

VOLUME HOME BUILDING: SUSTAINABILITY INCLUSIONS FOR NEW HOMES

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ABSTRACT

Purpose: *This paper investigates the provision of sustainability related inclusions in the standard inclusions lists for new homes offered by the HIA's top 100 homebuilders and that are available for download from their websites. Homebuyers are identified as being a key reason for the limited uptake of sustainability initiatives in new housing. However, if homebuyers are unaware of options, features or information relating to sustainability, how can they make informed decisions in the new home building process? Consequently, homebuyers engagement in sustainability are guided and influenced by the information provided to them from professionals in the sectors, in particular the volume builders. The purpose of this research is to examine a key source of information and provides insight into the structural, lifestyle and sustainable features that a homeowner will have in their completed home, such as sustainability features.*

Approach/method: *The research utilises content analysis of standard inclusions collected from websites of the HIA's top 100 homebuilders in Australia to identify the type and information provided regarding sustainability features in standard inclusion lists for new homes.*

Findings: *This paper highlights the limited range of sustainable inclusions that Australia's top builders are drawing on when designing and constructing homes for new homebuyers. It also demonstrates a focus by builders on doing the minimum to meet the NatHERS 6-Star Energy Rating regulatory requirement rather than exceeding it.*

Implications: *This research exposes the severe lack of information provided to homebuyers, providing some explanation as to the disengagement of homebuyers in sustainability options and initiative take up in new housing. Consequently, to increase the level of sustainability in new housing in Australia, the Volume Homebuilders need to actively seek to provide more information, education and identify and suggest options for homebuyers to engage in.*

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Keywords: Residential Construction, Volume Builders, Consumers, Sustainability, Australia

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INTRODUCTION

New homebuyers are often the scapegoat for the poor adoption of sustainability in the production of new homes. Builders, architects, developers and planners blame homebuyers for their lack of interest, adoption and willingness-to-pay for sustainability initiatives in new homes. However, homebuyers generally have limited knowledge of residential building and are guided through this process within the industrialized home building approach used in Australia. Consistent with that, homebuyers' knowledge of sustainability opportunities in new homes and their capacity to know and ask for sustainability initiatives is constrained and perceived as a lack of awareness and interest by supply stakeholders. Homebuyers have their wants and needs, however they are strongly guided by professionals in the process and rely on the information and guidance provided by volume builders. Sustainability inclusions beyond the code requirements is limited in Australia and the position of this paper is that homebuyers are unaware of sustainability initiatives because of a lack of information provided by the professionals, further more only limited information is provided relating to sustainability features and energy efficiency code requirements in the provision of standard inclusions.

The purpose of this research is to investigate the sustainability inclusion information homebuyers found on the websites of Housing Industry Australia's (HIA, 2015) Top 100 Australian Builder's during their new home building purchasing process. It exposes another aspect of the severe lack of sustainability information available to consumers on-line, further inhibiting their ability to understand and demand sustainability features and solutions during the new home purchasing process. Consumer utilization of the Internet is increasing, with consumers increasingly relying on it for purchasing information, data and answers to their questions. As a primary source of information it provides direction for decision-making (Weinberg et al., 2015; Oates et al., 2008; Hasbrouck and Woodruff, 2008, Littlefield et al., 2000).

This paper is the second of a two part series investigating the provision of information to homebuyers through the internet. The first, examines the type, level of detail and quality of sustainability information provided on the builder's websites. The first paper discussed how the websites display and provide information about the importance of sustainability in the design and build of a home and how their homes incorporate sustainable design and features. This paper (the second) focuses on the type of sustainable inclusions that builders are providing in their homes, based on the inclusion lists that are available for download from their websites.

This paper aims to investigate; the provision of information about sustainability and energy efficient features in the standard inclusions from Australian volume builders; and whether consumers have the ability to engage with choices relating to sustainability and energy efficiency when making decisions about their new home. This is achieved by answering the following key questions:

1. What sustainability ratings are listed and to what level?
2. Is there a dedicated sustainable housing range?
3. Are sustainability options described and are these part of a package, or an optional extra?
4. What sustainability attributes are described as standard inclusions?

This paper highlights the limited range of sustainable inclusions that Australia's top 100 homebuilders are drawing on when designing and constructing homes for new homebuyers. It also demonstrates a focus by builders on doing the minimum to meet the 6-Star Energy Rating regulatory requirement rather than exceeding it. These findings follow on from the results of the first paper that outlined a severe lack of sustainable information across the sample of 145 websites from Australia's Top 100 Builder's.

This research demonstrates that consumers are provided with very limited information about the benefits of sustainability and sustainable and energy efficient regulations and inclusions by the Volume Builders they are considering building their new home with. In-line with an understanding of the consumer purchasing process for significant investments such as a new home, this is a key reason why homeowners generally have very limited knowledge of sustainability and the building process (Pitt and Sherry, 2014; Warren-Myers et al. 2012; Crabtree and Hes 2009; Dalton et al. 2008; Crabtree 2006; Williams and Dair 2006).

