

EXPLORING THE ENERGY EFFICIENCY CONVERSATION IN THE AUSTRALIAN VOLUME HOME BUILDING SECTOR

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ABSTRACT

Housing with high operational energy efficiency has the potential to positively contribute towards the global environmental challenge of climate change. Further, these types of homes can provide social and financial household benefits such as improved health and wellbeing, and reduced cost of living. Although these potential benefits are well known, the adoption of higher standards of energy efficiency in new Australian housing is not widespread. This is in part a result of limited mandatory requirements (compared to the benchmarks of other developed economies), and limitations to demand creation by consumers – two contributing features of an ongoing ‘blame game’ between consumer, government and industry stakeholders.

This paper focuses on the dominant providers of new housing in Australia, the volume home builders. These organisations occupy an influential position in the system of new housing supply, informing and directing the choices of inexperienced homebuyers, and providing work opportunities to a large supply chain of building contractors and trades. But recent studies reveal that sustainability measures such as energy efficiency are not well promoted or prioritised by the sector.

This paper presents preliminary findings from an exploration of the current energy efficiency ‘conversation’ between volume home building organisations and their potential homebuyers, as revealed by a content analysis of organisational websites. The preliminary review investigates the type of language being used to describe and promote the various housing products and options on offer, and its relationship to energy efficiency. This study establishes an evidence base for the current energy efficiency conversation in the volume home building sector, in order to identify opportunities for a more productive conversation, and the mainstreaming of higher energy efficiency performance in new housing.

Keywords: housing; energy efficiency; homebuyers; volume house builders; qualitative content analysis; website analysis

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INTRODUCTION

Australia is a highly urbanised country, with a rapid rate of development being driven by a high rate of population growth (Enker & Morrison 2017). Residential buildings form a large proportion of Australia’s urban infrastructure mix, with tens of thousands of new dwellings being completed every month (HIAE 2018). A house is one of the single largest investments an Australian individual or family is likely to make, and housing that is built now will lock in ways of living and a degree of performance over a long expected life span of 50-plus years.

Housing with high operational energy efficiency¹ can positively contribute towards global environmental challenges such as climate change, through reduced overall energy demand and therefore greenhouse gas emissions (ASBEC 2016; Wang et al 2010). In addition, such

¹ Throughout this paper, the term ‘energy efficiency’ is used in reference to operational energy efficiency of detached residential buildings, with respect to energy demands for heating, cooling, ventilation, hot water, lighting and appliance use. This study does not emphasise specific energy efficiency performance benchmarks, but is instead concerned with the understanding and articulation of energy efficiency more generally (i.e. by volume home builders and potential new homebuyers), such as the broad range of environmental, social and financial benefits such housing can provide.

housing can provide on-going financial and social benefits to households, such as reduced operational costs and the potential for higher property values, as well as improved occupant comfort, health and wellbeing, including resilience during climate extremes (ASBEC 2016, 2018). Although these potential benefits are well established, there is a notable disconnect between the ideals and aspirations for energy efficient housing contained in current academic discourse, government performance objectives, and the realities of mainstream housing industry practice in Australia.

The adoption of high standards of energy efficiency in new Australian housing is not widespread. Current regulatory benchmarks lag behind other developed countries (Horne & Hayles 2008; Moore et al 2014), and the minimum standards that have been implemented are not consistently met in practice, as described in Pitt & Sherry's major industry review (2014). Their report revealed a culture of mediocrity and antagonism within the residential construction sector, characterised by issues of under performance and non-compliance, and an on-going blame game between consumer, government and industry stakeholders.

Slow uptake of sustainability initiatives such as high operational energy efficiency in the mainstream housing industry has been characterised as an institutional problem, rather than a technological one (Crabtree & Hes 2009); the product of social, cultural and commercial constraints rather than a lack of practical or technical knowledge. However, there is remarkably little research into the dominant institution for new housing provision in Australia, the volume home building sector. This research seeks to help fill this gap, by examining the ways in which energy efficiency is understood and articulated by this sector, and identifying opportunities within established industry practice for improving the communication and promotion – and ultimately uptake – of energy efficient housing within the mainstream new housing market.

The aim of this study is to establish an evidence base for current industry practice by examining the websites of major volume home building organisations, in particular the language and concepts being used by these organisations to describe and promote their housing products and options, and the implications these might have for the promotion of operational energy efficiency in new housing. The research is focused on Victorian-based detached volume home builders, as identified through the Housing Industry Association's annual report of Australia's largest residential building companies (HIAE 2018). This paper presents preliminary findings of the study, which included examination of a small initial selection of websites, to help determine the most relevant and comparable web pages and content, and to identify and trial preliminary codes and categories for analysis of the eventual full study.

BACKGROUND

The Australian volume home building sector

This paper focuses on the dominant provider of new housing in Australia, the volume home building sector. If the gap between energy efficient housing discourse and mainstream practice has institutional roots, then it is important to better understand and examine this powerful institution.

