

Study Report

SR402 [2018]



The choice to exceed: Consumer perspectives on building beyond Code in New Zealand

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ISSN: 1179-6197



Preface

This is one of a series of reports centred around the issue of building beyond Code – residential housing that exceeds the minimum standards as set out in the New Zealand Building Code – that is a part of the BRANZ ‘Exceeding the minimum’ research programme, led by Dr David Dowdell.

Acknowledgements

We would like to thank the Building Research Levy for funding this research. We also wish to thank Anne Duncan, Dr David Dowdell and Dr Bev James for comments on this report.



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BRANZ Study Report SR402

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Reference

MacGregor, C. & Donovan, E. (2018). *The choice to exceed: Consumer perspectives on building beyond Code in New Zealand*. BRANZ Study Report SR402. Judgeford, New Zealand: BRANZ Ltd.

Abstract

This report examines consumer decision making about the choice to exceed minimum building standards as outlined in the New Zealand Building Code. A particular focus of research has been to examine the interactions between consumers and the building industry and the ability of consumers to make an informed decision to exceed the minimum. A qualitative social research methodology was undertaken. Research was conducted in three parts: 1) An information audit of current industry advice and messages to consumers about exceeding the minimum was undertaken. 2) Focus groups were held in Christchurch and Wellington with consumers who were in the process of residential building to understand their experiences. 3) Semi-structured interviews and an industry expert focus group were undertaken to gain an understanding of current industry messages and communication to consumers and to collect industry experiences of dealing with consumers about the issue of exceeding the minimum. The research found that it is presently challenging for consumers to build beyond Code with respect to higher-performing houses. This was due to inadequate information, a lack of confidence and trust in building professionals and some cultural bias concerning the perceptions and experiences of housing and the Building Code. The report outlines a number of strategies to encourage consumers and industry to build higher-performing houses that exceed the minimum.

Keywords

Higher-performing housing, consumers, decision making, residential buildings, exceeding the minimum, sustainable buildings, New Zealand Building Code, standards.



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Executive summary

This report examines how consumers make choices about exceeding the minimum.

Exceeding the minimum refers to:

- new buildings that go beyond minimum performance levels set out in the New Zealand Building Code and standards
- new buildings that incorporate features and/or consider aspects that are not covered in the Building Code and standards such as access and environmental performance
- existing buildings that are brought up closer to current Building Code minimum performance levels, meeting or exceeding these
- existing buildings that incorporate features and/or consider aspects that are not covered in the Building Code and standards.

A qualitative social research methodology was used to capture consumer experiences of exceeding the minimum. The research study involved three parts:

- An information audit of 11 key consumer resources and information sources were critically analysed for how they communicated exceeding the minimum to consumers.
- Focus groups with consumers were undertaken in Christchurch and Wellington (n=22) to examine consumer experiences of exceeding the minimum primarily with the construction of new residential homes.
- A focus group and stand-alone semi-structured interviews were undertaken with industry experts including builders, designers and others (n=20) to gain an understanding of current industry messages and communication to consumers and to collect industry experiences of dealing with consumers about the issue of exceeding the minimum.

The research draws attention to the challenges to normalise residential housing that exceeds the minimum. This is due to a number of factors:

- Consumer inability to access relevant information
- New Zealand's poor housing conditions due to consumer perceptions that the Building Code is seen as a quality assurance mechanism rather than the minimum standard.
- Consumer trust and confidence in building professionals is crucial to whether the consumer exceeds the minimum or not. When consumer and builder share similar values, such as an interest in sustainability, exceeding the minimum is more likely to happen.

In order to encourage consumers and the construction industry to exceed the minimum, this research found that:

- a change in consumer and industry practices, beliefs and values that incentivises a drive to exceed the minimum is required
- cost is not the sole barrier but just one of many to exceeding the minimum
- it is important to change New Zealand cultural practices to focus on building smaller houses and adjusting standards of thermal comfort



- a change to consumer expectations is important, especially cost versus quality, house as asset/commodity versus a healthy home and Code minimum versus exceeding the minimum.

If we are to encourage consumers and industry to build houses that exceed the minimum, we need to do the following:

- Use evidence-based information so that consumers can understand what exceeding the minimum is and the means and the benefits of doing so. Consumers can then make an informed choice in relation to incorporating design features and products that can improve building performance beyond the minimum levels outlined in the Building Code.
- Improve existing information through the use of multi-platform messages and media that informs and encourages information flows between stakeholders.
- Encourage consumers and industry to consider a whole-of-building, whole-of-life approach when designing, building and occupying houses.
- Raise awareness of houses that exceed the minimum through demonstration and getting consumers and the building construction industry to experience and interact with these houses.

Future research and action is required:

- Create a behaviour change framework that outlines in more detail how to encourage the changing of consumer and industry practices to adopt exceeding the minimum and integrate this behaviour change framework into exceeding the minimum research and a roadmap for change.
- Further research is needed on how to encourage industry to adopt building performance practices to exceed minimum building standards.
- Support industry to develop better information and advice on exceeding the minimum for itself and consumers, especially information that promotes awareness and demonstrates design solutions and buildings system options that are aligned with accruing the benefits of exceeding the minimum.
- Outline the performance requirements of what exceeding the minimum means in real terms for building performance so that consumers and industry can differentiate between Code minimum, better and best-practice building performance. As understanding the different building performance options will give consumers and industry greater choice in their decision making.