In the consumer purchasing process, consumers are reliant upon the information, education, guidance and provision of products that engage their interest and desire (European Commission, 2012; Thøgersen. 2005;

Watheiu, 2002). Furthermore trust in the information is paramount for decision making, and consumers looking to build a new home, place that responsibility on the builders to provide and guide them in the process to build a new home. Consequently, they are also seeking builders to provide them with the guidance and direction about choices in the building process. This includes lifestyle choices as well as sustainability related decisions. As argued by Gangale et al. (2013), consumers need to be provided with information and feel confident in their choices to engage and pay for sustainability. Due to the complex and high risk nature of construction, this is particularly the case when building a new home.

So, if there is limited information, guidance and encouragement from the builders, how are consumers to make an informed choice about sustainable design and features? Essentially the Consumers' current knowledge limits their ability to demand sustainable design and features in their new home which in-turn is perceived as a lack of interest and engagement by volume builders who then are reluctant to offer more sustainable designs and features in their homes.

BACKGROUND

The Australian residential building industry is characterized as a mass production market using industrialized processes to produce new housing. However, this produces suboptimal homes in regards to sustainability and energy efficiency compared to the rest of the world lagging behind European and US standards by 30 years (MacMillan, 2015; Pitt and Sherry, 2014). Residential property is responsible for one fifth of Australia's greenhouse gas emissions (GHG) produced by operational energy use and are predominately from heating and cooling (40%), water heating (21%) and lighting (6%) (McGee, 2013). There is scope in providing new homes to make substantial GHG reductions, which has been the focus of the Building Code of Australia's requirements for homes having a 6 star NatHERS rating. However, the system's flaws demonstrate that on average there are potentially 200,000 new homes each year with suboptimal energy efficiency, as current requirements are routinely not being met (Pitt and Sherry, 2014) and a culture of corner-cutting results in housing not meeting code (Jewell, 2015). Given that a new home is arguably the largest investment that people make in their lifetime, the opportunity to create lifelong change to reduce bills and GHGE whilst providing more comfortable and healthy homes is here. However, homebuyers' awareness is limited due to the volume housing sector's short-sightedness and inadequate industry standards, building codes and policies to ensure better and more sustainable housing.

The new housing sector is dominated by substantial Volume Builders who produce hundreds to thousands of homes annually across Australia. Through their market share they are powerhouse housing providers, accounting for between 37% - 41% of all new housing (Dalton et al. 2011 Dowling, 2005). The proportion of housing provided by the top 20 in the Housing Industry Australia Top 100 homebuilders accounts for 56% - 61% of new homes in Australia (Dalton et al. 2011). The sector's characteristics imply that an oligopoly exists (Coiacetto, 2006) which is evident in the industrialized and standardized approaches used by Volume Builders, particularly in their relationships with homebuyers and their supply chain (see Warren-Myers and Heywood, 2016a; 2016b).

Pitt and Sherry's (2014) report on the housing sector's energy efficiency practices, blamed homebuyers for their widespread lack of disinterest in home energy performance. However given how the new housing industry operates consumers have limited ability to actually engage in sustainability or energy efficiency education, information and decision-making. Consumers (homebuyers) are essentially told what they want by the Volume Builders, who sell concepts of lifestyles and market "keeping up with the Joneses", focusing on marketing various features of homes though a competitive approach. Although to the consumer the Volume Builders appear to provide many options in a complete package providing end-to-end project management and delivery, these are actually limited choices ensuring Volume Builders are able to maximize efficiencies of scale and profits while providing a standardized product (Dowling, 2005; Reardon, 2013; Warren-Myers and Heywood, 2016a). The process has been designed to create feelings of homebuyer empowerment in their choice of dwelling, features, finishes and certainty of price and product delivery, albeit from a structured and preconceived list (Barlow and Ozaki, 2003). However, homebuyers' capacity to change these standardised plans is limited and often is allowed only if the homebuyer pays exorbitant additional costs for the changes. Pitt and Sherry (2014) acknowledge, supported by other research, that consumers have limited knowledge of sustainability and the building process, consequently are unempowered to create demand for something they know little about (see Warren-Myers et al. 2012; Dalton et al. 2008; Crabtree and Hes 2009; Crabtree 2006; Williams and Dair 2006). Consequently, how can

consumers create demand for products they do not know anything about or even know about? In regard to sustainability and energy efficiency, often consumers are none the wiser because without information or guidance in the process from the Volume Builders or other avenues, they remain ignorant, resulting in poor decision-making and their inexperience in the process means limitations in creating demand and actually understanding the consequences and implications of their decision-making.

