impact on affordability of housing. Others were concerned about the impact that a 5 Star Standard would have on renovation and additions work in the coming future.

Views/Opinions	Total	Urban	Rural
Affordability Impact	24%	57%	0%
Air Quality Issue	6%	0%	10%
Biased Point System	24%	14%	30%
Future/ Renovations?	6%	0%	10%
Good for Environment	53%	71%	40%
Guarantee Issue	18%	14%	20%
Limitation on Designs	6%	0%	10%
Needs Revamp	6%	0%	10%

Not Addressing GHGE	12%	14%	10%
Politically Motivated	12%	14%	10%
Problem meeting Standard/ Not Practical	18%	14%	20%
R-Values don't help timber/ Wood Floor Problems	12%	0%	20%
Should be 4 Star	18%	0%	30%
Should be Consumer Choice	6%	0%	10%
Sceptical of Energy Saving	6%	0%	10%
Slab Creates More Gas Emissions	18%	0%	30%
Software influenced by some companies/associations	12%	0%	20%
Too Fast Too Soon	12%	29%	0%
Shortage of Energy Raters	6%	0%	10%

Table 10 Views and Opinions of 5 Star Standard.

Other General Comments Made by Builders

Below is a list of comments and/or statements made by interviewees that were recorded on the survey forms in addition to the responses to the questions posed to them.

I'm walking away from coastal jobs that come in. It's too hard.

I take the easy option, which is usually slab floor.

I only put in double glazed windows when I have to and only where I need to, to get to 5 Stars.

Most of my business (about 50%) is in New South Wales now as it's easier. *(Builder lives in Echuca)*

Who says that it doesn't cost much? We've all tried it now and have the figures to prove that it costs more.

Of course it costs more. I have to get a rater at \$250 a pop don't I?

I had 2 houses exactly the same and 1 of them cost me \$8,000 more to build because I had to put in double glazed windows to meet 5 Star. How do you figure that?

I've always done 4 stars before this so it didn't take much for me to get there. I just put in a rainwater tank.

What's the point? When you open up a window the whole theory goes out with it.

If we seal up our houses we create air quality problems.

I'm finding it difficult to find raters. *(Rural builder)*

It's difficult to get tradies *(concreters)* in the country.

We all have to conserve energy. This is a good thing. I just don't think it's being done right.

Great idea. I put a water tank in to save me water and then use a pump to pump it out. Where's the logic?

I leave it up to the rater to provide me with solutions to meet 5 stars.

Questionnaire

- 1) What building practices do you currently employ to meet the 5 Star Standard?
- 2) What materials/systems are you utilising to meet the 5 Star Standard?
- 3) Has the 5 Star Standard had any impact on your business?
- 4) In what way has it affected your business?
- 5) What percentages of your homes are built on: timber sub-floor; concrete slabs?
- 6) Why do you choose to build on timber sub-floors?
- 7) Why do you choose to build on concrete slabs?
- 8) What have you heard in relation to timber sub-floors meeting the 5 Star Standard?
- 9) What is your view/opinion of the new 5 Star Standard?

Appendix A

Results: Question 1:

What building practices do you currently employ to meet the 5 Star Standard?

Raw data as at 30th November 2004 – Question 1.

Builder	5 Star BE	4 Star + HW	4 Star + RT	Windows			Slab	Modify Orientation	Change Design
				DG	Reduce Size	Other			
Urban	1				✓			✓	
	2	✓					✓	✓	
	3	✓				✓			
	4			✓			✓		
	5	✓					✓	✓	
	6		✓	✓	✓			✓	
	7		✓	✓	✓	✓		✓	
	8			✓			✓		
Rural	9	✓			✓		✓		
	10			✓			✓	✓	
	11		✓	✓			✓		
	12			✓	✓		✓		
	13			✓	✓		✓		
	14			✓			✓		
	15	✓			✓		✓	✓	
	16			✓	✓		✓		
	17			✓	✓		✓		

BE: *Building Envelope*

DG: *Double Glazing*

HW: *Hot Water*

RT: *Rainwater Tank*

Appendix B

Results: Question 2.

What materials/systems are you utilising to meet the 5 Star Standard?

Raw data as at 30th November 2004 - Question 2.

Builder	Windows				Insulation							Other
	DG	E-Glass	Tinted	Other	Wall	Floor	Ceiling	Other	W&F	W&C	W,F&C	
Urban	1										✓	✓
	2	✓								✓		✓
	3				✓					✓		✓
	4						✓					✓
	5									✓		
	6									✓		✓
	7	✓								✓		
	8	✓								✓		✓
Rural	9			✓		✓						
	10	✓		✓						✓		
	11	✓									✓	✓
	12			✓							✓	✓
	13										✓	
	14		✓				✓					
	15	✓								✓		✓
	16	✓									✓	✓
	17	✓								✓		

C: *Ceiling*

DG: *Double Glazing*

F: *Floor*

W: *Wall*

Appendix C

Results: Question 3 & 4.