1. Introduction

In recent years, houses that include enhanced performance and sustainability features that go beyond that specified within the New Zealand Building Code have become more common. For the purposes of contributing to wider discussion and policy about houses that exceed specifications (Building Code or otherwise), the terms 'higher-performing' or 'higher-performance' house will be used. It should be acknowledged that building performance is on a continuum with Code-minimum buildings being the starting point, the next step being better houses that exceed the Building Code in certain aspects. The ultimate is international best practice, such as a platinum LEED-rated building or Homestar 10 star-rated homes. The report uses the terms 'higher-performing' or 'higher-performance' not because it is not problematic, but because it implies a house better than Code minimum. Higher-performance dwellings are often associated with several related terms, such as eco-building, passive house, zero-energy house, green building, BREEAM building and many others (Erhorn & Erhorn-Klutting, 2011). Higher-performing houses have one, two or all three of the following characteristics:

- Low energy consumption, often incorporating renewable energy such as solar panels, and have alternative energy supplies.
- Low greenhouse gas emissions, mitigating the effects of climate change and/or lowering their carbon footprint.
- Sustainable or green aspects, incorporating sustainable design features or eco-buildings aspects, such as passive thermal technologies, thermally broken windows, triple glazing and sustainably sourced materials (Erhorn & Erhorn-Klutting, 2011).

Houses that are built beyond Code are said to offer a number of benefits, such as increased thermal comfort, greater energy efficiency and warmer, drier and healthier homes (Jaques, Norman & Page, 2015). However, recent research has highlighted a number of barriers to the uptake of higher-performing homes, with build cost being the most common followed by an unwillingness of consumers to pay additional costs (MacGregor & White, 2018).

Based upon a political economic analysis of the higher-performance housing market, MacGregor and White (2018) suggest that consumer uptake of higher-performance housing was found to be more directed at personal resources over environmental ideology. Within the wider housing market, it was found that higher-performing houses were not highly valued, compared to similar Code-minimum houses (Christie, 2010). Despite the health benefits of higher-performing houses within the current housing market, the benefits of higher-performance housing are not shared evenly (MacGregor & White, 2018). For example, those on lower incomes may greatly benefit from a house that exceeds the minimum Building Code due to the house being warmer and drier, which contrasts with the lower levels of much of the current housing stock (White et al., 2017). It is consumers who are on middle to high incomes who choose which benefits they seek to accrue because they have an economic advantage by being able to afford to incorporate higher-performing features into their houses. Therefore, MacGregor and White (2018) argues that, within the housing market, discussion about housing that exceeds the minimum should be reframed from a discussion about the willingness to pay to one about the willingness to afford so that the benefits of exceeding the minimum can be shared more evenly with those unable to afford too. To date there exists a research gap, which this research project fills, in



examining how consumers make decisions about exceeding the minimum and to describe their experiences of planning to build houses that incorporate higher-performing features.

1.1 Defining exceeding the minimum

The Building Code sets out the minimum standards (the lowest legally permissible) that new building must meet performance wise. Within our current housing market, new houses tend to just meet the minimum standards outlined in the Building Code, rather than striving to exceed the minimum standards.

For this reason, BRANZ established an 'Exceeding the minimum' research programme that seeks to help and encourage consumers and the building industry to understand that the Building Code is a minimum only and that there are real benefits to exceeding them (BRANZ, 2017). The research programme hopes that, with the benefit of better information and choices around design features and benefits of these features, the opportunity to consider higher-performing buildings will be created (BRANZ, 2017). Over time, it is expected that the 'Exceeding the minimum' research programme will help to create a more responsive market, with industry able to better meet consumer expectations, aspirations and needs and create higher-performing housing (BRANZ, 2017; James et al., 2018).

The 'Exceeding the minimum' research programme seeks to ensure that:

- consumers and industry understand that the Building Code and standards are a minimum that must be met but can and should be exceeded
- the benefits of exceeding the minimum can be clearly articulated based on meaningful terms
- the barriers to exceeding the minimum have been addressed
- consumers expect and demand buildings and communities that perform to a higher standard
- the industry delivers buildings and communities that perform to a higher requirement in a cost-effective way.

Within this report, the terms 'exceeding the minimum' and 'building beyond Code' will be used interchangeably to refer to:

- new buildings that go beyond minimum performance levels set out in the Building Code and standards
- new buildings that incorporate features and/or consider aspects that are not covered in the Building Code and standards such as access and environmental performance.
- existing buildings that are brought up closer to current Building Code minimum performance levels, meeting or exceeding these
- existing buildings that incorporate features and/or consider aspects that are not covered in the Building Code and standards.

1.2 Research aims

This research project examines consumer decision making and experiences of building beyond Code within residential housing in New Zealand.

The research sought to:



- understand how consumers make choices about exceeding minimum building standards
- identify what information and advice is currently available to consumers to make meaningful choices around exceeding the minimum
- describe industry perspectives and messages about exceeding Code minimum that are given to consumers
- examine how information and communication about the choice to exceed the minimum can be improved.



2. Methodology

This research study undertook a qualitative social research methodology. This approach to examine consumer perspectives on exceeding the minimum was chosen for five key reasons:

- **Exploration:** A qualitative approach helps to understand something that is ill-defined, such as the problems and needs consumers may have had or cannot articulate about higher-performing housing or challenges consumers may have in finding information.
- **Complexity:** Sustainable building and the creation of higher-performance homes are complicated systems that cannot be understood in solely quantifiable terms. A key aspect of this research was to understand how consumers interact with the building construction system.
- **Context:** Understanding the context and environment a consumer is in provides insight into their actions and beliefs. Without understanding the wider social, economic and physical environment in which consumers are placed, the main drivers of their behaviour can be missed.
- **Explanation:** In attempting to understand consumer perspectives of building beyond Code, it is important to share and understand their experiences in their own words.
- **Measures don't fit the problem well:** Consumer decision making about whether to build beyond Code or not could be quantifiable, but doing so may mean the researcher determines the criteria in which the decision making takes place. In reality, decision making is a complex process that is multi-faceted and can be difficult to measure as it can be context specific.

As Sauro (2015) points out, the reasons are often interrelated but all point to the importance of understanding consumer experiences within the context of their own words and decision making.

2.1 Information audit

An information audit was undertaken on currently available consumer information about building, especially around the building process more generally and more specialist themes of higher-performance building and sustainable housing.

