Article
The Evolving Nature (or Not) of Sustainability Communications in New Home Building in Australia

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Abstract: Research has demonstrated that sustainable homes can help mitigate the impact of climate change and assist with meeting international climate targets. However, market implementation has been slow due to limited regulatory regimes and poor engagement by home builders across Australia. In Australia, homes are commonly built by ‘volume home builders’ (VHBs), who are defined as home builders who build large quantities of homes, generally from a standardised set of plans and formats. The Housing Institute of Australia (HIA) ranks the largest volume home builders annually in their top 100 home builders report. To evaluate the VHBs’ approach to communicating sustainability in their home products, this study used content analysis techniques to investigate their use of online communication channels (websites, blogs and social media accounts). This study examined 23 New South Wales VHBs in 2020 and 2022 and compared them to a study of Australia’s top 100 VHBs in 2016. The findings demonstrated a significant increase in the level of sustainability communications in their online channels between 2016 and 2020 but showed a decrease between 2020 and 2022. Overall, the level of detail, the type of information and the educational quality improved from 2016 to 2022. However, only two VHBs provided a high level of sustainability information. The most recent results illustrated that VHBs have moved away from having sustainability links and terminology on their websites compared to the 2020 baseline. This study demonstrated that leading Australian VHBs have an enormous opportunity to improve their sustainability messaging and suggested recommendations for enhancing communication capabilities and providing more meaningful sustainability information.

Keywords: residential construction; detached dwellings; volume home builders; home builders; sustainability; Australia

1. Introduction

Australia needs an additional three million homes over the next two decades to house its growing population [1]. Single-family detached homes are Australia’s most common type of housing, with detached dwellings comprising almost seven million Australian households—nearly three times as many as medium-density and high-density apartments combined [2]. A significant portion of detached dwellings are built by volume home builders (VHBs) in Australia [3]. VHBs are large companies that offer their customers a fixed range of designs that are often more affordable (compared with an architect-designed home) due to the use of bulk building materials. Their designs often come as a standard package, where the customer can select additional upgrades and extras at additional costs. The Housing Institute of Australia (HIA), on an annual basis, provides a publication on the top 100 home builders in Australia by the volume of houses built.

The volume housing sector is shown to have a focus on basic home design packages and optional inclusions, which severely lack sustainability credentials [4,5]. One in five houses do not meet the minimum energy efficiency building standards [6], and four out of five homes are only built to minimum standards [7], despite there being relatively direct energy and water efficiency objectives integrated into the National Construction
Code, which defines the minimum standards for building homes in Australia. Australian housing policy was considered to be lagging behind other countries [8]. The release of the National Construction Code 2022 showed that the minimum standards for residential energy efficiency were increased from six stars to seven stars [9], and 2023 also saw the release of the Green Star Home Standard from the Green Building Council, providing a reach target and benchmark for the industry and also defining the opportunities of a more sustainable home [10]. These changes are quite recent, and the implications for the market are yet to be fully realised in the market. It is hoped that the introduction of higher minimum energy efficiency standards through the National Construction Code, and the reach target provided with the release of the Green Star Home Standard, will help to generate greater demand from consumers and enable home builders to provide supply opportunities. However, to date, from the consumer perspective, whilst a more sustainable home would achieve a better quality home and reduce operational costs, going beyond code minimum requirements in new homes is presently limited. Whilst there are substantial information available and design guides on sustainability and energy efficiency options and features for new homes, VHBs seem reluctant to include these. It would seem that the key barriers affecting the uptake is the VHBs’ lack of energy-efficient options in their home designs and the lack of available information provided to potential customers [11,12]. A recent study by Warren-Myers and McRae [12] examined the websites of Australia’s Home Industry Association’s top 100 VHBs. The study found a major lack of sustainability information, which may have contributed to consumers’ disengagement with the sustainability features in new homes. In addition, regarding the types of inclusions and sustainability offerings provided by these top 100 VHBs, the study found very limited information about sustainability and energy efficiency in the standard inclusions for new homes.

This study builds upon previous studies that have examined sustainability communication in the online environment and provides a detailed review of this sustainability communication barrier. The key objective of this study is to compare the current communication channels and approaches of the top 23 VHBs in New South Wales (NSW), one of the most populous states in Australia, regarding the communication of sustainability and energy efficiency information. This study investigates the online communication channels of these VHBs, namely, their websites, blogs and social media accounts (e.g., Facebook, Instagram, Pinterest, Twitter, YouTube and LinkedIn).

This paper is structured as follows: First, the background information is presented to provide some context about VHBs and their sustainability. This is followed by the research approach, which describes the research questions and the data collection and analysis approaches. The results and discussion are provided, including the Likert scale results, and the results for 2020 and 2022 are compared to those results for 2016 from Warren-Myers and McRae [12]. The final section concludes the paper by summarising the report’s objectives, findings and future opportunities for VHBs.

2. Background

This section will provide context for the Australian new housing market, consumer demands for sustainable homes and the barriers to their uptake. This section concludes with this study’s research objectives.