Although there is no fixed definition for the term 'volume builder', it is commonly applied to residential building firms who construct significant numbers of dwellings per year, as exemplified by the organisations in the annual Top 100 report produced by the Australian Housing Industry Association (HIA) (Dalton et al 2013; Dowling 2005; HIAE 2018). The Australian residential construction industry is increasingly dominated by these large-scale

organisations. In the 2017/18 financial year, the largest 100 residential builders (Top 100) accounted for 33% of all new dwellings built (HIAE 2018). The majority of these dwellings were detached houses, which remains the predominant housing type in Australia. In 2017/18, detached housing accounted for 69% of all dwellings built by the Top 100, and the vast majority (85%) of Top 100 builders included some detached housing in their annual totals.

Volume built detached housing is typically built to customer order, with homebuyers selecting a house model from a catalogue of standardised plans, with a limited palette of customisable options such as façade treatments and interior finishes. Through mass production of a standardised range of housing, volume home builders create efficiency throughout the construction process, helping them to reduce construction timeframes and costs, and therefore maximise profits (Warren-Myers & Heywood, 2016).

The sheer scale and dominance of volume home building organisations means they have the power and potential to drive innovation within the industry. Recent research supports this, pointing to the highly influential role these organisations play in the demand and supply system for new houses (Warren-Myers & Heywood, 2018). Traditionally, volume home builders have been considered a supply-side player, providing housing according to consumer demand (refer Figure 1 below).

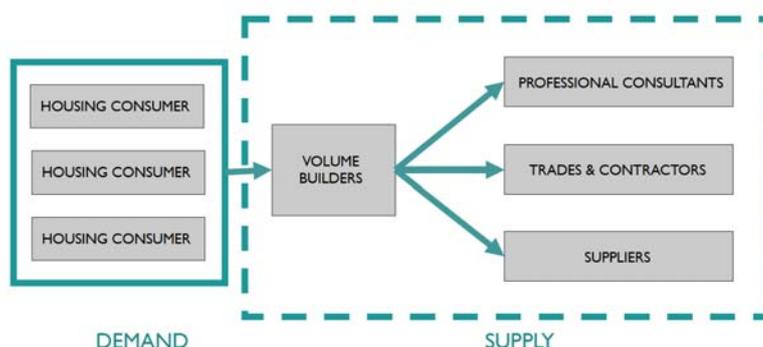


Figure 1: Typically assumed model of volume housing procurement (adapted from Warren-Myers & Heywood, 2018, Figure 4.)

However, research by Warren-Myers and Heywood (2018) suggests this perspective should be reframed, in order to recognise volume home builders as an influential demand-side player and agent for change. Upstream, volume home builders inform and direct the choices of many inexperienced and infrequent homebuyers, while downstream, they wield significant power over a large supply chain, offering contracts for hundreds or thousands of new homes (refer Figure 2 below).

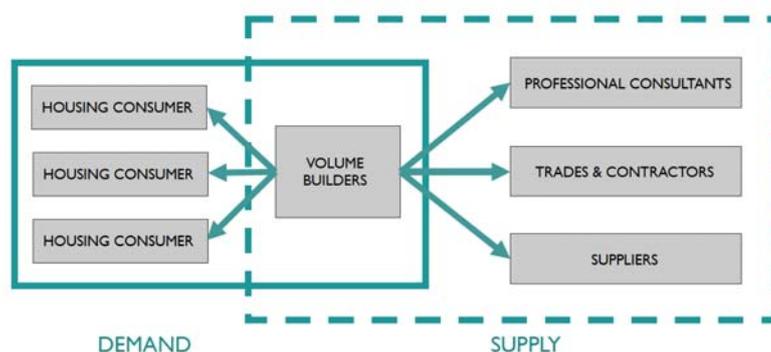


Figure 2: Re-framed model showing the influential demand/supply role of volume home builders (adapted from Warren-Myers & Heywood, 2018, Figure 1.)

Volume home builders evidently have the power and potential to drive change in the housing industry. But from an energy efficiency perspective, this potential remains untapped.

Communicating energy efficiency in volume built housing

Recent studies of Australian volume home building organisations suggest that sustainability initiatives such as energy efficiency are currently not well promoted or prioritised by the sector. Warren-Myers and McRae (2017) examined the websites of the HIA top 100 volume builders (2014/15), and found that 70% had no information about sustainability at all, and only 10% provided a high level of detailed, quality information. Only 6% provided sustainability information that was highly visible and easy to find, and only 5% featured a high level of educational content, helping to explain the lifestyle or cost benefits of their features. In a companion study, Warren-Myers, McRae and Heywood (2017) investigated the provision of sustainability features in the standard inclusions of new homes from the same top 100 builders. As with many studies regarding residential sustainability, the majority of sustainability features they considered related to operational energy efficiency: building features such as insulation and double glazing, systems for heating, cooling and hot water, and disclosure of house energy performance ratings. Inclusions were mixed, with insulation the only sustainability feature mentioned by more than 50% of builders. A key finding was that many builders did not mention the house energy performance rating at all, and only 11 out of the 78 examined Standard Inclusions lists noted that the house energy rating (or equivalent benchmark) was a regulatory requirement.