A range of internet search engines were used, such as Google and Bing. The web resource content was restricted to New Zealand websites only. The main keywords used in searching, with a number of different combinations, were 'consumers', 'consumer information', 'consumer perspectives', 'building', 'construction', 'sustainability', 'sustainable housing', 'sustainable design', 'sustainable architecture', 'high-performance' and 'building beyond Code' amongst others.

Information was collected until data saturation was reached, determined by following the method set out by Sarantakos (2013, p.159). This uses triangulation to seek a convergent validation of the main sources that consumers go to for information about the building process and information on building beyond Code and/or sustainable building that incorporates features that exceed the minimum. Eleven web resources were chosen for the final analysis (and are discussed further in section 3). Each web resource was accessed by researchers for consumer information about building and to determine whether it referred to higher-performing features or building beyond Code. Finally, following a critical analysis of content, suggestions were made about how the



web resource could be adapted to include discussion of exceeding the minimum for consumers.

2.2 Consumer focus groups

Four consumer focus groups (n=22) (two in each city) were held in Christchurch on 1–2 December 2016 and in Wellington on 7–8 December 2016. Two contrasting regions were selected. Christchurch was chosen as the city and region had been undergoing a massive rebuilding process following the 2010 and 2011 earthquakes that devastated the city. Due to the massive rebuilding programme, it was thought by researchers that consumers would be actively involved and would have recent experience or would want to build beyond Code. Wellington was chosen as a contrasting region to Christchurch, where the building approach was business as usual.

Consumer participants consisted of 10 men and 11 women ranging in age from late 20s to over 65, the majority being within the 40–60 age group. The majority of research participants (90%) were involved with new house construction. This was due to our sampling, which was done from building consent data. The rest were participating or planning refurbishment of existing housing.

Consumers were recruited by a number of means. The majority were randomly selected from building consent applications in Christchurch and Wellington and were sent invitations to participate in a focus group at a specific date and time. A small number of participants (3) were recruited from 'snowballing' – they were either invited by other focus group participants or responded to community advertising asking for research participants.

Focus group discussions ranged in time from 1–2 hours. The questions were semi-structured. The focus group discussions were facilitated by the lead researcher. All participants received a \$50 petrol voucher in compensation for their time to attend the focus groups.

2.3 Industry experts

Twenty building industry, housing and communications expert were interviewed for this research project. The industry experts were diverse with a number of high-performance builders, architectural designers and participants from organisations such as Registered Master Builders, EECA, BRANZ, Beacon Pathway, University of Auckland, Housing New Zealand, Community Energy Network and a local government authority.

Research participants designated as 'experts' were identified by the researchers through web searching or recommended by colleagues as recognised experts with knowledge and experience in the area of building beyond Code or sustainable housing. Eight experts participated in a focus group discussion held in Wellington on 8 December 2016. The focus group lasted approximately 2 hours. All other experts were engaged in a period from July 2016 to July 2017. Participants were not offered any inducements, but travel costs were paid for by researchers so participants could travel across New Zealand to attend the Wellington-based focus group.

2.4 Data analysis

All interview data was audio recorded or notes of the discussions were taken and then transcribed, de-identified and managed using NVivo™ 9.2. software. Data analysis was



undertaken using thematic analysis and inductive reasoning consistent with interpretative phenomenological analysis (Lindsay, MacGregor & Fry, 2014).

The data analysis process followed that outlined by Smith (1995, 1996) and Osborn and Smith (1998) and proceeded as follows:

- Interview and focus group transcripts were re-read a number of times to gain an understanding of the whole nature of the participants' accounts. During this stage, notes were made of potential themes. The process was also informed by the researcher's experience of the interview itself.
- The interview and focus group text were re-read and emerging themes were identified and tentatively organised.
- Attention was focused on the themes to define them in more detail and establish their inter-relationships. The focus was on the sociological content of the phenomena under study, and the data was condensed.
- The shared themes were organised to make consistent and meaningful statements that contributed to the account of the meaning and essence of the participants' experience grounded in their own words (Osborn & Smith, 1998, p.68).

The analysis that follows is organised around themes that emerged from the transcripts rather than themes chosen in advance. Consistent with interpretative phenomenological analysis, these themes are then considered in relation to the extant literature in the discussion section.

2.5 Ethics

A BRANZ human research ethics application (ER-0888) was undertaken for this research project. The application gained ethical approval on 18 October 2016 after independent ethical review in line with BRANZ human research ethics policy.

The ethical conduct of research was maintained throughout the research process. All research participants gave their written or oral consent. The research participants' names along with other identifying information have been changed to preserve their anonymity and guarantee confidentiality.



3. Consumer information

This section of the report examines the main sources of information currently available for consumers about exceeding the minimum building standards and creating a higher-performing home. The following list is not exhaustive of all possible sources of information but rather outlines the main reputable places consumers would seek information in their quest for information about exceeding the minimum or key places of information identified by researchers.

3.1 Consumer New Zealand

Website: www.consumer.org.nz

Consumer New Zealand is a leading source of independent information and advice for consumers. The organisation is independently funded through subscriptions, ensuring their advice remains neutral and non-commercial. In order to access their websites and magazines, consumers have to become members and pay an annual subscription.

The Consumer NZ website has a section devoted to building construction (Home, heating & renovation), which is split into four subsections (Heating, Energy, Building & renovation and Garden) and each of these has a number of subheadings. Consumer NZ provides comprehensive information and advice as well as providing links to other websites for further information. In particular, there are two sections under Building a new home:

- Passive design for energy efficiency – gives information about how the layout of the house in relation to the sun and the use of features and materials are important for keeping a house at a comfortable temperature while saving on energy costs. Passive design is the control of ventilation and temperature without using any products that consume energy or money (such as heaters, dehumidifiers or fires).
- 'Green' homes – gives information about eco-friendly approaches to building that have minimal impact on the environment and eco-housing, which incorporates elements such as building/site positioning to maximise sunlight and links back to the passive design for energy efficiency information, durable recyclable building materials, rainwater collection and solar power. This section also provides links to the Homestar website.

