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Perspectives of Australian property practitioners on sustainability features in residential property

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ABSTRACT

Information on sustainability features in the Australian residential property market is available but not always shared with buyers by property practitioners (real estate agents, property valuers/appraisers and financiers/mortgage lenders and brokers), as it is not a regulatory requirement. This paper examines the perspectives of property practitioners on a range of sustainability features in residential property. Drawing insights from combined questionnaires and interviews, property practitioners seem to attribute different levels of importance to sustainability related information depending on whether they view the information from their professional perspective or from their clients' perspective. The results obtained in both 2015 and 2017 confirm that practitioners' perspectives seem to limit the amount and/or type of information they pass on to their clients. Clients are not considering sustainability features as they may not be aware on the existence of such information and are not informed by practitioners about the value of such information. If practitioners share more complete information within the property market buyers would be able to make more informed purchase decisions regarding energy efficiency, sustainable homes, and reduction in operation costs. The property practitioners themselves can utilise this information to have more targeted and information rich marketing strategies.

Keywords: sustainability features; residential property market; real estate agents; property valuers; financiers

1 Introduction

Sustainability measures the ability to conserve non-renewable resources, meet basic human needs, and reduce environmental impact of economic activities (Sauvé et al., 2016). Triple bottom line concept suggested that sustainability strategy shall essentially highlighted environment, economic and social aspects (Elkington, 1994). These three aspects could lead to

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the development of sustainable housing. Sustainable housing should cover the “green” concept, resource usage, economic demand as well as meeting the humans’ need of comfortable living (Cole, 2005). A recent study stated that sustainable housing could be considered as the building that reduce negative impacts to the natural environment and climate, in terms of its design, construction and operation (World Green Building Council, 2019). Past studies had identified the underlying attributes of sustainable housing, which are energy saving designs, cleanliness, occupants’ safety and health, affordability and durability (Miller et al., 2014; Tapsuwan et al., 2018).

Property practitioners play an important role in supporting the implementation of sustainable housing. The awareness of sustainable features in housing relies on the information received prior to making the purchasing and/or renting decision (Susilawati, 2018). Housing information created at different stages of a building’s lifecycle and the creation and transfer of this information from one stage to another involves different stakeholders. Property practitioners may gather the information from developer, government, lot owners and/or through inspections (Wong et al., 2018; Zedan and Miller, 2015). Some ‘house specific’ information, such as site area, building orientation / layout and existence of solar panels, is distributed among stakeholders including developers, government agencies, real estate agents, and owners (Wong et al., 2018). Much building information, however, may be lost in property exchange cycles and hence lead to inefficient information flow (Kwofie et al., 2016), especially for information related to sustainability.

Various approaches have been undertaken by regulatory, industry and market sectors, attempting to identify what information about a building could be considered to indicate sustainability, i.e. how can sustainability in a building be described. A regulatory approach developed by the German Government, the Sustainable Building Quality Label, informed by research on building performance, property valuation and sustainability, identified 60 sustainability features, describing buildings in six main *quality* topics: ecological, economical, social-cultural and functional, technical, process, and location (Bock et al., 2010). A land development and building supply-chain approach identified approximately 150 distinct pieces of information that are typically created during the design and construction processes of a residential building (Miller et al., 2014). This approach mapped when such information was created, by whom, and whether the information was passed on to subsequent stakeholders. Taking into consideration Germany’s Sustainable Building Quality Label, this information was then condensed and classified into five categories: spatial planning, occupant health and safety, occupant comfort, operation and services, and building durability. Through collaboration with building assessment and construction industries, LJ Hooker, a real estate company in Australia, developed and introduced The 17 Things™, an appraisal checklist for sustainable housing design and construction, and a training program for real estate agents (LJ Hooker, 2014). This checklist and associated training program are now further developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) for application to the wider real estate industry (The Centre for Liveability Real Estate, 2017). In spite of these examples of approaches to try incorporating sustainability in the residential buildings sector, current government, industry and market approaches in Australia are not well-adapted to enhance

sustainable development, especially for assisting potential home buyers in making informed decisions and taking sustainability features into consideration. Fuerst and Warren-Myers (2018) also confirmed that the voluntary disclosure (energy-efficiency ratings) and other sustainability features did not formed part of the formal rating assessment and hence did not have much impact on the property transaction phase.

Home buyers consider different housing features in purchasing a house as houses are heterogeneous products (Opoku and Abdul-Muhmin, 2010). Home buyers can choose general housing features such as location, size and floor plan; as well as sustainability features such as property lifespan, indoor environment quality and energy efficiency / renewable energy. A survey of general public visitors at the Brisbane Home Show revealed that many respondents perceived that sustainability features could potentially reduce the water and electricity bills of the house (McGee et al., 2008). The increasing focus on sustainability globally may mean that general information about sustainability is conveyed to the public. However property specific information about sustainability is not necessarily conveyed, resulting in asymmetric information distribution that disadvantages potential buyers (Ifegbesan et al., 2016; Zhou et al., 2015). One of the reasons for this asymmetric information distribution is the inherent uncertainty and ambiguity of sustainability features which makes it difficult for buyers to identify and quantify the benefit of purchasing housing that includes sustainability features (Nelms et al., 2005). Research has shown that sustainable development alone could not fully motivate buyers to focus on housing sustainability features (Wilkinson et al., 2014). Because investors, owners or occupiers often need to refer to advertised property descriptions and valuation reports in making their purchasing decisions, real estate agents and property valuers have an important role to play in conveying sustainability related housing features and their value to potential homebuyers.