Has the 5 Star Standard had any impact on your business?

In what way has it affected your business?

Raw data as at 30th November 2004 - Question 3 & 4.

Builder	Impacted Business	Impact			
		↓ Sales	↑ Costs	Other	
Urban	1	Yes	✓	2-4,000	
	2	Yes		1-5,000	
	3	Yes		1.5-3,000	
	4	Yes		Yes	
	5	Yes		1,000	
	6	Yes		2-8,000	
	7	Yes	✓	6-8,000	
	8	Yes		5,000	
Rural	9	Yes	✓	8,000	✓
	10	Yes	✓	5-8,000	
	11	No		5-10,000	
	12	Yes		5-10,000	
	13	Yes		10-20,000	
	14	Yes		3-5,000	
	15	No		1,000	
	16	Yes		Yes	
	17	Yes		Yes	

Appendix D

Results: Question 5.

What percentages of your homes are built on: timber sub-floor; concrete slabs?

**Raw data as at 30th
November 2004 -
Question 5.**

Builder		Timber	Concrete
Urban	1	95%	5%
	2	5%	95%
	3		100%
	4	5%	95%
	5		100%
	6	5%	95%
	7	10%	90%
	8	15%	85%
Rural	9	15%	85%
	10	90%	10%
	11	50%	50%
	12	100%	
	13	100%	
	14	50%	50%
	15	5%	95%
	16	60%	40%
	17	25%	75%

Appendix E

Results: Question 6.

Why do you choose to build on timber sub-floors?

Raw data as at 30th November 2004 - Question 6.

Builder	Cheaper	Specified Architect	Specified Client	Sloping Site	Low Lying	Other
Urban	1	✓		✓		✓
	2			✓		
	3					
	4			✓		
	5					
	6			✓		
	7			✓		
	8		✓			
Rural	9			✓		
	10			✓		
	11					✓
	12	✓		✓		
	13	✓		✓		
	14			✓	✓	
	15					✓
	16			✓		
	17				✓	

Appendix F

Results: Question 7.

Why do you choose to build on concrete slabs?

Raw data as at 30th November 2004 - Question 7.

Builder		Cheaper	Specified Architect	Specified Client	Meet 5 Star	Other
Urban	1		✓			
	2	✓			✓	✓
	3	✓			✓	✓
	4	✓			✓	
	5	✓				✓
	6				✓	
	7	✓			✓	
	8	✓		✓		
Rural	9				✓	✓
	10				✓	
	11			✓		
	12					
	13					
	14				✓	✓
	15	✓				
	16			✓		
	17	✓			✓	✓

Appendix G

Results: Question 8.

What have you heard in relation to timber sub-floors meeting the 5 Star Standard?

Raw data as at 30th November
2004 - Question 8.

Builder	Too Hard	Expensive	Other	
Urban	1	✓	✓	
	2			
	3	✓	✓	
	4			
	5			
	6			
	7	✓		
	8		✓	
Rural	9	✓		
	10			
	11	✓		✓
	12			
	13		✓	
	14			✓
	15			
	16	✓	✓	
	17			✓

Appendix H

Results: Question 9.

What is your view/opinion of the new 5 Star Standard?

Raw data as at 30th November 2004 - Question 9.

		Affordability impact	Air Quality	Biased Point System	Future/ Renovations	Good Idea Good for Environment	Guarantee problem	Limits Design	Needs Revamp	Not addressing GHGE	Politically motivated	Problem meeting 5 Star/ Not Practical	R Values don't help timber/ Wood Floor Problems	Should be 4 Star+ Option	Should be Consumer Choice/ Forced by Government	Sceptical on Energy Saving	Slab more Gas Emissions	Software influence by some companies/ Associations	Too fast too soon	Shortage Energy Raters	
Builder	1			✓			✓					✓	✓				✓	✓			
	2			✓		✓															
	3					✓															
	4					✓															
	5	✓																	✓		
	6	✓										✓									
	7	✓				✓	✓			✓	✓								✓		
	8	✓				✓															
Rural	9									✓							✓				
	10													✓							
	11			✓		✓															
	12		✓					✓	✓									✓			
	13					✓	✓				✓						✓				
	14				✓						✓				✓					✓	
	15			✓		✓								✓		✓					
	16																				
	17					✓							✓	✓							