3.2 Building Guide

Website: www.buildingguide.co.nz

The Building Guide is a biannual magazine published by Aim-High publishers and is sold at a low cost in newsagents and distributed by many councils across New Zealand free of charge. The Building Guide is directed at consumers who are planning on building a new house and covers the process from design and building consent all the way to a completed house.

The Building Guide has numerous section devoted to the building process:

- Building your dream – is devoted to helping the consumer decide what kind of house they would like. Part of this section examines sustainable building and outlines 10 steps to long-term sustainability, such as using natural light, ventilation and environmentally friendly materials.



- Where to start – covers affordability and provides advice on legal requirements associated with building a house, such as the consenting process and talking with a designer.
- The design process – outlines the design process and suggests that the consumer engage in clear communication with the designer so they get the house they would like.
- Construction – deals with all the aspects of constructing a house, including dealing with builders, contracts, site survey and more.
- Product buying guide – outlines a range of options – for example, cladding – and lists a range of other products that could be incorporated into the build.
- Resources – provide a list of sources where consumers can seek further information, such as regulations, local councils and builder listings.

The Building Guide is an accessible resource for consumers. However, there is a lot of potential to add to this Building Guide to provide information on higher-performing features and inform the consumer about exceeding the minimum, as it currently offers little guidance in this area. Adding to the guide more specific information on higher-performing housing would be beneficial to the consumer with more in-depth information for consumers wishing to go beyond the basic knowledge outlined in the magazine. There are also some opportunities to expand information about higher-performing features across the guide and also outlining to the consumer the benefits of these features compared to the Building Code. For example, in the product buying guide section, the higher-performing design feature should be outlined with the added benefits explained. Likewise, added information such as links to the Eco Design Advisor service would help empower consumers looking for advice and more information.

3.3 Energy Efficiency and Conservation Authority (EECA)

Websites: www.eeca.govt.nz, www.energywise.govt.nz

The Energy Efficiency and Conversation Authority (EECA) is a government agency that seeks to improve the energy efficiency of New Zealand's homes and businesses and encourages the uptake of renewable and sustainable energy solutions.

The main website maintained by EECA of interest to consumers is their Energywise web resource. A flagship initiative of EECA, Energywise is responsible for running the nationwide social marketing of '3 essentials for a healthy home' – warm it up, dry it out, air it out.

This message has been part of a national media campaign to help encourage healthier homes by informing and facilitating behaviour change of house occupants. The website provides information on why ventilation and heating are important to heathy housing. Given the simple message and how warmer, drier and better-ventilated homes are essential to health, the Energywise website provides useful information to consumers in thinking about creating a healthy house.

Other information on the website includes how to lower your energy bills and advice for existing homeowners (rather than for new builds) wanting to improve energy efficiency and/or retrofit energy-efficient products. The At home section provides useful advice on:

- simple ways to lower energy bills



- renovating
- building
- buying and renting
- appliances
- dampness
- draught stopping
- heating and cooling
- insulation
- lighting
- ventilation
- hot water
- windows
- generating energy.

EECA provides advice and links for consumers to find other relevant information sources, relevant trade organisations and resources such as checklists and instructional videos. For example, there are instructional videos of how to install wall insulation. EECA's Energywise initiative presents a range of information, advice and resources for the consumer. Their multi-dimensional approach of social marketing, television advertisements and extensive online resources make it a key source of information and an important entry point for consumers. However, a lot of the information is concerned with existing buildings rather than new builds.

3.4 Homestar

Website: www.nzgbc.org.nz/homestar

Homestar is an independent rating tool that certifies the health, efficiency and environmental performance of New Zealand homes. Homestar was developed by the New Zealand Green Building Council (NZGBC) in partnership with BRANZ and Beacon Pathway in 2010. The present Homestar rating tool is now in its fourth iteration, which was released in July 2017.

A Homestar rating rates homes on a scale from 1 to 10. Most existing New Zealand homes would achieve a 2 or 3-Homestar rating. The typical New Zealand home built to Building Code requirements would achieve 3 or 4-Homestar. Homes built to the current Building Code still perform poorly, as indoor temperatures in many new homes are reported to be at least 2°C lower than the WHO's minimum of 18°C in living areas (Oliver et al., 2017).

Homestar assesses both new and existing homes including stand-alone and multi-unit dwellings. It is available to everyone from homeowners and tenants to property developers wanting to improve home performance and sustainability. This is available through either a self-assessment tool or a certified rating by a Homestar Assessor.

The Homestar rating system awards points across six categories – health and comfort, energy, water, waste, site and management.

The Homestar website offers links to information such as building professionals who can build higher-performing homes. However, there is little information available for consumers about how they can improve house performance by exceeding the minimum or advice on products and materials that could also help building performance. As Homestar is a rating tool, it may be unclear to a consumer how the tool relates to their own home or the benefits of using the tool to exceed the minimum.



This is a similar finding to Bond's (2013) study of New Zealand consumer behaviour on energy efficiency, which found that a small number of research participants (9.2% or 68 people) knew about Homestar and what it did. Despite widespread television advertising about the tools, it was found that the respondents often only learned about Homestar through *Build* magazine, relatives or property-related associations. Only 1.1% of the survey respondents (or 12 of the 68 who knew about it) had actually used Homestar. Bond's (2013) research highlights that, from a homeowner's perspective, many are focused on the costs and benefits of higher-performance housing, especially the perception of high costs/low benefits. For example, respondents to the survey noted how they had made changes after using the Homestar rating tool but did not see a change in their energy bills or had experienced an increase.

3.5 Ministry of Business, Innovation and Employment (MBIE)

Website: www.building.govt.nz

MBIE provides a range of consumer information about the building process. However, it is mainly concerned with the regulatory and legal context and the processes involved to build a house to the Building Code rather than suggesting to how to exceed Code minimum housing. This information is of course central to a successful building project. However, information about the benefits of building beyond Code would be helpful for consumers especially if exceeding the minimum features require different methods that require extra information to obtain compliance. The MBIE Building Performance website could be a useful starting place to help inform consumers about the benefits of exceeding the minimum and should be a part of any future plans in this area.