Homebuyers need information about sustainability in order to make decisions; currently they are strongly guided by professionals in the process in regard to choices made (often provided by sales teams and/or in information booklets and websites). Consequently, the Volume Builders drive homebuyer decisions in the new home market and there is a need for them to provide information to homebuyers, and aid them in developing knowledge and understanding of the process and opportunity for sustainable provisions and options to allow better decision-making. Warren-Myers and McRae (in refereeing) found there was a severe lack of sustainability information on the Top 100 homebuilders' websites, consequently the ignorance of homebuyers in creating demand for more sustainability dwellings is significantly constrained in that the connection between builder and information engaging consumers in sustainability is disconnected if at all there, and consequently consumers are unaware of the opportunities. Consequently, this paper investigates the direct information provided to homebuyers in the form of standard inclusions and what type of information relating to sustainability and energy efficiency are provided by the Volume Builders as standard.

RESEARCH APPROACH

The research approach used content analysis with a combination of qualitative and quantitative techniques to ascertain the standard sustainability and energy efficiency related information provided to new housing consumers. Content analysis is an established technique for analysing documents, as the research approach investigated the contents of Volume Builders' websites.. The ability to assess multiple observable factors and the replicable techniques and processes are the most appropriate method to achieve the research aims (Krippendorff, 1980; Holsti, 1969; Riff et al. 2014)

The 'Standard Inclusions' for new homes were downloaded from the HIA Top 100 homebuilders (2015) websites. The Standard Inclusions are the express inclusions within the new homes produced by the builder. Produced by all builders they provide a key document for builders to communicate to purchasers what they are getting for a specified price and they often also have lists of options. They provide a common document for consumer's comparison and analysis in the early stages of the purchasing process that includes on-line browsing. They are also a key component of a building contract in the purchasing process' contractual stage.

There were 125 websites investigated from the HIA Top 100 homebuilders, as many had multiple websites accommodating their different brands. For other builders with multiple ranges of homes, standards of finish or areas of operation there were several lists available on-line. Where possible, all inclusions have been downloaded and analysed, however, in situations where there are multiple variations dependent on location or separation of business between states, a selection have been chosen for analysis. The total number of inclusion documents downloaded and analysed for this study was 78.

In the standard inclusions document, the following aspects were investigated thematically to answer the research questions:

1. What sustainability ratings are listed and to what level?
2. Does the standard inclusions document indicate compliance with the BCA or above? (Noting whether this is standard or an option)
3. Is there a dedicated sustainable housing range and how many homes are in the range?
4. What sustainability attributes are described as standard inclusions?
5. Are sustainability options offered? Are these part of a package, an optional extra, a feature and are costs indicated?

Emergent coding was used as outlined in Haney et al. (1998) and Stemler (2001), whereby two researchers independently developed a checklist of information from initial analysis of material, then compared and consolidated the checklist to finalise the checklist shown below. Reliability of approach is checked using a 95% agreement. The final checklist was then used in a deductive approach enabling that all coding rules, assessments and decisions made by the researchers in the analysis of the content were finalized prior to the

analysis of the full dataset (Neuendorf, 2002). The coded data was then analysed using a variety of statistical techniques to understand the frequency of use by the Top 100 builders and whether there were significant differences between the different types of builders, being speculative builders, order builders and franchise order builders² and the state of primary operation.

The website analysis and collection of standard inclusions were conducted in July and August of 2016. Given the rapid pace at which changes can be made on the web, the authors' caveat that this was the period in which the content analysis was conducted and the information available at the time.

The total number of websites examined was 125, from 97 of the Top 100 HIA homebuilders. Not all homebuilders have a standard inclusions list or lists available for download or review on their websites. In contrast a number of the builders had multiple housing standard inclusions, generally based around basic house types or more luxury standard inclusions. The study has endeavored to include as many as possible from each homebuilder, however, where inclusions vary by region, a selection has been chosen to represent that particular builder. The total number of standard inclusions that could be downloaded from the Internet comprises 78 standard inclusions lists from 57 homebuilders in the sample.

The inductive development of the checklist by the two researchers identified a range of features identified in the standard inclusions. This firstly focused on what aspects were suggested as 'sustainability features or inclusions' and coded using emergent coding techniques to ascertain the checklist below:

Energy Rating noted in inclusions;

- 6 Star rating displayed in inclusions;
- Dedicated housing range;
- Sustainability inclusions described;
- Orientation;
- Insulation;
- Window glazing;
- Window shading;
- Heating and cooling;
- Water tanks;
- Solar Hot Water; and
- Lighting.