2.1. The Australian New Housing Market

Australia is facing a significant housing demand crisis. Due to a combination of factors, such as population growth, increased immigration, increased aging population and increased single-person households, Australia will have a housing shortfall of 106,300 by 2027 [13]. Almost 120,000 detached homes and 66,000 medium-density units will be added each year to the housing stock to address this housing demand [14]. Sydney in NSW—the most populous state in Australia—will need 1 million new homes by 2041, when
its population is expected to reach 7 million [15]. The government estimates that Sydney will need 40,000 new homes each year for the next 20 years to meet that growth (ibid).

A significant portion of these new homes will be built by VHBs, who dominate the Australian residential market, with an estimated market share of 35% in 2020 [16]. VHBs are large building companies that construct hundreds of homes per year from a set catalogue of designs. This improves their affordability compared to custom or architect-designed dwellings due to the standardised designs and maximised efficiency of materials and trades. However, these VHB homes have been found to lack sustainability credentials [17]. Studies, such as Warren-Myers et al. [18], Worrall [19] and McNabb [20], have found that VHBs often provide misleading information about the energy efficiency performance of their homes and have poor adoption of sustainability principles in their design and construction. A barrier affecting the uptake of more sustainable designs and energy-efficient VHB dwellings is the lack of communication about sustainability with potential customers [21].

### 2.2. Consumer Demand for Sustainable Homes

There has been an increasing awareness among consumers about the need for an energy-efficient house, with a recent study stating that after location and price, issues pertaining to sustainability were ranked third in importance to homeowners [22]. A decade of research has identified that new home buyers prefer energy-efficient homes [23,24]. There is a need to address the lack of information available to consumers to encourage Australians to adopt a ‘greener’ construction approach [11] and examine a range of policy options and standards in addition to mandatory and voluntary approaches in the Australian residential sector [5,8]. However, even with this growing demand, VHBs have little motivation to sell or provide information about sustainability features because of their perception that demand is low [21]. This perceived low demand is further fuelled by a lack of education and communication of sustainability features between VHBs and their customers, with customers not understanding the benefits of an energy-efficient design and how it can benefit them [21], notwithstanding there being useful references, like Your Home, and articles that guide home buyers in having discussions with VHBs [25].

Despite this perception, demand exists. Recently, projects like Nightingale Housing (Melbourne, Australia), which are emerging as new innovative forms of sustainable housing models, are highlighting the pent-up demand for more sustainable options [26,27]. Further, the demand for more sustainable housing has been demonstrated by Judge et al. [28] and Shoostarian et al. [29] using Theory of Planned Behaviour frameworks evaluating consumers’ desire for more sustainable homes. Demand has also been shown in the market pricing of sustainability and energy-efficient features in homes; this was demonstrated in a study by Fuerst and Warren-Myers [30], which indicated that the market would respond (through the pricing of rent or properties) in their decision making when clear sustainability or energy efficiency information is provided. This was supported by the results from the study by Tapsuwan et al. [31], who found, through a survey of 300 residents in Canberra (the same location studied by Fuerst and Warren-Myers [30]), that there was significant desirability for a high energy efficiency rating, energy-saving designs for good temperature control, solar panels, water tanks and technology to maximise energy and water efficiencies. It is evident in the Australian housing market that there is a demand for more sustainable and energy-efficient homes, and builders should be responding to this demand.

### 2.3. Barriers

Consumers are influenced by the information that is available to them and by the people they interact with. Recent studies by Hurst and Halvitigala [32], Wong et al. [33] and Wong et al. [34] examined experts in the field (real estate agents, valuers and financiers) and their promotion or acknowledgement of sustainability and energy efficiency, and found that in most cases, the information was limited and often demonstrated an inadequate understanding of sustainability and energy efficiency features in housing altogether. Real
estate professionals lack knowledge of sustainability despite the availability of further training or customer interest [32,35,36].

Further, the residential construction sector is plagued by many challenges in the face of innovative changes like incorporating sustainability and energy efficiency initiatives into building practices; there are limits to what professional education programs can achieve [37]. This is likely further enhanced by, or is perhaps reflective of, VHBs’ lack of sustainability information offered on their accessible platforms, such as their websites, which have been misleading in some cases [18]. Consequently, consumers do not act rationally or make decisions that maximise their dwelling’s environmental and financial wellbeing [38]. The lack of available information is considered a significant barrier to the market operating efficiently and the evolution of the sustainable built environment [11,38]. Several studies have clearly stated that VHBs do not provide enough information about sustainable inclusions, sustainable data or energy-efficient resources to their customers [11,38].

2.4. Study Objectives

This study provides a well-timed investigation of VHBs’ online communication about sustainability due to the imminent changes that are yet to take place. This study’s findings build upon previous studies, such as Warren-Myers and McRae [12] and Warren-Myers et al. [18]. Further, it develops a baseline understanding of the current communication channels and approaches of VHBs before the raft of market changes takes effect.

Few studies have focused on sustainability communication between VHBs and customers, especially from an online communication perspective. There is a need for a better understanding of VHBs’ roles and their promotion of sustainable homes and features, especially with the Australian market being on the cusp of the following changes:

- Most states and territories will require new homes built after October 2023 to meet a minimum energy efficiency rating of seven stars in the Nationwide House Energy Rating Scheme (NatHERS) under changes to the National Construction Code.
- The Green Star Homes Standard will be introduced, providing a best practice tool.
- NSW and Victorian State governments will implement a series of projects to increase consumer and building industry awareness of sustainability and energy efficiency.