Residential property practitioners arguably have a strong influence on the decision of buyers in purchasing their house, and buyers may not have a clear picture on all the housing features (Zhou et al., 2015). These property practitioners include persons involved in the field of leasing, negotiating, sales, research, consultancy, finance and real estate (Australian Property Institute, 2016). As real estate agents, property valuers, and financiers are information providers or conduits and have direct connection with potential homebuyers (Dunning and Grayson, 2014), this paper specifically identifies these three groups of professions as property practitioners. These stakeholders are impacting the dynamics and uncertainties in the property market which may influence the actions of other stakeholders, including home buyers (Mallinson and French, 2000; Warren-Myers, 2012; Whipple, 2006).

The role of real estate agents, property valuers and financiers is often underestimated in contributing to the development of more sustainable housing (Cucchiarelli and McGreal, 2012; Whipple, 2006). Real estate agents act as intermediaries between sellers and buyers, and are required to act ethically and responsibly when providing information (Cucchiarelli and McGreal, 2012; REINSW, 2016). Moreover, real estate agents could influence buyers' decisions in purchasing a home through their property descriptions (Arndt et al., 2013; Goodwin et al., 2014). A more thorough property description provided to potential buyers can

increase the perceived property value (Goodwin et al., 2014). Agents are required to facilitate the efficiency of market operation by improving market transparency between sellers and buyers (Cucchiarelli and McGreal, 2012), however they face time and skill limitations in locating all of the required and/or desired information (Rutherford et al., 2005). These limitations impact on their advertised property descriptions and hence market transparency. Wong et al. (2016) found that Australian real estate agents are more focusing in promoting general housing features (i.e. house size) but not actively promoting sustainability features to the potential sellers/buyers.

Valuers are responsible for not only documenting the details of the property, but also evaluating the impact of dynamics and uncertainties of the valuation (Whipple, 2006). There are different ways that properties can be valued and the majority of the valuation methods utilise some form of comparison to ascertain market value of the residential property (Pagourtzi et al., 2003). The market comparison approach derives property value by making adjustments on similar properties based on their differences, relying heavily on the completeness, timeliness, availability and accuracy of previous sales transactions (Pagourtzi et al., 2003; Reed and Wilkinson, 2007). However, problems exist for valuing houses with sustainability features as (a) there is a lack of comparable market evidence with most valuers developing their pricing preferences based on location, physical qualities and their personal assumptions (Aluko, 2007; Michl et al., 2016; Rahadi et al., 2015); (b) there can be a lack of clarity as to whether sustainability features have been included at all or may actually be double-counted (Le and Warren-Myers, 2019; Lorenz and Lützkendorf, 2011; Lorenz et al., 2007); and (c) there can be difficulties in collecting information related to sustainability features (Le and Warren-Myers, 2019; Lützkendorf and Lorenz, 2011; Mallinson and French, 2000; Michl et al., 2016). In Australian context, Low Carbon Living Ltd had been funded to examine the role of sustainability initiatives on the overall property value. However, the results indicated that sustainability features have minimal impact on the property value, as observed by property valuers (Kain et al., 2019).

The advice of financiers, particularly mortgage lenders and mortgage brokers, influences a buyers' ability to obtain a homeloan. Homebuyers' ability to repay the loan is the main criteria that the financier looks for in approving mortgage loans. Valuation reports can be used by mortgage brokers as documentation on the conditions of the collateral (i.e. the property) (Munro and Smith, 2008; Pinto, 2006). As buying a home is a very important investment to an individual and many people do not have enough capital, mortgage loans have been introduced in different counties (Ferreira et al., 2013; Kupke, 2008). In terms of promoting sustainability, different financial assistance programmes, such as loans and grants that focus on energy efficiency or other sustainability measures, have been introduced in various levels of government such as Australia, Germany, India, and New York (Bihari, 2010; Boyarchenko et al., 2014; Lützkendorf and Lorenz, 2005; Wood, 2010). However, research shows that educational factor has a stronger influence than the financial assistance programmes in terms of increasing the supply and demand of sustainable housing (Yang and Yang, 2015).

To ensure the supply and demand of sustainable housing, there is a need for residential property practitioners, homebuyers, and government policy makers/regulators to understand each other's perspectives; to enhance collaboration opportunities and to develop more effective marketing strategies that can be used by residential property practitioners to promote sustainability. One of the key assumptions made with a demand-driven approach is that buyers are well-informed about sustainable technologies (Connolly et al., 2007). However, buyers may not have full knowledge about such sustainability features. Their purchasing decisions in favour of sustainability can potentially be influenced by professional property practitioners who promotes sustainability features. The availability of information about sustainability features varies and different property practitioners have different practices in promoting sustainability products. As property practitioners arguably have a strong involvement in a buyers' purchasing decision making, the question arises as to whether practitioners' perspectives are limiting the amount and/or type of information about sustainability features that they are passing on to their clients. This paper seeks to investigate, compare and contrast the perspectives of property practitioners in the residential property sector in three different areas: (a) the impact of information about sustainability features on property price, (b) the relative importance of sustainability features from a property practitioner's professional point of view, and (c) the relative importance of sustainability features from their clients' (i.e. dwelling occupants, dwelling owners/investors) perspective.