Website: www.smarterhomes.org.nz

This MBIE website is for consumers who are looking to integrate sustainable and higher-performance features into their retrofit or new build. The website is split up into three sections – smart guides, tools and resources and case studies.

The smart guides offer consumer advice on a number of areas including:

- siting and location
- design
- construction and materials
- air quality, moisture and ventilation
- water and waste
- power, lighting and energy saving
- heating, cooling and insulation

The second main section on the website is devoted to tools and resources, this section is split up into the themes (the same as those outlined above), under each theme are links to specific tools to help with the design and building process, some examples include:

- NZGBC Homestar rating tool
- BRANZ ALF
- BRANZ Universal Design cost calculator
- BRANZ Up-Spec.
- Lifemark's Homescore
- Energywise water heater cost calculator.



The final section of the website outlines three case studies that demonstrate the application of some of the Smarter Homes advice. The first case study looks at design. It examines the experience of Brenda Kelly who designed her own container home in Parau, Waitakere City, Auckland, which is an example of a compact and low-waste housing design. The case study looks at Brenda's journey of design and building her house, such as getting advice from an Eco Design Advisor and getting a Homestar rating. It provides helpful tips for others considering a compact house, such as the usefulness of containers in limiting waste and their durability against natural hazards, such as fires, hurricanes and earthquakes.

The second case study relates to the theme of power, lighting and energy saving and examines an upgrade in Wellington on a limited budget. The case study looks at a young family and what they would do to their recently bought home to help improve energy efficiency and increase thermal comfort. The case study suggests ways the young family could make cheap improvements to their house's performance to increase thermal comfort and energy saving and suggests a future plan such as retrofitting double-glazed windows and replacing insulation with a higher R-value.

The third case study looks at heating, cooling and insulation and examines Beacon Pathway's Papakowhai renovation project in Porirua, Wellington, which has been examined in great detail (Easton, 2009). The project sought to refurbish older housing stock to be higher-performing to offer greater energy efficiency, thermal comfort and water efficiency. The houses were monitored before and after the retrofit to examine how they performed. The Smarter Homes website explains that results showed that a fully insulated home boasting an efficient heat source made substantial reticulated energy savings and indoor temperature improvements. The case study outlines what was done to the house. The main benefits from higher-performing refurbishment and key findings of the Papakowhai Renovation project outlined by the Smarter Homes website are:

- the importance of insulating the full thermal envelope, including the walls, if you can
- efficient heating must accompany a thermal retrofit
- hot water cylinder wraps are a great energy efficiency measure and should be widely applied
- solar hot water systems can perform well, even in winter
- water-efficient showerheads should accompany hot water conversions.

Overall, MBIE's Smarter Homes website gets consumers thinking about how to create a healthier home. Combining advice with tools, resources and case studies provides an array of ways to help communicate and provide education. The website is easy to use and has helpful consumer information, especially the tools and resources section. However, the ability for consumers to use information from the website is dependent on the consumer knowing how or when to use it.

3.6 Beacon Pathway

Website: www.beaconpathway.co.nz

Beacon Pathway is an incorporated society that grew out of a research consortium (Beacon Pathway Ltd) formed in 2004 to fulfil a 6-year research contract with the Foundation for Research, Science and Technology (FRST). Original shareholders were New Zealand Steel, Waitakere City Council, Fletcher Building, BRANZ and Scion. Beacon Pathway has been involved in projects encouraging the industry and



consumers to exceed the minimum. Beacon Pathway's objective is to transform New Zealand's homes and neighbourhoods to be high-performing, adaptable, resilient and affordable through:

- facilitating and undertaking demonstration projects that show the benefits of higher-performing new and existing homes.
- facilitating and providing robust research that builds a fact-based platform for sustainable, affordable, buildable and comfortable homes.
- enabling members to lead the transformation of the built environment in New Zealand
- collaborating with and bringing together other stakeholders in New Zealand's residential built environment to create greater change.

Over recent years, Beacon Pathway has undertaken a programme of demonstration projects, collaboration and development of practical solutions and tools:

- **NOW Home demonstration project:** This helped to illustrate that, within the New Zealand market, there existed the knowledge, materials and ability to design and build a house that could meet strict performance benchmarks. The project included post-occupancy monitoring, which demonstrated the benefits of living in a sustainable higher-performance home.
- **HIVE High Performance House project:** The higher-performance house was built at the Home Innovation Village (HIVE) in Christchurch and used innovative building techniques, technologies and performance benchmarks that helped demonstrate the benefits of off-site construction, such as lower build costs, speed and quality of construction and a warm, healthy, energy and water-efficient house with low running costs.

Beacon Pathway has two main resources that may be of interest for consumers in the design and building of their own home that seeks to exceed minimum standards or improve their current home's performance. The first is the development of the Home Performance Advisor service (see section 3.10), and the other is the creation of the Beacon High Standard of Sustainability (HSS) tool.

Website: www.beaconpathway.co.nz/further-research/article/beacons_hss_high_standard_of_sustainability

The Beacon High Standard of Sustainability (HSS) tool lets home occupants understand the performance of their homes. The HSS also allows consumers to understand how their actions and behaviours can affect how well their home performs by using measures to help identify poor-performing aspects of their house design and improve them and the overall comfort, health and sustainability of the house.

The Beacon HSS sets benchmarks in five key areas: energy, water, indoor air quality, waste and materials. For example, benchmarks set out clear performance criteria, such as energy use for the three climate regions of New Zealand, as outlined in the Building Code. For example, for climate zone 1, the HSS sets a target of 5,800 KWh/year for new homes, and 6,200 KWh/year for existing homes. Other measures include stipulated indoor air temperatures – for example, >16°C in bedrooms from 11pm–7am in winter, which is in line with WHO guidelines. Other benchmarks include checklists to help the consumer identify and rectify issues, such as having a mechanical fan in bathroom, kitchen and laundry and no indoor clothes drying. The Beacon HSS outlines much information on exceeding the minimum, but it was unclear from our research to what extent consumers were using this resource.