² A speculative builder (at a volume builder level) is often considered a community builder, where homebuyers purchase an integrated product commonly an apartment, townhouses or house and land package, e.g. products from Mirvac, Villaworld or Frasers. Order Builders and franchise versions, provide the building of a dwelling on a parcel of land pre-purchased by the homebuyer. The order builder is engaged to build the dwelling, typical providers include the likes of Metricon, Simmons, G.J Gardner. House and land packages provided by builders within a land development usually have split contracts and there is agreements between the builder and land developer, unless the land has been purchased by the developer.

RESULTS AND DISCUSSION

The results have been analysed nationally for all 3 Builder types – speculative builder, order builder and franchise order builder (a total of 78) and which it has been analysed further by state to gain further insight into the industry's use of sustainability information (Table 1). When broken down by builder type and state, Order Builders provided the most lists with 65, while Victorian builders provided the most lists by state, with 27 as shown in Table 2.

Table 1. State and Territory Profile of Homebuilders providing standard inclusions

n=78	Total %	Total Number	Vic	NSW	WA	QLD	SA	Tas	ACT
Order Builder	83%	65	27	13	11	9	5	0	0
Franchise Order Builder	3%	2	0	0	0	2	0	0	0
Speculative Builder	14%	11	0	3	3	3	0	1	1
Total	100%	78	27	16	14	14	5	1	1

Source: Authors (2017)

It should be noted the state categorization is from the HIA's Top 100 report location information. This represents the state where the business or organization is registered and so names only one. Many builders operate in multiple states, if not Australia wide. While this is a limitation of the research, for this analysis we have assumed it is the state that they began operation, remains their primary state of operation and has a significant influence on their product offering. The breakdown of builders in the HIA Top 100 by state is provided in the table below.

Table 2. State and Territory Profile of Top 100 Homebuilders in Australia

Overall	Vic		NSW		QLD		WA		SA		ACT		Tas	
78	27	35%	16	21%	14	18%	14	18%	5	6%	1	<1%	1	<1%

Source: Authors (2017)

Disclosure of Ratings for new homes

The analysis of the energy ratings disclosed (Table 3) found that less than 50% of inclusion documents mentioned any Energy Rating system would be used in the home's design and building to meet or exceed the required code. This was often indicated in text as a separate dot point or used the 6-Star energy-rating symbol. Only 46% actually indicated what level the energy rating was.

Table 3. Disclosure of Energy Ratings for New Homes

N=78	Total	Order Builder	Speculative Builder	Franchise Builder
Ratings shown on documentation	48%	41%	6%	1%
Rating 6-star displayed on information	46%	42%	3%	1%

Source: Authors (2017)

Many builders omitted mentioning that the NatHERS 6-Star rating was a regulatory requirement and in some cases misrepresented it as an added feature rather than a compulsory standard. This is a missed opportunity for builders to provide consumers with information about the regulatory requirements and why they are important for achieving a level of sustainability in their new home. Given the 6 star mandatory requirements, it is concerning that this is not included in all Standard Inclusions. This raises further concern as to whether consumers are then required to pay additional costs, on-top of the quoted base price for a home, for sustainable elements that are required in their home to achieve what is actually a requirement for all new housing under the Building Code of Australia.

Only three inclusion lists stated that they could achieve a NaTHERS Star Rating above the required 6-Stars with ratings of 6+, 7 and 7.5. Only two considered this level of rating as standard for their 'range'. Nine mentioned the BASIX building sustainability index-planning requirement for NSW, all of which considered it standard. GreenSmart was mentioned 3 times and was considered optional in all cases.

A significant cause for concern is that only 11 inclusion lists mentioned that an Energy Efficiency report or compliance certificate was required under the Building Code of Australia, or BASIX regulations in NSW, indicating, perhaps, that builders are not intending to make the certification clear and possibly not provide consumers with verifying certification for their home.

Dedicated Housing Range, and Sustainability options for homeowners

These sustainability features together are intended to identify builders who's target market is new homebuyers wanting more sustainable options. The results show that very few of the Top 100 homebuilders use these in their marketing strategy and sustainable inclusion information. Warren-Myers and McRae (2016) found only 30% mentioned sustainability on their websites and most did not link their sustainability information with positioning their actual housing product.

At the time of the research, it was rare for a Volume Builder to have a housing range dedicated to including sustainability and a higher than 6-Star rating. Table 4 shows only 1 Order Builder offering a housing range dedicated to sustainability. This was Burbank with their 23 Future range homes, which now in 2017 is no longer available and only the 'Gen Collection' and 'Elements by Burbank' are available. The differences between the standard inclusions is significant, with only one reference that insulation will comply with 6-star energy assessment and that solar hot water will be at extra cost to owner. Whereas in the Futures range, insulation was to 7-star compliance, double glazing throughout and a quote on the front saying "*Living smartly in a 7 star Burbank Home compared to living in a 2.5 Star rated established home in Melbourne means you could save up to 74% on energy usage.*"

Reflecting the location and market specific nature of property development projects, speculative builder websites indicated that the level of sustainable features and marketing strategy was dependent on the development. This research did not identify a development by a speculative builder with an inclusions list focused on sustainable design and features.