2 Research Methodology

This study investigates the perspectives of three groups of property practitioners: real estate agents, property valuers, and financiers (mortgage lenders and brokers) about the importance of sustainability features in the residential property market (both newly completed and existing houses) and determine if there is information gap deliverance to the demand-side stakeholders. The demand-side stakeholders, in this paper, are referring to the dwelling occupants, dwelling owners and investors (i.e. simplify to "client"). These three groups of property practitioners were selected as they can potentially influence clients' decisions in the property selection transaction phase, particularly in terms of housing sustainability features (Wong et al., 2018).

This study adopted a mixed method approach: an online questionnaire and semi-structured interview, in 2015 and 2017 respectively. The same questionnaire and interview questions were used in both 2015 and 2017 to confirm the validity of the data. The data collected in 2015 was mainly focused in Queensland while the data collected in 2017 was narrowed to a regional city in Queensland – Townsville.

The questionnaire was used to examine practitioner perspectives on the significance of and correlations between fifty sustainability features. A list of 50 "sustainability" features (see Appendix) related to houses was developed from a combination of the previously mentioned regulatory, industry and market based approaches (Bock et al., 2010; LJ Hooker, 2014; Miller et al., 2014), with ten items in each of five categories: spatial planning, occupant health and safety, occupant comfort, operation and services, and building durability. These 50 "sustainability" features were then further classified to indicate which attribute could contribute towards building sustainability (at design, construction and operation stage). This could

provide an overall indication to the practitioners on which aspects are being considered at different stages of building sustainability.

The core questions were designed using a five-point Likert scale with “1” (Not at all important), “2” (Slightly important), “3” (Moderately important), “4” (Very important), and “5” (Extremely important). Participants were asked to rate the relative importance of each of the 50 pieces of information from their professional point of view, and to rate the importance of the five categories of building information, according to three different perspectives: dwelling occupant, dwelling owner/investor, and as a professional practitioner. These three perspectives were then compared to investigate the completeness of information that is distributed from practitioners to their clients. These practitioners were asked, considering they were representing their clients, to rank the importance of the 50 sustainability features.

In 2015, this questionnaire was distributed using an online survey tool, Key Survey, from September to December 2015. Table 1 shows the selection of participants and how the questionnaire was distributed. An invitation to participate was sent to all members of selected institutions through their monthly newsletter and their mailing lists, followed by a reminder invitation four weeks later. The exact number of the participants who received this questionnaire could not be tracked as this questionnaire was distributed through the institutions listed in Table 1. However, records showed that 265 people clicked on the survey link. Participants received the questionnaire link where a cover letter and Research Ethical Consent Form were given.

Table 1: Selection of participants and questionnaire distribution in 2015

Stakeholders	Distribution channel	Coverage	Participant selection
Real estate agents	Real estate company (PRDnationwide)	Australian wide	Distributed through the monthly newsletter of the organisations to reach their members
	Real Estate Institute of Queensland (REIQ)	Queensland	
Property valuers	Australian Property Institute (API)	Queensland	
Financiers (Mortgage lenders and brokers)	Ten major financial institutions with headquarters within 5km of Brisbane CBD	Australian wide	Distributed through the mailing lists of the organisations to reach their members

Seventy-eight respondents (29.43% of people who viewed the questionnaire) completed this questionnaire: 60% real estate agents, 21% property valuers and 19% financiers. From these 78 respondents, 28 of the respondents participated in the next phase of this research: semi-structured interviews. The positive response (i.e. 36% of the survey participants agreed to participate in the interview) showed that the respondents were not only interested in the questionnaire survey but willing to discuss their opinions on sustainability issues. Recruiting the participants was inherently difficult, resulting in a small sample size.

In 2017, the same set of questionnaire and interview were distributed to real estate agents in October to November 2017 in Townsville, a regional city in tropical Australia, to

confirm the results obtained in year 2015. 90 real estate agencies in Townsville were identified through REIQ and realestate.com websites. 18 real estate agents were involved in the questionnaire and 13 of these participated in the semi-structured interview. The high participation rates of questionnaire participants that agreed to do interview (i.e. 72% of the questionnaire participants) may be a result of face-to-face questionnaire distribution using door knocking and making appointments through phone call.

This high participation interview rates in 2017 was a strategy that developed based on the 2015 response rate results. The authors believed that the property practitioners may be interested to be engaged in sustainability issues but may need to provide a face-to-face approach to provide an avenue for the practitioners to express their opinions. High participation rate in Townsville seems to prove that the practitioners are moving towards the area of sustainability.

Descriptive analysis and the Mann-Whitney test were used to investigate significant differences in the opinions of property practitioners about the importance of sustainability features in residential property. Content analysis were carried out to investigate the results obtained in semi-structured interview.

3 Results and discussions

The responses from both the quantitative questionnaire and qualitative interviews provided valuable insights into how property practitioners involved during the property purchase selection phase perceive sustainability related building information. Section 3.1 provides a background information of the participants in both 2015 and 2017. Section 3.2 - 3.4 relate specifically to the 2015 data collection from questionnaires and interviews. Section 3.5 refers to the data validation provided by the 2017 questionnaires and interviews.

3.1 Background information

In 2015, both the questionnaire respondents and interviewees were distributed over the three property practitioners groups. In total, 65% of the questionnaire respondents had more than 10 years experiences in their professional sectors, an indicator of the reliability of the data. The majority of questionnaire respondents were from Queensland (59) with smaller numbers from other states: New South Wales (13), Victoria (3), South Australia (2) and Western Australia (1). In 2015, 28 property practitioners were involved in this semi-structured interview with 27 of them based in Queensland and one from New South Wales. In 2017, 18 real estate agents who involved in the questionnaire and 13 real estate agents who involved in the semi-structured interview were all based in Townsville, Queensland.