3.7 Eco Design Advisor

Website: www.ecodesignadvisor.org.nz

The Eco Design Advisor initiative was developed by BRANZ to provide free, independent, expert advice on new home design and renovations to homeowners, house designers and industry professionals. The Eco Design Advisors are advocates for creating healthier buildings, improving energy, water and material use, minimising waste and reducing the environmental impact of buildings.

The Eco Design Advisor service is run through a number of councils within New Zealand including Auckland Council, Hamilton City Council, Palmerston North City Council, Kāpiti Coast District Council, Nelson City Council, Christchurch City Council and Dunedin City Council.

The Eco Design Advisor service provides free independent advice about energy efficiency and how to better use water and materials on home improvement, building and renovation projects. Eco Design Advisors are available for 2-hour face-to-face visits at seven council centres, at building sites or architects' offices or by phone or email.

The Eco Design Advisor initiative has a lot of potential in helping to promote and provide much-needed information and advice on exceeding the minimum to consumers and industry professionals. As we outline later in the report, few of the consumers we spoke with engaged or were aware of the service. An up-to-date evaluation of the initiative may be a helpful future exercise, so we can understand who is accessing this service rather than relying on anecdotal evidence. An evaluation undertaken by BRANZ in 2013 found that consumers felt the main improvement that could be made to the service was building awareness through better promotion of the programme (Jaques, 2013).

3.8 BRANZ Level

Website: www.level.org.nz

The Level website is devoted to sustainable building and is operated by BRANZ. Level is designed to provide information and guidance on sustainability features in the design and building of homes in order to help create homes that have less impact on the environment and are healthier, more comfortable and have lower running costs.

Level outlines specific information on topics such as insulation or windows. The Level website also contains links to free BRANZ resources and BRANZ fact sheets. For example, the *Easy guide to eco-building: Design, build and live with the environment* (Mittermuller, Mardon & Jaques, 2006) has advice for building compatibly with the environment, such as positioning the house for solar energy use and saving water. It also has a comprehensive list of other material and resource links.

Level presents information that has potential for building professionals wishing to learn more about exceeding the minimum. However, the website lacks specific explicit information on exceeding the minimum, such as outlining cost and benefits of building beyond Code-minimum housing.

3.9 BRANZ Up-Spec

Website: www.branz.co.nz/up-spec



Up-Spec is a BRANZ web resource that includes a range of information on simple steps to create a higher-performing home. The website is directed at a wide audience, and is primarily concerned with:

- comfortable temperatures
- energy efficiency
- water management

Information is focused on nine climate zones: Auckland, Tauranga, Hamilton, Napier, Wellington, Nelson, Christchurch, Dunedin and Invercargill.

The website offers detailed but accessible information and includes links to tools such as ALF (Annual Loss Factor) – a free online tool to aid the thermal design of houses. It provides a step-by-step method for calculating the energy performance of conventional New Zealand houses. The website also provides links to the Eco Design Advisor Service, EECA and other related websites.

Since the website was developed in 2015, it has not been widely used. To date, it has received approximately 1,600 landing page views. It is not known why the website isn't being utilised more by users, but a possible reason could be the use of specific terminology like up-spec. This is a colloquial term used within the building industry for higher-performing features.

3.10 Community Energy Network

Website: www.communityenergy.org.nz

Related websites: www.sustaintrust.org.nz, www.awaruasynergy.co.nz, www.healthyhomesnorth.co.nz

The Community Energy Network (CEN) is a collective of not-for-profit community-based organisations devoted to improving and creating warmer, drier and healthier homes across New Zealand. Key members of the collective include the Sustainability Trust in Wellington, Awarua Synergy in Invercargill and Healthy Homes Tai Tokerau in Northland.

CEN's goal is to create healthy housing, which is seen as crucial to a healthy society and a basic human right. CEN outlines minimum standards that all existing residential buildings in New Zealand should be able to meet in a cost-effective manner:

- Portable LPG gas burners should be made illegal due to health impacts of their use, safety concerns and poor heating performance.
- Where there is an accessible underfloor cavity, all properties should have a moisture barrier installed.
- All bathrooms and kitchens should have appropriately sized ventilation systems (not including windows).
- Minimum indoor temperatures based around minimising health impacts from cold homes must be at least 16°C in bedrooms and 18°C in living areas.

CEN believes New Zealand's approach to poor-quality housing stock should be holistic. Addressing just one of the causes of a cold and damp house often does not result in the positive outcomes envisioned – a poorly designed house with no or inadequate heating will be cold irrespective of whether it has good insulation or not.



In order to help create better housing for New Zealanders, CEN focuses on four key areas:

- **Advice:** CEN provides advice to consumers on how to improve home performance. Key advice given to consumers is focused on changes in occupant behaviour and making sure that houses have:
 - properly installed insulation
 - the right type of heating
 - ventilation to remove damp stale air
 - no draughts
 - a ground moisture barrier if the house has a raised floor.
- **Insulation:** CEN is involved in educating people about insulation for their home, especially the benefits of ceiling and underfloor insulation. CEN also helps consumers get access to the EECA Warm Up New Zealand home insulation scheme.
- **Curtains:** CEN provides consumer advice on the benefits of curtains especially for maintaining heat within a home. CEN recognises that well installed, quality curtains are important for a house's thermal performance and are a cost-effective way to improve heating. CEN recognises that double glazing may not be an obtainable option for established homes due to the cost. CEN also provides advice on materials, design and how to hang curtains properly, which can be important for DIY consumers. Some partner CEN organisations also run curtain banks so that consumers can access curtains for their home at little or no cost.
- **Home Performance Advisor Service:** A number of CEN organisations provide home performance assessment services that assess houses with regard to heating, insulation and moisture levels either freely or at low cost. Home Performance Advisors aim to make suggestions for house modifications or house occupant behaviour to increase house performance. Information is also given to consumers, such as availability of discounted products, to help promote energy and water efficiency.