In Table 4, only 5 inclusion lists indicated or discussed that there were sustainable options available for the homeowner to select from. Two of these had sustainability options available as part of a package while 5 had

sustainability options as add-on options. Recently in November 2016 (outside the study period) J.G. King released an options package known as the ‘Green Pack’ which comprised a solar panel system installation, water tank or recycled water connection, and upgraded ceiling and wall insulation (R5 and R2.5, respectively). This is marketed with the catch phrase “Reduce your carbon footprint by installing solar power or a recycled water connection”. The ‘Green Pack’ competes with a ‘Kitchen Pack’, an ‘Outdoor Pack’, a ‘Security Pack’ and an ‘Electrical Pack’, the later comprising LED downlights and motion sensors among other features. Although providing sustainability options, there was little information available about their particulars, nor what might be the benefits. However, at least the option is available for consumers to consider and it would be interesting to investigate what the added cost would be of taking up these ‘packs’ if more than one was wanted.

Table 4. Sustainable housing ranges, inclusions and options

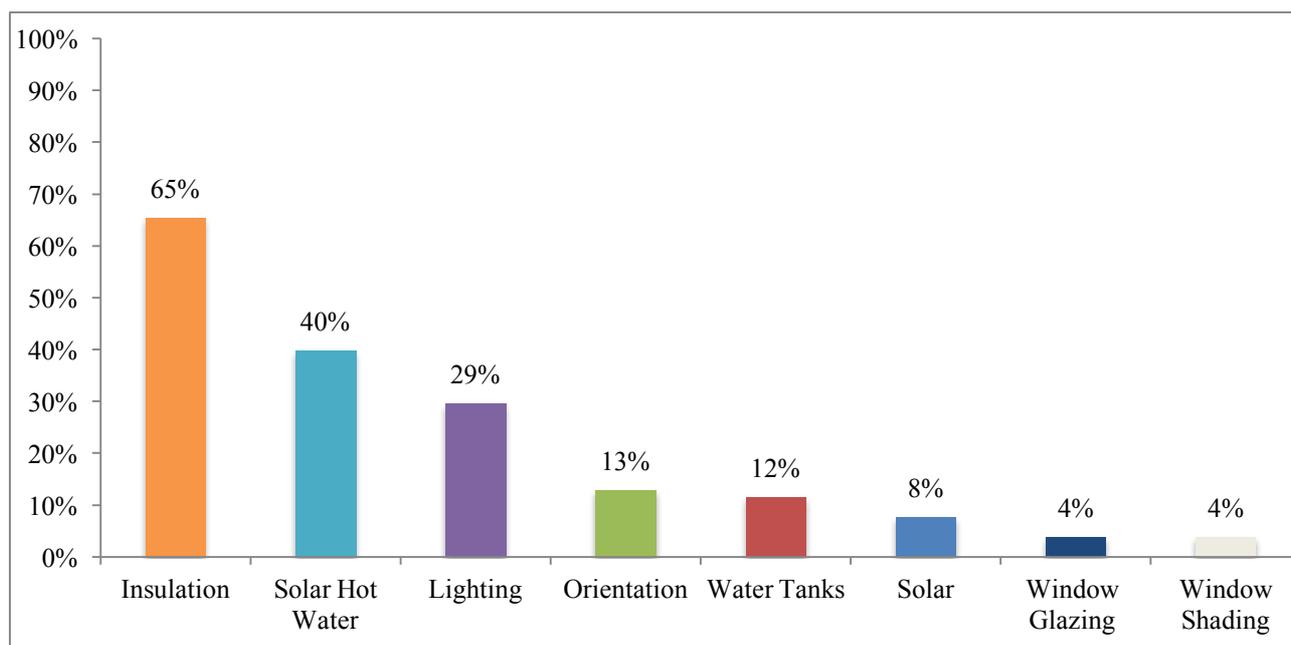
	No. of inclusion lists	Notes
Dedicated housing range	1	Burbank homes with 23 Homes
Sustainability options	5	Order builders listed in standard inclusions document
Sustainable Options as part of a package	2	Order Builders that included the options as part of a package

Source: Authors (2017)

Standard sustainability inclusions in new homes

The analysis indicates a limited range of the possible sustainability features as standard in the inclusion lists. The ‘sustainability’ inclusions here were identified through the researchers coding techniques. These were not specified by the builders as ‘sustainability inclusions’, instead the researchers identified which features might be construed as more sustainable or energy efficient inclusions on the inclusions lists. The top 5 are Insulation which is mentioned in 65% (51) of the inclusion lists, Solar hot water in 40% (31), Lighting mentioned in 29% (23), Orientation in 13% (10) and Water Tanks in 12% (9), depicted in Figure 1. This provides some indication of the basic inclusions that builders use to achieve the required 6-Star Energy rating.