This research examines and provides a baseline of the top 20 VHBs in addition to 3 VHBs identified as having key sustainability programs in NSW (Australia’s oldest state) regarding the communication of sustainability and energy efficiency information. This research provides a current assessment of common gaps and a roadmap for future sustainable communication opportunities for VHBs. Further research can then utilise this baseline to understand the implications of the new home market as the increased minimum energy efficiency standards roll out, and as the Green Star Home Standard is introduced and gains traction.

3. Materials and Methods

To investigate the current level of online sustainability communication by VHBs, this research utilised and adapted the approach used by Warren-Myers and McRae [12] to collect and document data from VHBs’ websites and then conducted an analysis of the level and quality of communication of sustainability and energy efficiency information. This process is outlined in Figure 1. Additional online platforms, primarily social media and blogs, were also included in this study, as it was found that these social media platforms play significant roles in communicating with consumers, particularly around the advertising of new project types and sales, ads and promotions, and there is a continuing need for expertise in this area [39].
A combination of quantitative and qualitative techniques, comprising content and web content analyses, were used to understand sustainability and energy efficiency content [40]. Qualitative content and quantitative analysis were undertaken using thematic coding techniques. In addition, the quantitative analysis of the content to be compared to previous studies [12] utilised a Likert grading approach. This allowed for quantitative analysis via explicit coding rules. This process focused the research investigation and comprised the following questions:

1. What online platforms do VHBs use to communicate their sustainability offerings to consumers?
2. How visible is sustainability-related communication on VHBs’ online platforms?
3. How detailed is the VHBs’ sustainability messaging on these digital platforms?
4. What keywords do VHBs use in communicating their online sustainability messaging to consumers?
5. What are the key differences in sustainability messaging on VHBs’ online platforms between 2016 and 2022?

This project focused on the top 20 VHBs operating in NSW, as determined by the 2018/2019 HIA report [16], and 3 VHBs that position themselves as sustainable housing providers. The sample of the 23 VHBs all appear in the “Top 100 Australian Home Builders” publication, as defined in the HIA report, meaning the examined sample makes up 23% of the top 100. Twenty-three VHBs were included in the sample in 2020; however, due to the foreclosure of one VHB in 2022, the second period of data collection included only twenty-two VHBs. Where possible, results are compared with the Warren-Myers and McRae [12] analysis of the top 100 VHBs, who’s analysis was conducted in 2016, and results published in 2017.

3.1. Data Collection Approach

A three-tiered data collection approach was used to identify relevant content on websites, blogs and social media platforms relating to sustainability, energy efficiency and net zero energy considerations, information and product offerings (see Figure 1).

The investigation comprised the analysis of websites, blogs and then the relevant social media pages. Keywords included ‘sustainability’, ‘energy’, ‘energy rating’, ‘energy efficiency’, ‘energy efficient’, ‘green’ and ‘net zero energy’.
if so, how often and where. Additional website-related investigations included whether each VHB had a dedicated ‘sustainability’ tab or a dedicated sustainability housing range (specific set of plans or housing types offered that have sustainability or energy-efficient features).

3.2. Data Analysis Approach

The analysis of the sustainability information on VHBs’ websites comprised a combination of qualitative and quantitative analyses:

- Thematic theoretical analysis techniques, as described by Braun and Clarke [41];
- Media content analysis techniques, in which a coding system was created to determine the likely effect of the text [12,18,42];
- Scaling of observed factors, from 0 to 5, for weighting relevance [43,44], as used by Warren-Myers and McRae [12].

The websites, blogs and social media dataset was analysed using both qualitative and quantitative analyses and advanced analyses with NVivo [45]. Text and images were downloaded from the VHBs’ websites, blogs and social media platforms and then imported or entered into NVivo. Next, the researchers created thematic nodes for the software to use when coding and analysing the text. An example of such a thematic node was to analyse all text from VHBs’ websites and determine how often the term ‘sustainability’ was used. The software then computed the frequency of the total number of appearances of the word. The analysis was performed by one researcher and then verified by the second.

A further analysis occurred with the review of the collected data to understand the following aspects:

1. The visibility of sustainability messaging and product offerings;
2. The extent of sustainability information;
3. The depth and detail of sustainability information provided;
4. The emotive language used to demonstrate the benefit of features;
5. The education quality of sustainability information.

These aspects were coded using a Likert scale, as previously used in Warren-Myers and McRae [12], to allow for comparison. Traditionally, a Likert scale is used in surveys and presents a set number of options, usually on a 5- or 7-point scale. The Likert scales created and used to code the content are described in Table 1; these were primarily used to aid in analysing the sustainability content of the VHBs’ websites and social media. This research used a 6-point Likert scale with scores ranging from 0 to 5, where 0 represented none, and 5 represented very-high-level detail or detail that was very easy to find. For each VHB website, the researchers allocated a rating based on their experience on the VHBs’ websites. This process comprised each researcher reviewing the website and forming their judgement, which was then reconciled in further discussion between the researchers. The lead author was involved in both the current and previous Warren-Myers and McRae [12] study, which provides detail and rationale for the Likert scale coding framework.
Table 1. Likert scale and aspects for investigation.