CEN provides a useful resource for consumers, especially for those wishing to retrofit their homes. However, similarly to some of the other information sources, it provides little information, if at all, on how consumers could incorporate these features into designs for their new homes. Nonetheless, it is a point of contact that could provide consumers with further important advice.

3.11 Conclusion

This consumer information audit has highlighted a number of key resources available to help inform, educate and advise consumers on creating a higher-performing house. There are a number of key resources – such as EECA's Energywise, MBIE's Smarter Homes and BRANZ's Up-Spec websites – that provide important information, tools and resources. These websites also outline a number of services such as the Eco Design Advisor service and Community Energy Network to help consumers in their decision making and planning. From examining the information and language used in the websites, we can observe that a lot of the information available is directed at educated and informed consumers who know what they are looking for.

The information audit has also highlighted a number of information sources that could be modified and utilised to help inform and encourage consumers to learn about exceeding the minimum building standards and their benefit, such as the Building Guide and Consumer NZ. EECA's Energywise web resource presents a good framework of how to plan and implement a strategy of encouraging consumers to adopt healthy



housing behaviours. We would suggest similar initiatives are also needed for exceeding the minimum, such as multi-platform messages that inform and educate consumers about exceeding the minimum and its benefits. A key aspect of this information is that it must come from a reputable evidence base, such as the information provided on BRANZ Up-Spec, to enable evidence-based decision making for consumers.



4. The choice to exceed the minimum

The aim of this research project is to understand how consumers make choices about exceeding the minimum and to examine the current state of knowledge and communication between industry and consumers in relation to exceeding the minimum. Consumer focus groups were held in Christchurch and Wellington to discuss participants' experience of the building process. The aim was to gain an understanding of how choices were made during the planning, design and building process in terms of what information was sought and how information was accessed about the choice to exceed the minimum. A workshop with recognised professionals working within the higher-performing housing industry from across the country was held in Wellington to discuss these issues with a focus on identifying potential barriers and solutions.

4.1 Emerging themes

In addition to participants talking about various aspects of house building, the main themes to emerge from the consumer focus groups were communication, energy efficiency, health, information, quality, trust and confidence. Additionally, many people spoke about their perceptions of the current Building Code as well as what they have done and why in terms of building beyond Code. As expected, earthquake-related issues tended to dominate the discussions in Christchurch. In general, the participants were probably more aware than the average homeowner about the Building Code being the minimum standard, given that they had agreed to attend focus groups on this subject.

Many of the participants were very interested in increasing energy efficiency and wanting a warm, dry and healthy home. However, there was a very low level of awareness on some aspects – for example, specific requirements such as R-values of insulation and rating tools such as Homestar. Only two participants were familiar with Homestar. One had heard about it through the TV programme *The Block*, and the other had previously worked with a Homestar assessor. None of the other consumer focus group participants seemed to have heard about Homestar, despite their interest in energy efficiency. However, the two who were familiar with Homestar were also very enthusiastic about it.

More in-depth discussions took place during the expert focus group as the professionals exchanged personal experiences highlighting existing problems and worked through potential solutions as a group. All the themes that emerged from the focus groups as mentioned above were covered in these discussions. Other themes discussed were:

- Homestar
- new innovations
- sustainability
- current legal/policy restrictions
- affordability
- New Zealand culture
- resistance to building beyond Code
- communication about exceeding the minimum including reframing and using new terminology.



Although the industry professionals had expertise in different areas of higher-performing houses, there was consensus about the current low building standards and the need for change.

4.2 Accessing information

The most satisfied participants from the consumer focus groups were those who were already passionate about higher-performing houses, had done a lot of research themselves and knew exactly what they wanted in terms of building performance. One participant from Christchurch, whose building project was not earthquake related, moved back to Christchurch after the major earthquakes. She did most of her research through personal contacts as her son worked in the building industry:

My dream was always to build an eco-house or a house that has quite a lot of eco features. So it had to have photovoltaics, it had to have greywater waste. It had to have – I've been jotting some things down – we've got two huge water tanks for the water off our roof. So we've got all of those things. (BS, female, 50s, Christchurch, FG2).

A couple from Wellington, one of whom was an engineer, talked about the process behind their decision making to build beyond Code. The couple researched using the internet, attended seminars and visited prospective builders. From their research came a real desire to put their words into action:

I've always been reasonably sustainably conscious ... if I could put it like that ... and I'm an engineer ... we've always discussed insulation, power generation, you know, various methods of ... making sure that your house is sustainable. And when we decided to build a house, I thought, well, I'll put the money where my mouth was ... and actually do it. (GC, male, 40s, Wellington, FG4)

However, this couple expressed their disappointment with the lack of New Zealand-specific information available on the internet about options to build beyond Code and the adoption of sustainability features:

There's very, very few New Zealand websites about New Zealand conditions ... whether you're talking about – well, you can talk about anything you like – wind generation, hydro, micro-hydro, solar power, insulation, orientation, lighting, windows, whatever you like. A lot of the information's actually all overseas, and you have to think, well, will this actually work? And if, if it'll work, can we actually get it? (CC, female, 40s, Wellington, FG4)

Other participants spoke about how difficult it was to find any information about building beyond Code and that they had to visit lots of different unlinked websites or make numerous phone calls to find the required information. They stated that it was very time consuming, which suggests that only the very dedicated were likely to persist. Indeed, such experiences validate our information audit – a lot of the web resources lacked context and specific information directed at consumers. Those who had struggled to find information said they would have liked to have been presented with various options that were explained in easily understood language. An example would be a design aspect with a range of features including what it did and for what costs and so on. A potential barrier for consumers wanting to access information is not being familiar with the technical vocabulary – for example, knowledge and understanding of insulation R-values. Many who were not satisfied with their builders, particularly those in Christchurch, wished they had done more research at the



beginning of the process. They spoke about the general lack of communication and information available and indicated that the average consumer would probably not be familiar with building standards or how to improve on them.