3.2 Level of interest and the impact of information about sustainability features on property price

In 2015 questionnaire, respondents were asked to define the level of growing interest from their client on the topic of sustainability or “green” features and the question “Do you believe that

sustainability and/or “green” features add capital value to a house?”. Table 2 presents the combined results of these two questions, e.g. A = sum of the real estate agents who agreed that sustainability features do increase the capital value of a house and B = sum of the real estate agents who agreed that there is definitely no growing interest from their clients on the topic of sustainability features.

Table 2: Comparison between the level of interest from client and the impact of sustainability features on property value

Impact on property Clients' interest	Real estate agents			Financiers			Property valuers		
	Yes	No	Not Sure	Yes	No	Not Sure	Yes	No	Not Sure
Definitely not	4%	11%	0%	28%	13%	0%	6%	19%	0%
Not sure	4%	0%	4%	6%	13%	6%	0%	6%	0%
Yes, a little	34%	21%	9%	28%	6%	0%	31%	13%	19%
Yes, a lot	11%	0%	2%	0%	0%	0%	6%	0%	0%

A
B

The majority of the real estate agents believed that there is a little growing interest from their clients but 34% of these agents thought that sustainability features will increase the capital value of the property and another 21% of agents indicated no increment in capital value. 28% of financiers believed that there is no growing interest from their clients but they indicated that sustainability features will increase in property value. 19% of property valuers believed sustainability features have no influence on the capital value of property and there is definitely no interest growing from their clients.

To further investigate the opinions of respondents on the impact of sustainability features on property value, the interviewees were asked to provide their opinions on whether sustainability features impact on property price, in the semi-structured interview (see Figure 1).

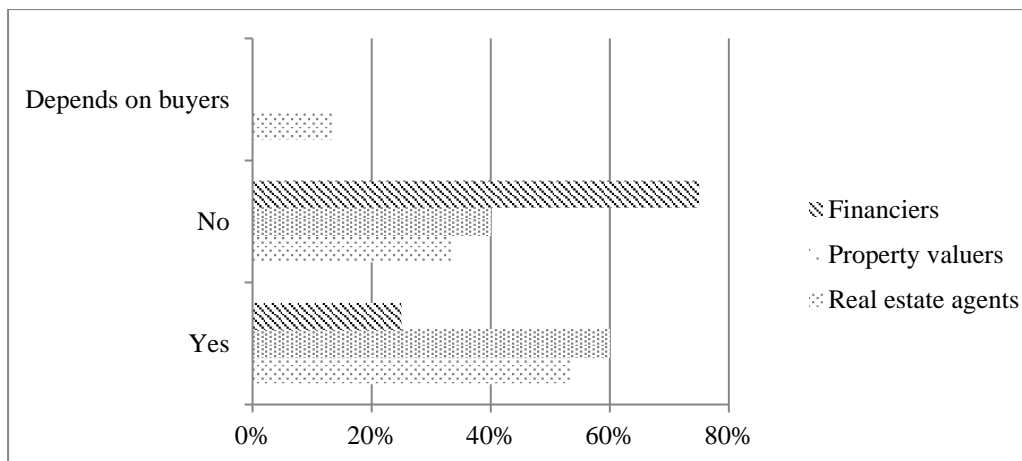


Figure 1: Interviewees' agreement on the influence of sustainability features on property price

The percentages of real estate agents (53%) and property valuers (60%) who agreed that sustainability features will influence the property price was similar. The interviewees stressed that the property price would only be increased if the full information about sustainability features was available. One of the property valuers mentioned that the increase of property price happens in Canberra only but in no other states in Australia (note that Canberra is the only region that mandates the provision of energy efficiency information). One of the real estate agents believed that sustainability does add innovation value or marketability to a property:

"Yes, I think it will...I think if the house can sustain longer, then it can increase value." (R07)

Seventy-five per cent of the financiers believed that property price is not affected by the information about sustainability features:

"I do not believe that the sustainable or green property is going necessarily to have a much greater value on the property." (F01)

Forty per cent of the property valuers stated that there is only a very small market that pays attention to sustainable housing. Moreover, as smoke alarms and a minimum level of energy efficiency, insulation and some other sustainability features are mandatory for new homes in Australian regulation, these sustainability features are not going to increase the property price:

"It is compulsory for all buildings to have this minimum requirement, which was introduced in 2006 for them to get building approval. They are not going to add value because they are all required standards." (V03)

Two real estate agents mentioned that the impact of sustainability features on property price depends on the buyers' purchasing preferences. They believed that if the buyers are concerned about sustainability, they will be willing to pay a higher price for the property.

The results show a discrepancy between the views of real estate agents and valuers upon the one hand, and financiers on the other hand. Majority of the real estate agents and property valuers believe that sustainability features can enhance property price. This would suggest that both agents and valuers could consider incorporating changes into their practices in order to capture this benefit. The negative view of the financiers may suggest that sustainability features may take time to be reflected in the Australian residential property price, or that financiers are somewhat removed from the information cycle (as they focus on finance, not property characteristics).

3.3 Comparison of stakeholders' opinions on the significance of sustainability features

The responses from both questionnaire and semi-structured interviews provided important insights on the opinions of real estate agents, property valuers and financiers. These three group of stakeholders could be considered the first layer of stakeholders who collect and pass information to their clients for different purposes. It is feasible that there may be differences in their opinions towards sustainability features. The questionnaire results for the four highest ranked features from each category by the total group of questionnaire respondents are shown in Table 3. The mean value shown for each category is the average mean value of the 10 pieces of building information in each of the five categories previously mentioned. The ranking of the different building information is based on the mean value of all the features listed in Table 3, from highest to lowest. If two pieces of building information had the same mean value, the ranking was determined by the standard deviation (SD).