<table>
<thead>
<tr>
<th>Likert Scale</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility of content</td>
<td>None</td>
<td>Very difficult to find—extensive searching required</td>
<td>Difficult to find—significant searching required</td>
<td>Some searching required</td>
<td>Easy to find—found in second-level search</td>
<td>Very easy to find—tab with sustainability on the main page</td>
</tr>
<tr>
<td>Extent of information</td>
<td>None</td>
<td>Minimal—mentioned on a page</td>
<td>Some—paragraphs</td>
<td>Moderate—dedicated page and descriptions</td>
<td>High level—multiple dedicated pages</td>
<td>Very high level—dedicated tab and pages</td>
</tr>
<tr>
<td>Type of sustainability related information (depth and detail)</td>
<td>None</td>
<td>Very basic</td>
<td>Basic information—i.e., business operations/corporate messaging</td>
<td>Moderate—general description with some detail</td>
<td>Detailed descriptions</td>
<td>Comprehensive detail and discussion</td>
</tr>
<tr>
<td>Use of emotive language to describe sustainability aspects</td>
<td>None</td>
<td>Very basic</td>
<td>Basic information</td>
<td>Moderate—general description with some emotive language</td>
<td>Detailed descriptions—simple details on features and benefit</td>
<td>Comprehensive detail and discussion—clear communication of features and benefits</td>
</tr>
<tr>
<td>Level of sustainability-related educational content</td>
<td>None</td>
<td>Minimal—a reference to energy or water cost savings</td>
<td>Some—statements on energy and water features and cost savings</td>
<td>Moderate—more detailed discussion on energy and water features and cost savings</td>
<td>High level—extensive discussion and explanation on benefits and savings of features</td>
<td>Very high level—as in high level, plus dedicated pages, videos and links to additional resources</td>
</tr>
</tbody>
</table>

3.3. Limitations

This study’s findings are limited to what the researcher found on the VHBs’ websites and social media platforms at the time of the investigation in 2020 and 2022. Relevant historical posts, particularly on blogs and social media, were included in these analyses; however, it cannot be guaranteed that all data were captured. Online content can change daily or be removed and updated. The comparisons drawn from the previous studies conducted by Warren-Myers and McRae [12] and Warren-Myers [18] are not directly comparable due to the vast differences in sample size—[12] examined the top 100 VHBs in Australia in 2016, and Warren-Myers et al. [18] examined the top 30 VHBs in late 2018 to early 2019. However, the earlier study [12] was compared with results from this study, where relevant. Thus, while comparisons provide insights into how the NSW VHBs compare against the broader Australian market, time and the sample differences limit the inferences that can be made in this context.

4. Results and Discussion

The results are structured as follows. First, the review of the online communication channels is presented; then, the sustainability keyword analysis and sustainability messaging is presented and, finally, the comparison of the 2016, 2020 and 2022 findings is presented.

4.1. Online Communication Channels

The analysis of the different communication formats investigated and used by the VHBs revealed that all of the VHBs had a website and a LinkedIn account (see Figure 2). The social media platforms investigated as part of this research included the VHBs’ blogs
(i.e., a web log of internally authored articles and information, typically found on the main VHB website; 87% of VHBs had one), Facebook, Instagram and LinkedIn (all VHBs had an account on each of these platforms). Twitter, Pinterest and YouTube were less popular, with 65% of VHBs having an account on these platforms.

Figure 2. Comparison of online media presence and communication of sustainability of VHBs in 2020 and 2022.

Figure 2 demonstrates an overview of these results and a comparison of 2020 and 2022 data. There was a decrease in the number of VHBs who used their websites, blogs and Facebook to communicate about sustainability from 2020 to 2022. Further, there was an increase in the use of Instagram, Twitter and Pinterest to communicate about sustainability from 2020 to 2022. The use of LinkedIn and YouTube remained the same.

4.1.1. Websites

As noted in Figure 2, all VHBs had a website, which appeared to be a core consideration in VHBs’ marketing strategies. Typically, on the examined websites, if the consumer wanted to find more information about a particular home, they would need to engage directly with the organisation’s sales staff. For example, many VHBs did not provide an inclusions list and rarely were prices displayed or advised (except when there was a promotional special). In 2020, six VHBs were found to incorporate sustainability into their marketing and design approach; these VHBs usually had a dedicated ‘sustainability’ or ‘energy’ tab or a prominent link on their home page. Between 2020 and 2022, three of the six VHBs deleted these sustainability links. By comparison, the 2016 findings showed poor visibility of sustainability information, with almost 70% of VHBs not using their websites to communicate about sustainability [12]. Only seven VHBs (6%) had sustainability information that could be easily found on their websites [12].

4.1.2. Social Media

Social media has been an increasing element in marketing campaigns, with Facebook, Instagram and LinkedIn being the most popular social media platforms (see Figure 2). Facebook was identified as a key communication tool, with 22 VHBs (96%) having an account. However, a significant decrease in sustainability messaging was observed between 2020 and 2022. LinkedIn continues to be a relatively popular platform; however, this
appeared to be more business-oriented than consumer-oriented, with only four VHBs using it to communicate their sustainability message.