A lack of prominent, informative and trustworthy information regarding energy efficiency is problematic, as inexperienced housing consumers – often experiencing the house building process for the first time – look to industry experts such as volume home builders for guidance on their housing options (Warren-Myers & Heywood 2018). Clear communication of the features and benefits of energy efficient housing is critical if widespread uptake within Australia’s new housing market is sought.

Studies of UK house builders revealed numerous institutional barriers to adopting greater residential energy efficiency (Heffernan et al 2015; Osmani & O’Reilly 2009; Williams & Dair 2007), many of which apply in an Australian context. Notable amongst these were a range of barriers related to the communication of energy efficiency. These included a lack of clear definition and comprehension of energy efficiency targets, and the varying degrees of awareness, knowledge and interest in energy efficient housing strategies held by both housing

industry professionals and homebuyers. Such findings indicate that the way energy efficiency is understood and articulated by industry stakeholders plays a significant role in its potential adoption in the mainstream housing market.

The energy efficiency ‘conversation’

This research uses the ‘conversation’ as a device and means of exploring the way individuals and organisations understand and articulate energy efficiency in new housing. The conversation in academia is well articulated through an extensive body of research, for example regarding policy and regulatory settings, and approaches for greater consumer engagement. But the energy efficiency conversation within the mainstream housing industry is not well examined.

In particular, this study is interested in the public energy efficiency conversation between volume home builders and their potential homebuyers, as expressed through the medium of organisational websites (refer Figure 3 below).

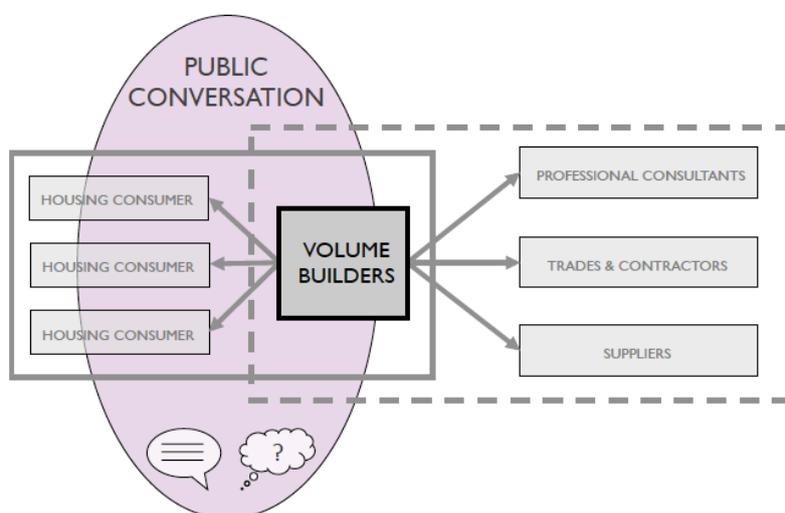


Figure 3: Focus of the study: the energy efficiency conversation between volume home builders and potential homebuyers (adapted from Warren-Myers & Heywood, 2018, Figure 1.)

Websites, along with display homes and media advertisements, are one of the primary mediums volume home building organisations use for communicating with potential homebuyers (Dalton et al, 2013). They represent the curated public ‘face’ of each organisation, in an easily accessible data format. By examining the type of language used to describe and promote the various housing products and options on offer, some insight can be gained regarding the ways in which energy efficiency is understood and prioritised by the volume home building sector, and the degree to which these organisations have determined such housing appeals to their potential homebuyers. In this way, the public ‘conversation’ captured in organisational websites provides a small portal into the internal conversations being had within the volume home building organisations themselves. By establishing an evidence base for the current energy efficiency conversation in the volume home building sector, opportunities for a more productive conversation can be identified, with the ultimate objective to facilitate the mainstreaming of higher energy efficiency performance in new housing.

RESEARCH APPROACH

This research investigated the language and concepts used by volume home builders to describe and promote the housing products offered on their organisational websites, considered the ways in which this communication related to energy efficiency. To do this, the research utilised web content analysis techniques for examining the selected websites. Content analysis is an established technique for the systematic and replicable examination of communication content (Holsti 1969; Krippendorff 1980). It is particularly useful for identifying patterns and trends within the examined documents (Stemler 2001), making this approach compatible with the research aims. Content analysis was advantageous for this study because it is an unobtrusive technique for exploring the artefact of communication directly (such as website content), rather than the contributing individual (Krippendorff 1980).