Table 3: Overall top 4 building information in each classification (Read in conjunction with Appendix)

	Mean (overall)	SD	Real estate agents (REA)			Financiers (F)			Property valuers (PV)		
			Mode	Mean	Rank	Mode	Mean	Rank	Mode	Mean	Rank
Spatial planning (S)	3.74			3.79	1		3.62	3		3.68	1
Site area	3.97	0.811	4	4.07	1	3	3.80	4	4	3.88	4
Zoning	3.88	0.959	4	3.98	2	4	3.87	3	4	3.63	6
House size	3.87	0.709	4	3.86	5	4	3.93	2	4	3.81	5
Access to personal modes of transport	3.82	1.029	4	3.77	6	4	3.93	1	5	3.88	3
Occupants comfort (C)	3.47			3.40	3		3.51	4		3.65	2
Insulation	3.96	0.901	4	3.84	2	4	4.13	1	4	4.13	2
Building orientation	3.88	0.923	4	3.91	1	4	3.53	4	5	4.13	1
Cross-flow ventilation	3.73	0.995	4	3.76	3	3	3.53	6	4	3.81	4
Shading	3.58	0.997	3	3.39	5	3	3.71	3	4	4.00	3
Occupants health and safety (H)	3.43			3.42	2		3.50	5		3.40	4
Smoke alarms	4.15	1.074	5	4.23	1	5	4.36	1	5	3.64	4
Building materials	3.86	1.067	4	3.85	3	3	4.00	2	5	3.75	3
Durability of building material	3.85	1.045	4	3.74	4	4	3.93	3	5	4.06	1
Pest control	3.78	1.199	5	3.87	2	3	3.73	4	5	3.56	5
Operation and services (O)	3.38			3.19	5		3.87	1		3.49	3
Water services connections	3.91	1.028	4	3.79	1	5	4.27	=1	5	3.93	1
Type of communication/data services connections	3.86	1.060	4	3.74	2	5	4.27	3	4	3.80	2
Type of energy services connections	3.70	1.101	4	3.57	3	5	4.27	=1	3	3.53	3
Energy efficient lighting	3.57	1.129	3	3.36	4	4	4.27	4	5	3.53	4
Building durability (B)	3.37			3.27	4		3.65	2		3.40	5
Accessible bathroom/toilet	3.74	1.005	4	3.63	2	4	4.00	2	4	3.81	1
Non-toxic building materials	3.73	1.255	L	3.74	1	5	4.27	1	4	3.19	8
Kitchen/bathroom materials	3.62	0.987	4	3.57	3	4	3.93	4	4	3.50	4
General interior fit out materials	3.49	1.078	4	3.40	4	4	3.87	5	3	3.38	5

Questionnaire results revealed that among these five categories, real estate agents and property valuers considered spatial planning as the most important category (3.79 for agents and 3.68 for valuers) but financiers ranked operation and services as the most important category. The spatial planning category could perhaps be conceived as the category least directly related to sustainability as it incorporates the layout and functionality of general property features such as house size and number of bedrooms and bathrooms (Miller *et al.*, 2014). This is what both of real estate agents and property valuers currently focus on in property advertisements and valuation reports, perhaps supporting a notion of a self-perpetuating action.

Financiers had different perspectives from the other two stakeholders as financiers ranked operation and services as the most important category. This appears to indicate that financiers are concerned about the operation of a property such as energy and water service connections, perhaps a reflection of their concern about a mortgagee’s ability to service a loan, which can be affected by the operational costs of house. Some of the financiers may concern about the energy and water services connections as the bank adopted a number of attributes from Australian Property Institute (API) residential standing instruction, to act as checklist in approving loan. Within each category there are also differences in rankings between professionals. For example, under spatial planning, site area was considered the most important feature by real estate agents, yet it was rated 4th by financiers and valuers.

The highest ranked features in Table 3 by each group of stakeholders were listed and investigated further through semi-structured interview. Table 4 shows the percentage of interviewees agreeing on the ranking from the questionnaire.

Table 4: Interviewees’ agreeability of top three ranked features from questionnaire

No.	Real estate agents (R)		Financiers (F)		Property valuers (V)	
1	Smoke alarms	47%	Smoke alarms	50%	Building orientation	100%
2	Site area	100%	Type of energy services connections	50%	Insulation	60%
3	Zoning/land use	67%	Water services connections	50%	Durability of building material	60%

Smoke alarms. The semi-structured interviews’ results showed that 50% of the financiers and 47% of real estate agents considered smoke alarm is a legal requirement, implying that regulation of this feature is viewed as a type of professional indemnity.

“I think the smoke alarm would not be matter to the top, it is a legal obligation that today all property has to have smoke alarm as safety features for either selling or renting.” (R11)

Site area and zoning/land use. All of the real estate agents stated that site area should be in the top three together with the number of bedrooms and number of bathrooms. Site area has been recognised as one of the criteria to increase the value of the property. One of the real estate agents mentioned that site area indicates a sense of

‘spacious living’ and sometimes the area of the site depends on the zoning/land use of the property.

Energy and water services connections. One of the financiers mentioned that there is a shift towards acceptance of “off-grid” properties so the type of energy service connection could grow in importance. There was perhaps some confusion about whether these items meant merely the absence or presence of energy or water services, or whether it was meant to indicate what type of energy and water services were present. This is perhaps a limitation of the survey in that different participants can interpret questions in different ways.