Figure 1. Sustainability Inclusions



Source: Authors (2017)

Differences were identified in the way the builders from each state use the inclusions lists and the different sustainability inclusions that builders from different states use (Table 5). Victorian based builders contributed the highest proportion of lists with sustainability inclusions providing 27 or 35%. They were followed by NSW with 16 lists, Queensland and WA with 14 lists and SA with 5 lists. Indicating a higher likelihood in Victoria of providing an inclusion list on-line, the same number of lists were downloaded in Victoria as there were builders in the sample for the state. This proportion was lower for all other states.

Table 5. Builders and the percentage of inclusions by State

	All	Vic	NSW	QLD	WA	SA	Tas/ACT
Number of Builders	97	27	20	23	18	7	1/1
Number of Inclusions	78	27	16	14	14	5	1 /1
Percentage of total inclusion lists	100%	35%	21%	18%	18%	6%	<1% /<1%

Source: Authors (2017)

There were variations in the type of sustainable inclusions used in each state (Table 6) where an interesting perspective can be seen. Victoria dominated in the number of builders that mentioned sustainability-related features in the standard inclusions, with Solar hot water mentioned by 89% of builders in Victoria, and 78% included insulation.

This indicates that while 65% of inclusion lists mentioned insulation, the figure and likely use in Victoria is a lot higher where 78% of lists mentioned it. Similarly 100% of Builders in SA also mentioned insulation, while the proportion was lower in NSW, Queensland and WA. Solar hot water is another inclusion that is mentioned significantly more in Victoria where 89% of lists included it compared to 40% nationally. Queensland and SA had Solar hot water on 21% and 20% of lists respectively while the use of it on NSW lists is particularly low at 6%.

There is a significant variation in the use of Water Tanks between the states with 12% of lists mentioning it nationally, 25% of lists from NSW and 21% of lists from Queensland mention it. This is compared to only 7% of lists in Victoria.

Sustainable lighting solutions including Compact Fluorescent Globes and LED lights and globes are used consistently across the states with the national average being 29% and most states in the table below falling between 21% and 33%.

Table 6. Sustainability inclusions by state

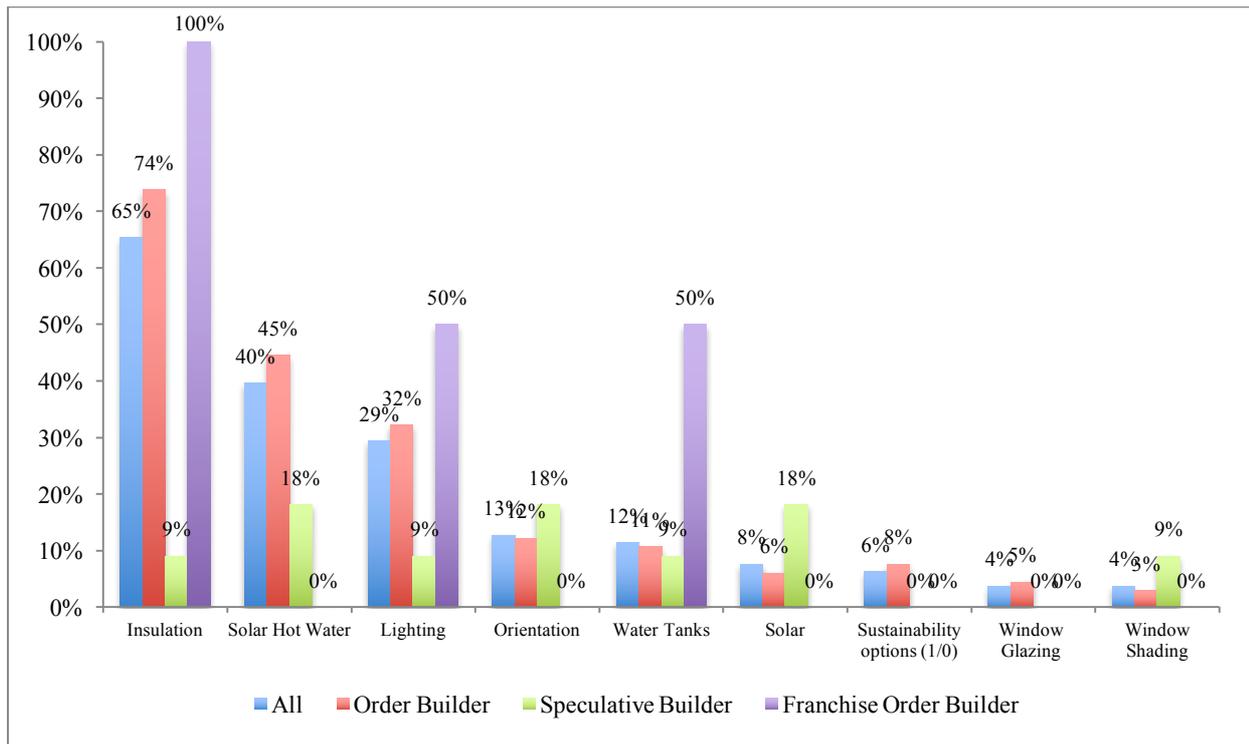
N=78	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Sample Size	78	27	16	14	14	5	1	1
Insulation	65%	78%	56%	57%	50%	100%	0%	100%
Solar Hot Water	40%	89%	6%	21%	14%	20%	0%	0%
Lighting	29%	33%	25%	29%	21%	60%	0%	0%
Orientation	13%	7%	13%	0%	14%	60%	100%	0%
Water tanks	12%	7%	25%	21%	0%	0%	0%	0%
Solar PV	8%	7%	6%	0%	14%	20%	0%	0%
Window Glazing	4%	4%	0%	0%	0%	20%	100%	0%
Window Shading	4%	0%	19%	0%	0%	0%	0%	0%