While 15 VHBs continued to have a YouTube account as of 2022, only 2 VHBs used this platform to share a sustainability message. One builder was a leader in sustainability messaging; they had their own sustainability video category on the website, discussing subjects like prefabrication and material use that aligned specifically with their sustainability campaign. The microblogging platform, Twitter, was also not a popular choice for communicating sustainability. Eight of the VHBs chose not to have an account, and only two used it to repost tweets relating to the same sustainability posts shared on Facebook and, sometimes, websites. In general, the predominantly visual platforms of Instagram and Pinterest were not used by the VHBs to communicate their sustainability messages.

4.1.3. Blogs

After websites and Facebook, blogs were the next most common communication channel between the customer and builder, with 11 of the 20 VHBs using it to discuss sustainability in 2020. However, a significant decrease was observed, with this number falling to five in 2022. Blogs were used to communicate the VHBs’ sustainability stance and provide more detail, particularly for those VHBs that had a prominent sustainability campaign on their main website. The builders that did not have a strong sustainability campaign on their website sometimes relied on their blog to communicate their message and provide information. Overall, the analysis found that the ratio of blog posts to sustainability blog posts demonstrated low or non-existent posting about sustainability.

4.2. Keyword Analysis

Figure 3 illustrates the use of sustainability-related keywords by VHBs on their websites and blogs. In general, it could be noted that there was decreased use of these keywords from 2020 to 2022 on websites and blogs. The exceptions to this decrease were ‘sustainability’ (in the blogs), ‘efficient’ (in both websites and blogs), ‘comfort’ and ‘energy efficient (in blogs only).’

![Figure 3](image-url)
However, when examining how prolific the use of the most common sustainability-related keyword in 2020, as shown in Figure 4, ‘sustainability’ saw the most broadscale use based on the number of times it was counted on the main websites of the VHBs. Yet in 2022, the term ‘sustainability’ reduced substantially in terms of the number of times used, whilst the term ‘energy efficiency’ escalated in the number of times used. The next most common terms were ‘energy’ and ‘energy rating’. The term ‘NatHERs’ it appeared was no longer used by VHBs on their websites.

Figure 4. Frequency of keyword use on the main websites of VHBs in 2020 and 2022.

The results are interesting; consumer testing by Nilsson et al. [24] found that the word ‘sustainability’ did not resonate with consumers about new homes, yet ‘energy efficiency’ did. Further, other messaging identified by Nilsson et al. [24] found that the term ‘comfort’ was more effective in influencing consumers’ preferences of housing (albeit attributes like floorplan still commanded the highest preference), and ‘cost saver’ increased consumers’ likelihood of purchasing. In the context of this VHB study, it was found that ‘comfort’ was mentioned 21 times in six VHBs’ websites in 2022 and was mentioned 7 times in six VHBs’ websites in 2022. Further, an alignment between the study by Nilsson et al. [24] and this study was the prominence of ‘costs’, which was mentioned by 11 VHBs’ websites (27 times), and 10 VHBs mentioned costs 71 times in 2020, with a slight decrease observed in 2022. This suggests that VHBs must consider and examine the meaningful language they can utilise to communicate sustainability information effectively to consumers. Short attention-grabbing points like ‘energy efficient’ or ‘reduced costs’ might be useful to provide engagement in forums like Twitter, Facebook and perhaps Instagram, while more meaningful and longer narrative-type discussions of the benefits and educational content could be presented in blogs and websites.

4.3. Sustainability Messaging

An analysis of the Likert scale responses (see Table 1 for topics and response options) provides a quantitative snapshot of the qualitative analysis of the VHBs’ websites. The analysed themes are described in more detail below, including the visibility of sustainability messaging, the extent of sustainability information and the educational quality of sustainability information. The Likert scale results from 2016 were compared against the more recent 2020 and 2022 findings.

4.3.1. Visibility of Sustainability Messaging and Product Offerings

The visibility of sustainability messaging and product offerings was assessed based on how easy or difficult it was to find information. As noted in Figure 5, there was an overall
reduction in sustainability visibility in the 2022 data collection and analysis. However, there was an increase in the number of VHBs with no visible information on their websites or other online platforms communicating their sustainability message or sustainable product offerings. Two of the VHBs deleted their dedicated ‘sustainability’ tabs. Only 4 of the 22 VHBs had a dedicated ‘sustainability’ tab on their home page; this was sometimes not even noted as a ‘sustainability’ tab but was located in the next level search. Having a tab on their home page or an icon on their main page allowed for consumers to easily navigate to sustainability information.

**Figure 5.** Visibility of sustainability message and product offerings in 2020 and 2022.

### 4.3.2. Extent of Sustainability Information

The extent of sustainability information on the VHBs’ online platforms refers to the amount of information found (i.e., whether there was a mention on a page, dedicated paragraphs, further descriptions, multiple pages or dedicated sections of the website). As shown in Figure 6, eleven VHBs presented no information, four had a minimal amount of information, three had some paragraphs dedicated to sustainability matter and only two had a very high level of sustainability information.