“If there are no water services, it is unable for us to do a loan or may not want to do that. As a lender, we do not care specifically, but it would be good for customers [to know].” (F03)

Building orientation and insulation. All of the property valuers interviewed agreed that building orientation is the important feature as it contributes to energy efficiency which could reduce the operational costs of the property for air conditioning and ventilation.

“I think orientation is important, insulation probably is, people think that if there’s lots of insulation meaning it’s going to be more efficient in terms of heating and cooling that make sense.” (V01)

Durability of building material. Durability of building material can be easily identified through visual inspection and this could increase the value of the property. However, 40% of the property valuers disagreed by stating that most building materials are durable and the key thing to consider is the condition of the materials. This again is perhaps a limitation of the survey, where the term ‘durability’ means different things to different people, e.g. durability over different timescales.

“We do not look at the durability of materials but we look at the condition of the materials.” (V02)

Three interesting findings are revealed in these results. First, property valuers identified three features (orientation, insulation, durability) that were not in the priorities of the other two professions. This is particularly surprising because valuation reports are used by financiers to determine eligibility for home loans. Second, there was strong agreement (100%) within real estate agents and within valuers, regarding the most important feature from their perspective (site area and building orientation respectively), perhaps reflective of sector specific practices. Financiers, however, were much more divided as to what features were most important, perhaps a reflection on their focus on finance rather than property features. Third, out of 9 different features (the top three identified by each profession), only 1 was in common with another profession. Each professions’ views on the importance of particular features did not seem to be based on

any empirical data, but may in fact be based on common practices within each profession. There was also evidence that the terminology used to describe the features themselves was interpreted differently by different respondents. This disparity in their professional views on the importance of particular features, and the meaning of particular features, is a cause for concern. It raises the question of whether these perspectives impact on the amount and/or type of information distributed to potential buyers or considered in property valuations. As there are differences between the perspectives of stakeholders in different features from their professional point of view, this raises the question of how they think their clients may rank the housing features.

3.4 Comparison of stakeholders' opinions on sustainability features to their clients

To determine whether there is discrepancy between professional perspectives and their clients' perspectives, questionnaire respondents were asked to rank the importance of these five categories of building information from three different points of views: (i) their clients' perspectives as dwelling occupants, (ii) as owners/investors; and (iii) their own perspectives of their profession (as real estate agents, property valuers or financiers). As property practitioners have chance to deal with their clients and directly introduce to their clients about the housing features, it is claimed that these practitioners could represent their clients' thoughts. Additionally, some of the practitioners may have the experience in renting, buying or investing a property. Hence, it could be argued that they could be the person to represent the thoughts of clients (i.e. dwelling occupants, dwelling owners/investors).

To investigate any value gaps and common ground regarding the importance of key building information categories among these three stakeholders, a Mann-Whitney test was carried out (see Table 5). The results of the Mann-Whitney test were interpreted by the probability value (p-value). If the p-value is less than 0.05, there is a significant difference between the groups.

All stakeholders had similar opinions from the perspective as dwelling occupants. From the perspective as dwelling owners/investors, real estate agents and property valuers had different opinions towards the category of occupant health and safety. From the perspective as professions, real estate agents and financiers had different perspectives on occupant health and safety, and occupant comfort categories. Property valuers and financiers had different opinions on the category of operation and services. By accumulating the detailed features of each category, there is discrepancy between the opinions of real estate agents and financiers in the category of operations and services in five out of ten features under this category: "Type of energy services connections", "Alternative power systems", "Size of solar panel", "Battery storage capacity for solar panel" and "Energy efficient lighting" showed significant differences.

Table 5: Comparison of different building category among stakeholders

Building category	Perspective as dwelling occupants			Perspective as dwelling owners/investors			Perspective as professions			Perspective as professions (Accumulation of detailed features in each category)		
	REA/F	REA/PV	PV/F	REA/F	REA/PV	PV/F	REA/F	REA/PV	PV/F	REA/F	REA/PV	PV/F
S	0.689	0.436	0.343	0.921	0.557	0.584	0.080	0.623	0.095	0.276	0.410	0.858
H	0.777	0.247	0.281	0.914	0.044*	0.092	0.031*	0.086	0.730	0.908	0.722	0.843
C	0.439	0.582	0.288	0.899	0.164	0.167	0.017*	0.535	0.138	0.786	0.169	0.332
O	0.467	0.926	0.657	0.358	0.574	0.187	0.367	0.075	0.031*	0.003*	0.462	0.303
B	0.480	0.158	0.548	0.559	0.609	0.417	0.763	0.722	0.984	0.074	0.393	0.812

Note: S = Spatial planning; H = Occupants health and safety; C = Occupants comfort; O = Operations and services; B = Building durability
 REA = Real estate agents; F = Financiers; PV = Property valuers

*significant differences between property practitioners group (p value less than 0.,05) from Mann-Whitney Test.

Overall, the least discrepancy is indicated in the columns associated with ‘clients as dwelling occupants’. This appears to indicate that these three professions are somewhat in agreement about the sustainability features that would be important to their clients as occupants of dwellings. The results indicated in the columns associated with ‘clients as dwelling owners / investors’ indicate that real estate agents and property valuers believe that these clients are most concerned about building durability (perhaps an indication of interest in the property’s lifespan and ongoing maintenance costs or resale value). These same professions, however, disagreed about the importance of occupant health and safety (as a consideration for building owners / investors). This highest degree of differences is shown in the column relating to ‘professional perspective’, especially between real estate agents and financiers about occupant health, safety and comfort, and between property valuers and financiers with regard to operations and services. Overall the results indicate differences in opinions regarding what features are important to occupants, to dwelling owners / investors and to each of these professions. It is conceivable that these differences in opinion and perceptions of client interests, could influence what information is passed on to clients by each of these professions, and hence limiting the amount of information be passed on to the client.