Some adaptation of traditional content analysis techniques is required to ensure valid application to, and meaningful analysis of, web-based communication media (Bryman 2016; Herring 2010; Kim & Kuljis 2010; McMillan 2000). A key challenge of website content analysis is defining the boundaries of what data is to be analysed (Stemler 2001), due to the potential variety of website structures and content between each organisation. To address this, a preliminary examination of each website was undertaken to determine the most relevant and comparable web pages and content for analysis, while also allowing for capture of notable products and information specific to any one organisation. Web-based content is also highly dynamic, necessitating rapid collection of data, and clear articulation of the data collection time period (McMillan 2000). Accordingly, data for this study was collected within a nominated time period (September 2018) and stored offline for later access and analysis.

The subject of this research is major volume home building organisations, as identified by the HIA's annual publication of the largest 100 residential building companies in Australia (HIAE 2018). The study is focused on Victorian-based volume home builders as representative of Australia – by nature, many volume home building organisations operate across multiple states or nationally (HIAE 2018). This paper reports on the initial findings of the pilot study, which sets the frameworks for future research that will expand to a full study, sampling the top 20 Victorian detached home builders from the HIA's annual Top 100 list (HIAE 2018).

For the purposes of the preliminary review presented here, the websites of four Victorian volume home building organisations were selected from this eventual list of 20. All four organisations are headquartered in Victoria, however only one of the four operates solely in Victoria; the other three operate across multiple states. The four selected organisations also range in scale, with the largest builder commencing over 4000 detached dwellings in 2017/18, and the smallest commencing less than 300.

The chosen web pages and content for analysis included: the 'home' or landing page, the 'about' or 'why choose us' page, descriptions of major housing product ranges and options, and the list of standard inclusions. Websites were also explored for any specific product descriptions or information / resource pages relating to energy efficiency, including use of a search function if available.

In addition to establishing the unit of analysis (i.e. the most relevant web content for collection), a key objective of the preliminary review was to identify and trial preliminary codes and categories for analysis, that would inform and improve the design of the eventual full study. To this end, an open and emergent coding strategy was employed, allowing

notable thematic, conceptual and linguistic interpretations to be drawn from the collected data (Altheide & Schneider, 2013; Charmaz 2008; Stemler 2001). As compelling themes and concepts emerged from various websites, the collected website content was iteratively re-examined, to allow for incorporation of new coding of previously examined websites. This process was guided by the qualitative content analysis procedures recommended by Altheide and Schneider (2013), whereby the process of preliminary review allows for revision of the ultimate coding strategy and approach to analysis, as necessary to suit both the aims of the research, and the emerging characteristics of the selected data.

RESULTS AND DISCUSSION

The preliminary website review examined the type of language used to describe and promote the available housing products to potential homebuyers, and how this language is related, either directly or indirectly, to energy efficiency. Key preliminary findings are summarised and discussed below, including: the predominant use of *home* instead of *house*; three key emerging themes used to describe and promote these homes – *aspiration*, *lifestyle* and *affordability*; and the associations and relationships these terms and themes have – and could have – with energy efficiency. For anonymity, the reviewed volume home building organisations are coded below as VB1 to VB4.

Home versus House

The most notable overarching feature of the language used on the reviewed volume home builder websites is the preference for *home* rather than *house*. Product offerings are nearly never referred to as *houses*; the term *home* dominates the web pages, tempting visitors to browse their various “home designs” (VB1, VB2, VB3), sometimes bundled up as a “home and land” package (VB1, VB2). Websites also encourage potential homebuyers to visit each organisation’s “display homes” (VB1, VB2, VB3, VB4), in order to “explore and experience” (VB1) their designs in a “fully immersive” (VB3) three-dimensional manner, and discuss design customisations and financial options with on-site consultants.

Volume home builders promote their expertise and product offerings as more than simply four walls and a roof: “a [VB1] home is more than a house; it’s a lifestyle” (VB1). Rather than purely rational decision making about a static, impersonal object, the process of buying and building a new home is expressed as an emotional journey and investment. The reviewed websites present homes “to fall in love with” (VB1), that “families adore” (VB2), and that put “smiles on the faces” (VB3) of their customers. *Home* is emphasised not only as an end product, but the result of a process: “because anyone can build a house, at [VB3] it’s how you get there that counts” (VB3). The “journey” (VB1, VB2, VB3) of building a new home can be “inspiring and rewarding” (VB3); it “is serious business – but that doesn’t mean it can’t be fun!” (VB2).

Volume home builders are clearly offering potential homebuyers more than mere *houses* – impassive physical objects in a variety of shapes, sizes and features. Instead, these organisations are in the business of selling a powerful vision of *home*, and all the evocative and appealing ideas that come bundled up with this term (Blunt & Dowling 2006; Mallett 2004).