Source: Authors (2017)

This analysis provides insight into the limited combination of sustainable features builders are using to reach the 6-Star Energy Rating. The national figures indicate that this is likely to be a combination of 5 or 6 sustainable features including Insulation, Solar hot water, Lighting, Orientation and Water tanks with very limited use of Solar, Window Glazing or Window Shading. However the state level figures show that the range of sustainable features is more likely to be limited to 3 or 4. Table 6 shows the percentage of lists that mention the inclusion for each state. Based on this in Victoria the combination of likely sustainable inclusions is Insulation, Solar hot water and Lighting. In NSW the combination is likely to be Insulation, Lighting, Orientation, Water Tanks and Window Shading. In Queensland the combination is Insulation, Solar hot water, Lighting and Water Tanks.

By Builder type, the weighting of sustainable inclusions information available from Order Builders compared to Speculative and Franchise Order Builders is highlighted in Figure 2. Order Builders provide between 60% and 100% of all instances of sustainable inclusions for each type of inclusion. For example, for Insulation 90% or 48 of the 51 times insulation was mentioned as a sustainable inclusion was on an inclusion list for an Order Builder.

Figure 2. Sustainability inclusions by builder type



Source: Authors (2017)

The national and state figures show that due to the infrequency of mention in inclusions lists, Solar Panels, Window Glazing and Window Shading are least likely to be used by Australian Volume Builders. The top 5 sustainable inclusions that are presented most often in inclusions lists are discussed in more detail below.

Insulation

This research shows that insulation is a key sustainability inclusion for the Top 100 Australian builders. As such a more detail about the standard of insulation in their homes was provided. This information was ranked according to Table 7 that shows a large proportion of 65% (51) of inclusion lists referred to the standard of insulation provided.

A 0 rating was given to lists that did not mention insulation, while a rating of 1 was for inclusion lists with statements like “Insulation required to achieve a 6-Star energy rating”. This statement indicates that some builders may adjust the R rating of insulation in their homes up or down depending on the homes' Energy Rating assessment. Five inclusion lists specified insulation of R2.5 on the ceiling and R1.5 on the walls while a significant 35% (27) of lists were given a rating of 3 for the inclusion of ceiling insulation of R3.5 and wall insulation of R2 or above.

Table 7. Insulation

Rating	Rating Description	No of Inclusions	% Total Inclusion Lists
3	Above code at Walls R2 or above and Ceilings R3.5 or above	27	35%
2	Above code at Walls R1.5 and Ceilings R 2.5	5	6%
1	Statement such as “Minimum to meet 6-Star Energy Rating”	19	24%
0	No mention of insulation	27	35%

N = 78

Source: Authors (2017)

By state, the results show that insulation was included broadly across Australia, with over 50% of the lists from the larger states including this (Table 8). Reflecting climate and market conditions, Victoria is the most prevalent with 78% (21) of lists including insulation.

Table 8. Sustainability insulation inclusion by State comparison

Insulation	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Yes	65%	78%	56%	57%	50%	100%	0%	100%
No	35%	22%	44%	43%	50%	0%	100%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

N = 78

Source: Authors (2017)

Solar hot water

Solar hot water is the second most mentioned sustainable inclusion with 31 mentions in the 78 inclusion lists. The results indicate that Solar hot water systems are used widely by builders who’s primary state of operation is Victoria. 89% (24) of lists from Victoria mentioned the feature, while only 1 list from NSW and 3 from Queensland included a Solar hot water system as standard.