3.5 Townsville case study to confirm the questionnaire and interview responses

The questionnaire and interviews carried out in October and November 2017 with real estate agents (representative of property practitioners) present similar findings to the data collected in 2015, from the perspective of real estate agents. Tables 6 and 7 show the comparison of the findings between 2015 and 2017 agents’ perspectives.

Table 6: Comparison between the importance of different building category of 2015 real estate agents and 2017 Townsville’s agents

Categories	2015		2017	
	Mean	Rank	Mean	Rank
Spatial planning	3.79	1	3.57	2
Occupants comfort	3.40	3	3.43	3
Occupants health and safety	3.42	2	3.71	1
Operation and services	3.19	5	3.40	5
Building durability	3.27	4	3.41	4

Table 7: Perspectives of 2015 Australian real estate agents and 2017 Townsville agents; and representative for their clients as dwelling occupants/owners/investors on different building category

		2015			2017		
Criteria		Not Important	Quite important	Very important	Not Important	Quite important	Very important
Buildin		Perspective as dwelling occupants					
	S	0%	26%	74%	5%	6%	89%
	H	0%	30%	70%	0%	17%	83%

C	0%	30%	70%	6%	33%	61%
O	0%	26%	74%	6%	11%	83%
B	0%	47%	53%	11%	11%	78%
Perspective as dwelling owners/investors						
S	2%	45%	52%	6%	24%	70%
H	0%	53%	47%	0%	18%	82%
C	0%	51%	49%	0%	29%	71%
O	0%	40%	60%	11%	18%	71%
B	0%	33%	67%	0%	12%	88%
Perspective as professions						
S	0%	37%	63%	0%	33%	67%
H	2%	45%	53%	5%	17%	78%
C	2%	45%	53%	6%	22%	72%
O	0%	38%	62%	5%	28%	67%
B	0%	47%	53%	5%	6%	89%

Note: S = Spatial planning; H = Occupants health and safety; C = Occupants comfort; O = Operations and services; B = Building durability

Table 6 shows that the rankings of different categories are similar. Building durability was ranked higher by Townsville 2017 agents compared to 2015 overall Australian agents. This may be due to the strong focus on structural integrity (building durability) in Townsville due to it being in a cyclone region. Moreover, the mean values of four building categories in 2017 were higher than year 2015. The mean value of Spatial Planning in year 2017 was lower than year 2015. This may be because the houses in Townsville have almost similar number of bedrooms and bathrooms, and therefore the agents did not see the importance of spatial planning. Table 7 shows that real estate agents ranked the importance of different building categories with different weights. This confirms that real estate agents might see some features that are important to their clients but not to themselves professionally, as in year 2015.

The semi-structured interviews with real estate agents showed a stronger focus on pest control (termites) and security, compared to 2015 (see Table 8). The former is understandable as termites are a known threat to building integrity in Northern Australia. The focus on security might be a result of several socio-economic conditions in Townsville, such as the property crime rate (the highest 'break and enter' rate in the region: 102 per 100,000 population 2017), unemployment rate (8.5% in December 2017) or family composition (17.6% single parent families, 2016). As social aspect is part of the sustainability outcome, hence these external factors (i.e. high crime rate) could affect the contractors' choice of materials and the designs of the property security system to better enhance the safety of the occupants. This seems to imply that the real estate agents (representative of property practitioners) are highlighting the location-specific information, that could help them to promote their property listings (i.e. "security" in Townsville case). The property practitioners should not filter or eliminate the type of

information that being delivered to the clients. Moreover, 2017 Townsville real estate agents mentioned that zoning/land use is not the focus in Townsville as residential zoning is well managed (i.e. most housing has similar land use / zoning). The results seem to imply that real estate agents are ranking the importance of different housing features based on the situation of the particular area in which they operate.

Table 8: Top three features ranked by real estate agents in 2015 and 2017

2017		2015	
Smoke alarms	100%	Site area	100%
Pest control measures	100%	Zoning/land use	67%
Insulation	77%	Smoke alarms	47%

The findings raise several questions relating to information dissemination in the residential property market:

1. Do property practitioners' perspectives in the relative importance of particular housing features influence what information they seek about a property and what information they pass on to potential buyers?
2. Are property practitioners' perspectives about the relative importance of particular housing features influenced by their lack of understanding of what some of these features are and what they mean for occupants?
3. Does the disparity of weightings between property professionals about sustainability features result in potential home buyers receiving mixed messages?

These questions stress that property practitioners may limit the amount of information distributed to their clients, and hence selecting the piece of information distributed to their clients. Practitioners may not aware about value of sustainability features and/or do not have the knowledge about the sustainability features (Warren-Myers, 2016). This creates the asymmetric information in the property market.

It could be argued that property practitioners should be "information agnostic" in the distribution of all the housing information to their clients, by not filtering information or limiting information transfer based on their perceptions of what is important. Property practitioners should conceivably act as the information conduit between supply chain agents and buyers, without blockages or filters, in terms of introducing sustainability features (for real estate agents), valuing sustainability features (for valuers) and including sustainability features in house loan approval (for financiers), to their clients. If all 50 pieces of building information (see Appendix) were made available to the clients without filters, clients would be able to make their own decisions as to what is important for them.