**Figure 6.** Level of sustainability information in 2020 and 2022.
4.4. Depth and Detail of Sustainability Information Provided

A further aspect was the depth and detail of the sustainability information provided. This analysis examined whether and what type of information and detail was provided, including basic information (for example, reference to the standard inclusions), general descriptions (for example, details of particular features like solar photovoltaic (PV) panels) and more detailed information (for example, detailed descriptions and identification of ratings, sustainability features and their descriptions and benefits). As shown in Figure 7, four VHBs in 2022 provided general descriptions, and two were found to provide more-detailed descriptions. Most provided either no information or very basic information, which was mostly related to the thermal value of insulation that formed part of their inclusions. Two VHBs removed information specific to sustainability from their websites since the 2020 analysis.

![Figure 7. Type of sustainability information in 2020 and 2022. Note: Very basic, for example, means reference to standard inclusions only; basic information refers to operation-related benefits; general description with some detail comprises statements of photovoltaic panels and battery inclusion; detailed description comprises more specific descriptions like 7-star rating, plus specific energy efficiency or sustainability inclusions; and comprehensive details and discussion means that more specific details in addition to the use of videos and interactive presentations to explain sustainable/energy efficiency strategies, initiatives, concepts and benefits were provided.](image)

4.5. Emotive Language Used to Demonstrate Benefits of Features

This analysis focused on how language was used and whether this provided information to consumers about the benefits of any sustainability features noted on their websites (see Figure 8). The use of emotive language altered slightly since 2020. Three VHBs used a comprehensive level of emotive language to demonstrate the benefits of sustainability and energy efficiency to homeowners, including savings in operational costs. The number of VHBs that did not use emotive language decreased from 12 to 10, while 6 VHBs were found to use very basic emotive language. As previously noted, many of the VHBs did not include commentary on this; a further two were found not to use any form of emotive language to communicate how sustainability features would benefit their customers’ homes. Only six VHBs provided some very basic descriptions of lifestyle benefits, mostly related to energy efficiency and energy cost savings. Two of the twenty-three VHBs provided more detailed descriptions, such as information about contributions to reducing their carbon footprints and becoming carbon neutral, water savings and waste diversion, in addition to energy efficiency and cost savings.
The final Likert analysis examined the educational quality of the sustainability information provided. The educational quality of information was broadly categorised as ‘none’, ‘minimal’, ‘some’, ‘moderate’, ‘high level’ and ‘very high level’. As shown in Figure 9, half of the VHBs (11 out of 22) in 2022 did not provide any educational information to demonstrate to their customers how sustainable home design features could benefit them or the environment. Five VHBs (in 2022) provided minimal information, which was mostly related to energy cost savings or water savings. Only one VHB (same for 2020 and 2022) was found to provide comprehensive detail and discussion, as they had a dedicated sustainability campaign and a dedicated section on their website, providing customers with easy access to multiple reports and fact sheets.

**Figure 8.** Discussion of emotive language related to the benefits of sustainable features in 2020 and 2022.

**4.6. Education Quality of Sustainability Information**

The final Likert analysis examined the educational quality of the sustainability information provided. The educational quality of information was broadly categorised as ‘none’, ‘minimal’, ‘some’, ‘moderate’, ‘high level’ and ‘very high level’. As shown in Figure 9, half of the VHBs (11 out of 22) in 2022 did not provide any educational information to demonstrate to their customers how sustainable home design features could benefit them or the environment. Five VHBs (in 2022) provided minimal information, which was mostly related to energy cost savings or water savings. Only one VHB (same for 2020 and 2022) was found to provide comprehensive detail and discussion, as they had a dedicated sustainability campaign and a dedicated section on their website, providing customers with easy access to multiple reports and fact sheets.

**Figure 9.** Level of sustainability-related educational content in 2020 and 2022.
4.7. Comparison of VHB Sustainable Online Communications between 2016 and 2022

This section provides a detailed comparison of the 2020 and 2022 results to Warren-Myers and McRae’s [12] study of the top 100 VHBs in Australia. The data collected and analysed by Warren-Myers and McRae [12] in August 2016 are presented in Figures 10 and 11. Overall, the 2016 study found a significant lack of sustainability information on the VHBs’ websites and suggested that limited consumer engagement in the sustainability agenda in new housing was likely a result of poor communication of information through key channels.

**Figure 10.** Comparison of sustainability messaging between the top 100 VHBs (2016) and the 23 NSW VHBs (2020 and 2022). Source of top 100 in 2016 from Warren-Myers and McRae [12].

**Figure 11.** Comparison of sustainability messaging from 2020 to 2022. A few general conclusions that consumers have a stronger desire for more information on VHB websites and suggested that limited consumer engagement in the sustainability agenda in new housing was likely a result of poor communication of information through key channels.
The data on the top 100 VHBs from 2016 and the 2020 and 2022 NSW VHBs are not directly comparable. However, they indicate that larger builders or sustainability communication may have improved since the 2016 study. For example, Figure 10 shows that only 30% of VHBs had at least minimal sustainability messaging on their websites, whereas this number improved in 2022 to more than 50%. However, this number significantly dropped to 38% in 2022. While an improvement can be observed overall, the most recent findings suggest that sustainability is still lacking in VHBs’ communication.

The same trend can be observed when looking at the type and educational quality of sustainable information on the VHBs’ websites between 2016 and 2022 (see Figure 10). For example, only 19% of the VHBs provided any educational information about sustainability on their websites in 2016; this number improved to 47% in 2020 and 50% in 2022. So, while the number of VHBs providing general sustainable communication on their websites decreased from 2020 to 2022, the level and educational quality significantly improved over the assessed period.