Table 9. Sustainability insulation inclusion by State comparison

Solar Hot Water	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Yes	40%	89%	6%	21%	14%	20%	0%	0%
No	60%	11%	94%	79%	86%	80%	100%	100%
Total	100%	100%	100%	100%	100%	100%	100%	100%

N = 78

Source: Authors (2017)

Lighting

In this study an inclusion list was judged as having sustainable lighting if they supplied LED globes and/or lights or compact fluorescent globes as standard. This was the case on 29% of inclusion lists, with lists from Victoria again providing the largest proportion with 33% (9) of lists mentioning sustainable lighting as an inclusion. Further mentions were spread evenly amongst the larger states, with 4 in NSW and Queensland and 3 in both WA and SA.

Table 10. Sustainability insulation inclusion by State comparison

Lighting	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Yes	29%	33%	25%	29%	21%	60%	0%	0%
No	71%	67%	75%	71%	79%	40%	100%	100%
Total	100%	100%	100%	100%	100%	100%	100%	100%

N = 78

Source: Authors (2017)

Orientation

In this study an inclusion list was judged as mentioning orientation if it referred designing a home using passive solar design principles, or selecting a floor-plan that worked best for the block's solar orientation. For speculative builders in the sample they may have mentioned that the development was designed to maximize solar orientation. Orientation was mentioned in a low 10 of 78 inclusion lists and was spread evenly across the states with 3 lists from SA, and 2 for NSW, Victoria and WA lists.

Table 11. Orientation by state

Solar Hot Water	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Yes	13%	7%	13%	0%	14%	60%	100%	0%
No	87%	93%	88%	100%	86%	40%	0%	100%
Total	100%	100%	100%	100%	100%	100%	100%	100%

N = 78

Source: Authors (2017)

Water Tanks

A water tank was mentioned in a low 9 of 78 inclusion lists, with only 2 from Victoria, 4 from NSW and 3 times in Queensland. Both the regulatory requirement and market demand for water tanks are likely to be driven by the practicality of the climate in the state (and also the state of drought existing). With higher average temperatures and less rainfall than Victoria, NSW is likely to have higher latent consumer demand for water tanks.

Table 12. Water tanks by state

Solar Hot Water	All	Vic	NSW	QLD	WA	SA	ACT	Tas
Yes	12%	7%	25%	21%	0%	0%	0%	0%
No	88%	93%	75%	79%	100%	100%	100%	100%
Total	100%	100%	100%	100%	100%	100%	100%	100%

N = 78

Source: Authors (2017)

CONCLUSION

The objective of this research was to investigate what types of sustainability and energy efficiency related aspects are actually included in these standard inclusions for the consumer to understand and compare housing products in the market. This research identified a severe lack of information provided to consumers regarding sustainability, and energy efficiency aspects included as standard in their new home. The Standard Inclusions, generally, are lists of things included in the homes as standard. Given the current legislative environment there is a requirement for energy star ratings of minimum 6 stars required under the NatHERS rating scheme, which generally equates to the need for increased insulation, a Solar hot water heating system or water tank (both in some states), sometimes double glazing and external shading. However, less than 50% indicated there was a rating or the relevant star level. It is surprising, given the rating's mandatory requirement, that this is not listed as standard inclusions. What this implies is that homebuyers will or potentially surprised with the additional costs and requirements essentially hidden as a result of these ratings not being stated in the standard inclusions. It certainly may provide consumers with a metric for comparison, as in one standard inclusion has it and the other does not, but the consumer is likely to be unaware of the implications that this might have for them as a result.

Sustainability per se has limited discussion in the websites (see Warren-Myers and McRae) and even less in the standard inclusions. Only one organization in the Top 100 were identified as having a dedicated housing range, which was provided by the Order builders. There were only 6% that indicated there were 'sustainability' options for their homes and when analysing the inclusions, 31% identified a series of features which could be perceived as being 'sustainable', there were only several standard inclusions that identified 'sustainability inclusions' in their descriptions. Consequently, for consumers the profile of sustainability dedicated housing ranges are very limited, so its difficult to ascertain what makes these homes 'more sustainable' than others and there are limited sustainable options available to them to engage with, so in essence consumers are fielded into a particular housing choice with very limited ability to ask for or select more sustainable options in their home. The sustainability inclusions described by 31% of the sample range broadly from references to insulation, although not necessarily more sustainable/energy efficient, to Solar hot water systems and water tanks, which are generally required for the mandatory rating. Consequently, with the exception of the few standard inclusions that highlighted these features as 'sustainable inclusions', consumers are likely left wondering what are sustainability and energy efficient features and what do these look like, let alone what are the benefits. Coupled with limited information available through the websites, is it any wonder that consumers in the purchasing of a new home do not select sustainability and energy efficient features in their home. As a result, the volume builders need to be looked to in how they create a system or market that engages consumers in informed decision-making relating to sustainability and energy efficient features in new homes.

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