Notions of Home: Aspiration, Lifestyle and Affordability

The preliminary website review revealed three common recurring themes used to describe and promote the housing products on offer. Each theme invokes a particular notion of *home*

that might appeal to potential homebuyers. These themes can be summarised as concepts of: 1) aspiration and appearance – the outward expression of material success and social standing, to oneself and to others; 2) lifestyle – the accommodation of each household’s spatial and social needs, for both daily routines and occasional events; and 3) affordability and value – the achievement of these lifestyle and aspirational needs without exceeding the household’s financial budget. Each of these themes is specific, but at the same time interrelated and overlapping with the others; in combination, they result in an attractive new home that promises to satisfy numerous concerns of the potential homebuyer. Each of the four websites reviewed utilised language that covered these three themes.

Aspiration

The first dominant theme suggests *home* as the achievement of one’s dreams and the expression of self. These homes offer much more than mere shelter from the elements. The reviewed websites offer potential homebuyers opportunity for achieving their “dream home” (VB1, VB2, VB4) and bringing their “vision” (VB1, VB3) to life – while fulfilling the “great Australian dream” (VB1, VB4) of home ownership. The term *luxury* appears regularly, often bundled up with budgetary concerns, offering the attractive concept of “affordable luxury” (VB1, VB3), or “a little decadence” (VB2) in everyday life. High-end product offerings are described in numerous associated terms, such as “stylish”, “elegant”, “stunning” (VB1), “opulent” and “deluxe” (VB2). The reviewed websites encourage such aspiration, reminding visitors that they “deserve” (VB1) to “indulge” (VB2) in these high standards, and should pursue their “perfect” (VB1, VB3) floorplan and façade “without compromise”. After all, “your home is your castle” (VB2).

As well as promising the desired degree of *luxury*, the reviewed websites entice potential homebuyers by offering a unique expression of self. Website visitors can discover “a home as unique as you, ... [that] bears your mark ... [and] expresses your style” (VB1). By offering a large range of home designs and potential customisations, volume home builders attempt to overcome the somewhat paradoxical notion of achieving a *unique* home within a mass-produced housing model. In addition to satisfying the specific needs of each homebuyer, these homes promise to impress friends and neighbours as well. “Head turning” (VB2) designs offer to deliver “a level of space and style beyond what your neighbours consider possible” (VB1). The resulting dwelling could be “the most elegant home on your street” (VB1), transforming the homebuyer into “the envy of the street” (VB2). In such terms, the home is positioned as the physical embodiment and outward projection of status and success, for the admiration of others.

Lifestyle

The second dominant theme is that of accommodating the specific living needs of each potential homebuyer – be they singles, couples, young families, or multi-generational households. Once again the message is more than simply providing basic space and shelter. The term *lifestyle* is invoked regularly, to capture both the spatial and social requirements for daily routines, as well as exceptional and occasional events and circumstances, both now and into the future.

The reviewed websites promote “practical” (VB1), “flexible” (VB1, VB2) and “versatile” (VB4) designs that will satisfy a range of lifestyle “needs” (VB2, VB4) and “aspirations” (VB1). The promise is one of balance, between varying requirements in space and time: designs that accommodate the “complex and evolving” (VB1) needs of each family, while

providing varying degrees of privacy and interaction that allow occupants to “live it up or simply unwind” (VB1). It is about the rhythms of “everyday living” (VB2) as well as accommodating and “entertain[ing]” (VB1, VB4) occasional visitors and guests.

A strong underlying message is that buying or building a *new* home makes this possible, overcoming the flaws and limitations of previous and existing houses. Selected and customised to suit each household, a “contemporary” (VB1, VB2, VB3), “modern” (VB1, VB3, VB4) and “innovative” (VB1, VB2) home promises the degree of “space” (VB1, VB4), “comfort” (VB1, VB2, VB4) and “liveability” (VB1) required to satisfy all lifestyle possibilities. Similarly to the *aspiration* theme above, the reviewed websites suggest that little compromise is required. Within the large range of available floor plans, inclusions and upgrade options, a home can be found to match any combination of functional and financial requirements – a home to suit every “lifestyle and budget” (VB2, VB4).

Affordability

The third dominant theme is that of being able to afford the desired *aspirational* features and functional *lifestyle* requirements, with whatever funds are available to each potential homebuyer. The recurring concept here is the potential homebuyer’s purchasing *budget*, whether large or small. The reviewed websites offer a range of homes to “cover all budgets” (VB1) – and as stated above – “to suit every “lifestyle and budget” (VB2, VB4). Volume built housing is promoted as “exceptional value for money” (VB3), offering competitive pricing “with no detriment to quality” (VB4).

Housing product ranges are often divided into two or three categories or *collections*, with house designs typically varying in price, scale and inclusions. Whether tailored for first home buyers on a limited budget, or appealing to more experienced homebuyers with greater funds to spend, collection titles suggest there is a suitable and affordable option for everyone. Entry-level ranges such as “Freedom” (VB1) and “Essence” (VB3) imply that important basics are included, without expensive or superfluous extras. By comparison, high-end ranges have titles such as “Signature” (VB1), “Reserve” (VB3) and “Aspire” (VB4), targeting the “astute” (VB1) and “sophisticated” (VB3) purchaser. Such terms suggest a degree of exclusivity, and emphasise the importance of pursuing one’s aspirations.