Figure 11 provides a more detailed view of the Likert scale results of the 2016, 2020 and 2022 studies. While the type and educational quality of the information provided remained relatively basic, actual information was being provided to consumers. This suggests that the market may have improved the level of visibility (i.e., the actual identification of sustainability and energy efficiency information) and the depth and detail of information. This can also be observed in the improvement of the ‘very high level’ of information, where only 2% of VHBs provided visible sustainability communication in 2016, improving to 22% in 2020 before slightly decreasing to 18% in 2022. Even with the slight decrease in 2022, it is apparent that consumers have a stronger desire for more in-depth and detailed sustainability information (if and when provided) than in 2016. A recent study by Shooshtarian et al. [29] confirmed this notion, finding that Australian homeowners want more sustainable housing, but governmental and builder-related barriers are hindering the uptake.

While no information from the VHB sample used in this study could explain the significant decrease in VHBs’ sustainability messaging from 2020 to 2022, a few general conclusions can be drawn. The year 2020 saw the unprecedented COVID-19 pandemic unfold, and its effects were felt in almost every sector. Within the construction sector alone, negative effects included supply chain issues, construction project delays, material price increases, job losses and decreased construction output [46]. In Australia, a country reliant on international building material imports, supply chain disruptions were observed, especially for larger projects where higher volumes of imported materials are used to save costs (e.g., for VHBs) [47]. A 2021 survey of 700 real estate stakeholders found that 94% of participants viewed sustainability as important for business operations. However, the focus is no longer predominantly on energy efficiency and wellbeing, but is shifting to a more material-driven approach, where elements like life cycle thinking, circularity and waste minimisation are increasingly important [48]. This study only found five VHBs in 2020 and three in 2022 that mentioned waste on their websites, but on their blogs, waste went from being mentioned 3 times in 2020 to 58 times in 2022. This concurs with Rambolls’ [48] findings.

The comparison between the top 100 (in 2016) from Warren-Myers and McRae’s [12] study and this study would suggest that even though there was a smaller sample, the NSW VHBs in 2020 and 2022 demonstrated a level of progression and more engagement in sustainability and energy efficiency messaging than the top 100 Australian VHBs in 2016. However, as this study demonstrates, there is still room for significant improvement.

5. Conclusions

This research provided a detailed overview of the various online communication channels used by 23 NSW VHBs (22 in 2022) and the quality, type and educational content relating to their online sustainability communications. These online platforms included websites, blogs, Instagram, Facebook, Twitter, Pinterest, YouTube and LinkedIn. This research sought to analyse how VHBs used these communication channels to communicate sustainability
information. We examined how often and where they used sustainability-related and energy-related keywords, how often they used sustainability and energy efficiency–related terminology, how they presented sustainability information (e.g., dedicated tabs on websites or campaigns) and the visibility, depth, access and type of sustainability information presented to readers. The data collected in 2022 were then compared to those collected and analysed in 2020 and 2016.

The research posed the following five key questions to shape the investigation of the VHBs’ online communication channels:

1. **What online platforms do VHBs use to communicate their sustainability offerings to consumers?**

   All 23 VHBs had a website and a LinkedIn account, and almost all had Facebook and Instagram accounts and a blog. This number decreased to 22 in 2022, as 1 VHB was no longer operating. In terms of the utilisation of social media, it was found that almost all VHBs had Facebook, Instagram and LinkedIn accounts. Twitter, YouTube and Pinterest were less popular. There was a decrease in the number of VHBs who used their websites, blogs and Facebook to communicate sustainability from 2020 to 2022. However, there was a slight increase in the use of Instagram, Twitter and Pinterest to communicate sustainability between 2020 and 2022. LinkedIn and YouTube use remained the same.

2. **How visible is sustainability-related communication on VHBs’ online platforms?**

   The repeat analysis found that most VHBs still did not have any visible sustainability messages or product offerings. Over the two years since 2020, it appears that the industry has essentially retracted much of the sustainability information and communications on their websites. There are now only three VHBs (down from six) with dedicated ‘sustainability’ tabs on their home page (often not labelled as ‘sustainability’ but using alternate phrasing). This correlates with the 2016 findings that the visibility of sustainability information was poor, with almost 70% of VHBs not using their websites to communicate about sustainability.

3. **How detailed is the VHBs’ sustainability messaging on these digital platforms?**

   The Likert scale analysis based on the study by Warren-Myers and McRae [12] was used to assess the sustainability messaging in different online media. Details about what made these homes net zero, more energy efficient, more sustainable, etc., on websites, blogs and social media were rather scarce in 2020 and 2022. The wording was often quite general rather than specific (e.g., ‘sustainable building practices’), inferring that consumers would need to ‘trust’ that the builder knew what these were. Four VHBs in 2022 provided general descriptions, and two were found to provide more-detailed descriptions, while most either did not provide any information or provided very basic information. The level of detail, the type of information and the educational quality increased from 2016 to 2022, with only the level of information slightly decreasing when comparing the 2020 data with the 2022 data.