4 Conclusion and implications

This study is one of the first investigations on the perspectives of property practitioners on the importance of sustainability features of residential property, both from the points of view of their clients and their own profession. The perspectives of these property practitioners regarding the relative importance of different housing sustainability categories does not appear to be significantly different from their clients' (i.e. dwelling occupant, dwelling owner/investor) perspectives. However, there is significant difference between financiers and real estate agents; and between financiers and property valuers in the category of occupant health and safety, occupants' comfort, and operation and services.

Real estate agents and property valuers focus more on functionality and criteria which relate to the health and comfort of occupants but not the long-term building durability. Financiers, however, having a long-term connection with the property through mortgages, appear to be more concerned with the long-term building durability and operation and services of the property. This also appears to imply that although financiers potentially rely on valuation reports to determine the conditions of property, there is discrepancy between their perspectives. These differences suggest that there is a high potential for incomplete information distribution from property practitioners to clients. The questionnaire and interview with Townsville real estate agents in 2017 further confirmed that property practitioners are conveying location-specific information to their clients. Property practitioners seem to limit the amount and/or type of sustainability related information that they pass on to their clients and this results in incomplete information flow to clients. Arguably property practitioners should be information agnostic and distribute all housing information to their clients. This would allow clients the freedom to consider all available information, evaluate which information is important for them (as occupiers, owners or investors), and make more informed decisions that directly impact on them

This paper acknowledges that there may be a disconnection between dwelling occupant and dwelling owner/investor actual opinions about sustainability and practitioners' perception of their opinions. However, this study has not attempted to address this knowledge gap. The purpose of this study was to examine the perspectives of the property practitioners and how this may impact how they pass information to their clients. Future studies could examine the perspectives of clients directly and examine the extent to which practitioners' opinions match clients' perspectives in relation to sustainability features.

This study practically contributes to the property industry in terms of providing a greater understanding of perspective variations between property practitioners. Dwelling occupants and dwelling owners/investors could have improved access to energy efficient homes and so reduce operation costs and improve their lifestyle. Property practitioners can use the findings from this paper to analyse the differences between the perspectives of dwelling occupants, dwelling owners/investors and their professions to ensure that they

are meeting the needs of their clients. This may potentially create a more complete information flow from practitioners to their clients. Property practitioners may need to improve their business and marketing strategy to create better property advertisements, valuation reports or business products (e.g. types of loans) to ensure the saleability of property in the shortest time and/or minimise the risk of home loans in the long run. Real estate agents, property valuers and financiers can use this study to understand that there is a wealth of information on a property that better describes how the property provides for occupant comfort, health and environmental outcomes. As they can first recognise the availability of information and support steps to make it more readily available, they can then utilise this information to have more targeted and information rich advertising/marketing strategies.

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Appendix Building information categories and details

Category	Building information of housing	Parameters towards building sustainability (design, construction and operation stage)
Spatial planning	Site area	Design stage
	House size	Design stage
	Site coverage	Design stage
	Zoning/land use	Design stage
	Number of bedrooms/bathrooms	Design stage
	Size of rooms	Design stage
	Ceiling height	Design stage
	Internal room layout and connections	Design stage
	Access to personal modes of transport	Design stage
	Access to public modes of transport	Design stage
Occupant health and safety	Indoor air quality	Operation stage
	Accessibility-wide doorway	Design stage / Construction stage
	Accessibility-accessible ramps	Design stage / Construction stage
	Durability of building material	Construction stage
	Visual access to neighbours/streets	Operation stage
	Security system	Operation stage
	Smoke alarms	Operation stage
	Pest control measures	Construction stage
	Building materials (e.g. concrete, masonry, brick)	Construction stage
	Hot water temperature regulators	Operation stage
Occupant comfort	Annual thermal comfort-star rating	Operation stage
	Insulation (wall, floor, roof and ceiling)	Construction stage
	Building orientation	Design stage
	Cross-flow ventilation	Design stage
	Location of ceiling fans	Design stage
	Type of hot water unit	Operation stage
	Sealing on windows and doors	Construction stage
	Shading/sun control	Construction stage
	Acoustic comfort	Construction stage
	Visual comfort/scenic view	Design stage
Operation and services	Type of energy services connections (gas/electricity)	Operation stage
	Type of communication/data services connections (fax/phone coverage)	Operation stage
	Water services connections (mains supply/rainwater/recycled water)	Operation stage
	Connection to watertank	Operation stage
	Hot water service storage capacities (litres)	Operation stage
	Alternative power systems	Operation stage
	Size of solar photovoltaic (PV) panel	Operation stage
	Battery storage capacity for PV panel	Operation stage
	Energy efficient lighting	Operation stage
	Water usage of dishwasher	Operation stage
Building durability	Accessible bathroom/toilet	Design stage / Construction stage
	Flexible layout (i.e. use of rooms for different purposes)	Design stage / Construction stage / Operation stage

	Ability to adapt to changing needs over time	Design stage / Construction stage
	Reusable building materials	Construction stage
	Non-toxic building materials	Construction stage
	Recyclable building materials	Construction stage
	Building envelope construction materials-lifespan and durability	Construction stage
	General interior fit out materials-lifespan and durability	Construction stage
	Kitchen/bathroom materials-lifespan and durability	Construction stage
	Ease of access to service wiring/plumbing/data cabling	Construction stage