Regardless of one’s budget, the recurring message is that of no compromise – potential homebuyers “really can have it all” (VB1). Indeed, the notion of affordability is often bundled up with the *aspirational* and *lifestyle* themes described above. *Affordability* is linked to *aspiration* in the recurring concept of “affordable luxury” (VB1, VB3), with the reviewed websites offering homes as “grand or economical as you please ... making your budget go further than you may have dared dream” (VB1). A balance can be struck between visual appeal and budget: potential homebuyers can explore product ranges where “stylish design meets outstanding affordability” (VB1), and eventually select “a super stylish home without the daunting price tag” (VB2). Desired *lifestyles* are also affordable, with opportunity to have “more home ... [and a]... bigger lifestyle for less” (VB1). Affordable price tags and the concept of *less* are presumably measured against perceptions of high cost for custom-designed and bespoke-built homes – but could also be interpreted as competition within the volume home building industry itself.

Running concurrently throughout these three dominant themes – *aspiration*, *lifestyle* and *affordability* – is the strong underlying message that one’s dreams can be achieved, and the household’s various lifestyle needs met, without overstepping the household budget – and

without the need to compromise on any of these ideals. This seductive notion, no doubt highly attractive to many potential homebuyers, is best encapsulated in the following quote:

“We want to sell you a home for the right reasons. Because the home suits your needs perfectly, without compromise, without breaking your budget. Because you simply fall in love with the design, and what it will mean for your lifestyle and those you love.” (VBI)

Associations with Energy Efficiency

At first glance, the dominant language used to describe and promote the housing products on the reviewed websites is not strongly associated with ideas of energy efficiency. Closer inspection reveals that the themes commonly used to promote the available houses – the ideal of *home*, and its notions of *aspiration*, *lifestyle* and *affordability* – could lend themselves quite well to the various features and benefits of energy efficiency housing. But currently this potential remains largely unexploited.

Home is an engaging concept, and for this reason well utilised within the home building and real estate industries. Beyond a description of the house and its physical characteristics – its form, construction and technology – *home* is a more holistic socio-technical concept that acknowledges the interactions between people and buildings (Ellsworth-Krebs et al 2015; Reid & Houston 2013; Shove & Walker 2014). Indeed, failure to account for the social dimension of household energy use has been implicated as a contributing factor in the commonly-reported gap between designed and as-built energy performance (Heesen & Madlener 2018; van den Brom et al 2018). In the reviewed websites, *home* is not explicitly linked to concepts of energy efficiency. However, its widespread use is potentially fertile ground for capturing the public imagination on energy efficiency in new housing. By connecting the concept of *home* with energy efficiency – by talking about how people live in their homes, their different expectations and routines around household energy use, and the broader implications of these – a modest conversational shift could help to demystify energy efficiency for a much wider audience.

In the reviewed websites, energy efficiency is not promoted as an *aspirational* ideal, and it is somewhat difficult to connect the notion of energy efficiency with aspirations of *luxury*, *decadence* and *opulence*, given that *efficiency* implies doing more with less, without excess or waste. However the themes of *lifestyle* and *affordability* could be related more easily with energy efficiency benefits, particularly if a longer-term perspective was adopted. Current emphasis in the reviewed websites is very much on promoting the immediate benefits of the available housing products (i.e. a home of the desired size, layout and appearance, at an affordable price), rather than on-going operational concerns such as running costs and occupant health and wellbeing. While *comfort* is mentioned by most builders, it is commonly in relation to the professed ability of homes to adapt to changing social and spatial requirements over time (such as privacy, interaction and the accommodation of guests or additional family members) rather than specific energy efficiency benefits such as thermal comfort. *Affordability* and *budget* are frequently mentioned by all builders, but are essentially used to emphasise upfront cost, i.e. being able to afford to buy the home in the first instance. There is little suggestion of affordability in the context of on-going operational costs that may be faced by the household, such as energy bills.

The preliminary website review did uncover some exceptions to these examples; instances where the features and benefits of energy efficiency were explicitly articulated. But these infrequent examples did not feature on the most prominent web pages, such as Home pages

or descriptions of major product ranges. Instead, they were tucked away, a little harder to find, on 'About' pages, blog posts, downloadable standard inclusion documents, and in one instance a specific product description.

The standard inclusions of one product range stated that: "A 6 star energy rating ensures even greater comfort, reduced greenhouse gas emissions and savings on your utility bills" (VB1). A blog post from the same organisation included "energy efficiency and sustainability" as number 10 in a list of top 10 considerations for purchasing a new home, declaring:

With increasing energy costs, and environmental concerns on the rise, this is one area you want to consider very carefully ... Homes that leave a lighter ecological footprint are not just cost effective, but also more comfortable to live in. (VB1)

But this apparently important consideration was not mentioned throughout the most prominent pages of their website.