4. **What keywords do VHBs use in communicating their online sustainability messaging to consumers?**

   The keywords used most frequently on the VHBs’ websites saw a substantial change, with ‘energy efficiency’ increasing and ‘sustainability’ and ‘sustainable’ references reducing. ‘Sustainability’ and ‘sustainable’ continued to be used by two prominent VHBs, but this was usually in the context of their corporate strategies rather than the housing products they provide. There were substantial increases in the use of words like ‘building’, ‘homes’, ‘design’ and ‘quality’, while the use of ‘energy’ and ‘sustainability’ was reduced considerably. A detailed keyword analysis was not completed in the 2016 study; thus, the 2016 study data could not be compared with the 2020 and 2022 data.
5. **What are the key differences in sustainability messaging on VHBs’ online platforms between 2016 and 2022?**

The data collected in 2020 and 2022 demonstrate that there has been an overall improvement in the VHBs’ sustainability messaging compared with the data from the 2016 study. However, it is interesting to note the downward trend in the VHBs using their websites to help inform, educate and communicate with their customers about any sustainability information from 2020 to 2022. More than 60% of VHBs assessed in this study did not have any sustainable messaging in 2022, which was an increase from 50% in 2020. Even with the lack of visible sustainable messaging, the level of educational content has increased over the years: only 19% provided detailed information in 2016 compared to 50% in 2022. Consumers appear to have a stronger desire for more in-depth and detailed sustainable information (if and when provided) than in 2016.

The research is limited by several factors: firstly, online content is current at the time of viewing and can change daily or be removed and updated; secondly, comparisons between 2016 and 2020/22 have differing sample sizes, with 100 VHBs compared to 23 and 22 VHBs in later studies; and finally, the web study can only be seen as indicative of what VHBs may be offering. VHBs may, in fact, be offering more or less in terms of sustainability or energy efficiency, but may not be communicating this through their online platforms. As a result, the findings here represent the sustainability and energy efficiency information portrayed online by VHBs, but may not necessarily be the actual provisions of the VHBs on sustainability and energy efficiency home offerings. This has importance when considering inferences that can be drawn from this analysis.

This study demonstrated that leading Australian VHBs have an enormous opportunity to improve their sustainability messaging and information about their organisations and their products. Disappointingly, it appears that over the two years, VHBs have moved away from mentioning sustainability and energy efficiency, with substantial declines in the utilisation of these words on their websites and social media accounts. The reasons for this are not clear. Possible reasons may include the influence of COVID-19 shutdowns, material and labour shortages and VHBs simplifying their offerings in their communication channels. Additionally, the impending changes to the National Construction Code may have discouraged VHBs from developing their sustainability communication until details of the new benchmarks and timings were released.

6. **Future opportunities for VHB**

The VHBs’ website analysis demonstrated a range of deficiencies in their communication with consumers that illustrates opportunities for VHBs to improve their communication about energy efficiency and sustainability. The purpose of this research was not to identify the best practice actions of the VHB; rather, this research sought to ascertain a baseline understanding of the activities being undertaken, and how they were undertaken, over several years. Accordingly, observations of VHBs that have enhanced their profile and offerings in this study provide opportunities for other VHBs to engage with the following:

- **Visibility:** Websites should have clear links, preferably in plain language, that enable consumers to easily identify and locate relevant sustainability and energy efficiency information. Dedicated sections on websites that link to campaigns or news posted on social media would provide greater clarity, information and validity for consumers.
- **Information:** Clear and simple information and language should be used to communicate sustainability and energy efficiency information, the organisations’ objectives, home offerings and any inclusions, specials and packages.
- **Language:** Popular terms among some VHBs included ‘environment’, ‘water efficiency’, ‘waste management’ and ‘carbon footprint’. These terms provide some insight into VHBs’ sustainability focus and the topics consumers want more information about. Thus, it is worth expanding and providing better information, education and offerings in these areas.
Outcomes: VHBs could set clear targets for sustainability messaging to ensure that it is highly visible to the consumer. Viable ratios of sustainability and non-sustainability messaging should be used so that the benefits are obvious to the consumer, and so they are not at risk of being overwhelmed by social media noise. A broader market analysis must be measured regularly and provided to VHBs so that they understand consumers’ interests and demands in sustainability and energy efficiency.

These suggestions, the identification of opportunities for VHBs and the associated summary action list are just the beginning; so much more can be achieved. This research presents a new baseline for a future analysis that can be used to track VHBs’ online sustainable messaging. The suggestions in this paper are the first step. It is hoped that through this research, VHBs can become aware of the gaps in their communication and messaging about sustainability and energy efficiency and realise the opportunity to make homes more sustainable. Further, due to the competitive nature of the volume housing industry, economies of scale will be achievable over time, particularly if VHBs continue the competitive environment in a sustainability and energy efficiency context. Future replication of this research will be useful to understand the implications and impact from the changes to the National Construction Code to increase the minimum residential energy efficiency from 6 to 7 stars NatHERS (or equivalent), in addition to the introduction of the Green Building Council of Australia’s new Green Star Home Standard providing a new benchmark for sustainable homes. It is hoped that the introduction of reach targets and benchmarks, like the Green Star Home Standard, and increases to the minimum standards will not only see greater and better communication of sustainability and energy efficiency standards, but also a substantial improvement in the sustainability, energy efficiency and quality of new homes in Australia.

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