VB4 provided the most direct and comprehensive communication of potential energy efficiency benefits, describing a range of environmental, social and financial outcomes for their energy efficient housing product and carbon neutral display home:

Small carbon footprint, big living options! An affordable, energy efficient home that drastically lowers your energy bills, promotes better health and wellbeing for your family with reduced greenhouse gas emissions, and enhanced natural comfort in your home throughout all seasons. Build your family a sustainable future that doesn't cost the earth! (VB4)

However, as a stand-alone product within a large range of other conventional houses, energy efficiency is flagged as exceptional, rather than the standard.

CONCLUSION

The objective of this research is to establish an evidence base of current volume home building industry practice, with regards to the language used to describe and promote new housing products to potential homebuyers, and the relationship of this language and practice to energy efficiency. This preliminary review has revealed that the evocative concept of *home* predominates, and that notions of *aspiration*, *lifestyle* and *affordability* are utilised in order to attract potential homebuyers to each organisation's products. These themes are specific but also interrelated, and a seductive message of 'no compromise' is woven throughout website communications. The plentiful products and options available on each volume home builder's website guarantees that the 'perfect' solution for each household can be found, no matter what combination of taste, budget and spatial requirements they may have.

In addition to identifying the common themes and concepts used across the reviewed websites, the preliminary analysis has identified that this dominant language is not explicitly linked to the features and benefits of energy efficiency. In the occasional cases where energy efficiency features and benefits are clearly articulated, their infrequency and relative isolation on the reviewed websites marks energy efficiency out as the exception rather than the norm in volume built housing. These preliminary results suggest that energy efficiency is not a priority concern for volume home builders, at least when it comes to communication with potential homebuyers via their websites.

However, there is opportunity to build associations between energy efficiency and the powerful concept of *home*, in order to better capture the public imagination on this matter,

and recognise the crucial interactions between people and buildings on which energy efficiency relies. Similarly, there is opportunity to incorporate notions of energy efficiency within the established themes of *aspiration*, *lifestyle* and *affordability*, particularly if a longer-term perspective is embraced. The ongoing benefits of energy efficient housing, such as improved occupant health and comfort, and reduced cost of living, could be incorporated with more immediate concerns such as lifestyle needs and upfront purchase affordability. By better articulating the social, financial and environmental benefits across the life cycle of each home – by responding to both short- and long-term concerns of potential homebuyers – there is opportunity to improve both literacy and appeal regarding energy efficient homes in the mainstream housing market.

The small number of websites reviewed in this study is acknowledged as a limitation, but the intention of this paper is not to draw extensive conclusions from the data, but rather to inform and facilitate successful execution of the larger next stage of the research. In this manner, the preliminary review has been useful for acknowledging the commonalities and diversity between various volume home builder websites, identifying the relevant web pages and content for data collection, and helping to determine useful and emergent codes and categories for analysis of the selected website content.

The establishment of an evidence base of current industry practice is an important first step in advancing the mainstreaming of higher energy efficiency performance in new housing. Without acknowledging these well-formed and established industry practices, efforts to improve energy efficiency outcomes within the sector are likely to meet with resistance. It is hoped this preliminary review, and the larger study to follow, can make a meaningful contribution to knowledge regarding this influential sector and the latent potential it holds regarding the energy efficiency of new housing.

REFERENCES

- Altheide, D.L. & Schneider, C.J. (2013). *Qualitative Media Analysis* (2nd ed.), Thousand Oaks, CA: Sage.
- Australian Sustainable Built Environment Council (ASBEC), (2016). *Low carbon high performance: How buildings can make a major contribution to Australia's emissions and productivity goals*. Canberra, Australia.
- Australian Sustainable Built Environment Council (ASBEC), (2018). *The Bottom Line: The household impacts of delaying improved energy requirements in the Building Code*, Interim report for the Building Code Energy Performance Trajectory Project, produced with Climate Works Australia. Canberra, Australia.
- Blunt, A. & Dowling, R. (2006). *Home*, New York, NY : Routledge
- Bryman, A. (2016). *Social Research Methods* (5th ed.). Oxford, UK: Oxford University Press
- Charmaz, K. (2008). Grounded Theory as an Emergent Method, in S.N. Hesse-Biber & P. Leavy (eds), *Handbook of Emergent Methods*, New York: The Guildford Press, pp. 155-172
- Crabtree, L. & Hes, D. (2009). Sustainability Uptake on Housing in Metropolitan Australia: An Institutional Problem, Not a Technological One, *Housing Studies*. 24, 2, 203-224
- Dalton, T., Hurley, J., Gharraie, E., Wakefield, R. & Horne, R. (2013). *Australian suburban house building: industry organisation, practices and constraints*. AHURI Final Report No.213. Melbourne: Australian Housing and Urban Research Institute.
- Dowling, R. (2005). Residential Building in Australia, 1993–2003. *Urban Policy and Research*, 23(4), pp. 447-64.
- Ellsworth-Krebs, K., Reid, L. A. & Hunter, C. J. (2015). Home-ing in on domestic energy research: 'house', 'home' and the importance of ontology, *Energy Research and Social Science*, 6, p.p. 100-108
- Enker, R.A. & Morrison, G.M. (2017). Analysis of the transition effects of building codes and regulations on the emergence of a low carbon residential building sector, *Energy and Buildings* 156, pp. 40–50
- Heffernan, E., Pan, W., Liang, X. & de Wilde, P. (2015). Zero carbon homes : Perceptions from the UK construction industry, *Energy Policy*, 79, pp. 23–36
- Herring, S.C. (2010). Web Content Analysis: Expanding the Paradigm. In: J. Hunsinger, L. Klastrup and M. Allen eds. *International Handbook of Internet Research*. Dordrecht: Springer Netherlands. pp. 233-49.
- Heesen, F. & Madlener, R. (2018). Consumer behavior in energy-efficient homes: The limited merits of energy performance ratings as benchmarks. *Energy & Buildings*, 172, pp. 405–413

TWENTY FIFTH ANNUAL PACIFIC-RIM REAL ESTATE SOCIETY CONFERENCE

MELBOURNE, AUSTRALIA, 14-16 JANUARY 2019

- Holsti, Ole R. (1969). *Content analysis for the social sciences and humanities*. Philippines: Addison-Wesley Pub. Co.
- Horne, R. & Hayles, C. (2008). Towards global benchmarking for sustainable homes: an international comparison of the energy performance of housing. *Journal of Housing and the Built Environment* 23(2), pp. 119–130
- Housing Industry Association Economics (HIAE), (2018). *HIA-Colorbond Steel Housing 100 2017/18*. Campbell, ACT: Housing Industry Association Economics.
- Kim, I. & Kuljis, J. (2010). Applying Content Analysis to Web-based Content. *Journal of Computing and Information Technology*, 18(4), pp. 369-375.
- Krippendorff, K. (1980). *Content Analysis: An Introduction to Its Methodology*. Newbury Park, CA: Sage.
- Mallett, S. (2004). Understanding home: a critical review of the literature. *Sociological Review*, 52(1), pp. 62-89
- McMillan, S.J. (2000). The microscope and the moving target: The challenge of applying content analysis to the World Wide Web. *Journalism & Mass Communication Quarterly*, 77(1), pp. 80-98.
- Moore, T., Horne, R. & Morrissey, J. (2014). Zero emission housing: policy development in Australia and comparisons with the EU, UK, USA and California, *Environmental Innovation and Societal Transitions*, 11, 25-45
- Osmani, M. & O'Reilly, A. (2009). Feasibility of zero carbon homes in England by 2016: A house builder's perspective, *Building and Environment*, 44, pp. 1917–1924
- Pitt & Sherry (with Swinburne University of Technology), 2014, *National Energy Efficiency Building Project*, report commissioned by the South Australian Department of State Development on behalf of the Australian Government and all States and Territories
- Reid, L.A. & Houston, D. (2013). Low Carbon Housing: A 'Green' Wolf in Sheep's Clothing? *Housing Studies*, 28(1), pp. 1-9
- Shove, E. & Walker, G. (2014). What is Energy for? Social Practice and Energy Demand. *Theory, Culture & Society*, 31(5) pp. 41-58
- Stemler, S. (2001). An overview of Content Analysis. *Practical Assessment, Research & Evaluation*, 7(17), pp. 1-6.
- van den Brom, P., Meijer, A. & Visscher, H. (2018) Performance gaps in energy consumption: household groups and building characteristics, *Building Research & Information*, 46(1), pp. 54-70
- Wang, X., Chen, D., Ren, Z. (2010). Assessment of climate change impact on residential building heating and cooling energy requirement in Australia. *Building and Environment*, 45(7), pp. 1663–1682
- Warren-Myers, G. and Heywood, C. (2016). Investigating demand-side stakeholders' ability to mainstream sustainability in residential property, *Pacific Rim Property Journal*, 22(1), pp. 59-75.
- Warren-Myers, G. & Heywood, C. (2018). A new demand-supply model to enable sustainability in new Australian housing, *Sustainability*, 10, pp. 1-18
- Warren-Myers, G. & McRae, E. (2017). Volume Home Building: The provision of sustainability information for new homebuyers, *Construction Economics & Building*, 17(2). pp. 24-40
- Warren-Myers, G., McRae, E. & Heywood, C. (2017). Volume Home Building: Sustainability inclusions for new homes, *Proceedings of the Pacific Rim Real Estate Society Conference 2017*, Sydney, Australia, 15-18 January 2017
- Williams, K. and Dair, C. (2007). What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments. *Sustainable Development*, 15(3), pp. 135-47