4.3 Trust and confidence in building professionals

The importance of trust and confidence emerged as a very significant factor for consumers especially in selecting a builder. Participants who had a good building experience spoke about how they trusted their builder. Those that hadn't had a good experience complained mostly about industry failure, such as a lack of communication between builders and the consumer. In Christchurch among those having rebuilds, many complained about builders not being interested in incorporating high-performance features or doing anything different to what they normally do. They said some builders resisted or refused to consider higher-quality insulation or other energy efficiency options. Such experiences suggest an industry failure to help build beyond Code. A lack of trust or confidence also emerged in the discussions in relation to architects, designers and councils amongst others. One participant had specifically asked the local council about building beyond Code and found them unhelpful:

... going back 2 or 3 years, I rang the council, just rang ... the duty officer, building duty officer, and I said, "Why, what sort of, what's your approach if I build beyond Code?" And they said, "We're not interested. All we're interested in is that you build to Code." (BW, male, 60s Christchurch, FG1)

A Wellington participant who was passionate about energy efficiency went so far as to advise other potential home builders to take control and enact greater consumer sovereignty, avoid architects and question designs that might be presented to them by builders:

I think that the best advice I could actually give is, if you've got an idea of what you want, don't go to an architect ... and don't go to a big building company either ... find a building company that you are actually comfortable with ... and don't just settle for the design because that's the design you're presented with. Because ... I mean you're paying for the house. You need to actually get what you want ... not what the building company wants you to have. (GC, male, 40s, Wellington, FG4)

A Wellington participant exemplified consumer sovereignty and recalled their positive experience of building beyond Code. This was mainly due to having found a builder they completely trusted:

And the company that we finally chose, not only did they say ... we will build whatever you want, but their standard specs were actually ... higher than the building standard ... so, basically we were – well, to cut a long story short, we've got a house now that will sit at 20°C [indoors through passive heating], period. (CC, female, 40s, Wellington, FG4)

4.4 Standard of New Zealand housing stock

All participants in both the consumer and the industry expert focus groups were aware of the generally low standard of housing in New Zealand. Many spoke about their childhood memories of living in a cold draughty villa in which only one room was heated with a wood-burning fire or freezing flats when they were students. Participants who had moved to New Zealand from Europe and North America spoke of how



shocked they were by how cold the houses were when they first arrived. A few participants were currently renting. One spoke of how her landlord refused to install insulation as he didn't think it necessary in Wellington. A researcher in the expert focus group described how she felt disempowered by the lack of control she had through the renting process. She was shocked that, even with a high income, she was shown numerous rental properties "with holes in the wall to the outside". Rather alarmingly, a high-performance building professional who attended the Wellington expert focus group told how poor building quality keeps on perpetuating, as homeowners with leaky homes tend to rent them out:

I mean we do lots of reclads. People find out their house is leaking. They rent it out, go and live in a healthy home. It's pretty bloody disgusting ... if I had an office that was leaking and my staff were getting sick, I would be in jail ... But you can buy a house that's leaking, rent it out and ... make a couple of hundred thousand dollars in 6 months in Auckland ... the Building Code's just absolutely shocking. (High-performance builder, expert focus group)

The perception of the general public is probably that these issues have been sorted with the updates to the Building Code over time, as one participant expressed:

I grew up in a house with no insulation anywhere ... and most of the sort of new builds and things that I go into now are considerably warmer and more comfortable than most of those houses. So there has been an escalation in ... comfort levels over time. (GS, male, 40s, Wellington, FG3)

As this participant explained, there is an inherent belief that the New Zealand Building Code is a quality assurance mechanism rather than the minimum housing level that buildings should be built to. This misunderstanding of the Building Code is an important barrier to building beyond Code.

One of the building professionals who attended the expert focus group explained:

BRANZ research ... showed that 45% of people going into new homes feel that they're cold and uncomfortable ... What's going on there that we're building these sort of houses, new builds, where they're not warm and comfortable enough? (Building consultant, expert focus group)

4.5 Changing attitudes to accept building beyond Code

Within both the consumer and industry expert focus groups, a major barrier to exceeding the minimum was the attitudes of consumers and industry to the building process. For example, it was noted by several consumers that group home building companies' salespeople were often hesitant about selling higher-performing housing features such as greater energy efficiency to consumers. A participant from one of the consumer focus groups had noted the lack of building performance measures like those given on appliances for energy efficiency. The participant went on to suggest that perhaps buildings in New Zealand should possess a mandatory energy performance certificate that outlines the energy efficiency of the building, much like in the UK and the Australian Capital Territory. Other participants from the same focus group spoke about how real estate agents are driven by commission and are not incentivised to promote higher-performing features like energy efficiency. This again was brought back to energy performance certificates on appliances, which could be applied to houses:



So you have enough information to seek the fridge you wanted – you spec'd exactly ... and so it feels like the salesperson, that didn't outweigh the incentive. So they didn't perceive that they would change their behaviour for this customer 'cause it wasn't gonna work with this customer. So they should actually have given you what you wanted, that you really did truly believe that. If 60% their customers came in with a ... spec like that, then that would become their new norm. (HS, male, 50s, Wellington, FG3)

Building professionals from the expert workshop had similar discussions about incentives:

It's ... a real challenge to get consumers to do better than Code, particularly in the group home builder housing market, because it's sales driven. (High-performance builder, expert focus group)

The sales and profit-driven mentality of the housing market often meant that an issue like building beyond Code was often sidelined within the industry:

I mean we [designed and built] the 7-star home in New Zealand, and it was a home that I designed for [a group home building company] in 2011. And then that was the only one. Then they did hundreds and hundreds of 3-star homes after that. How misleading is that? ... Is that the sales system, or was it just people saying, "No, I'm not interested in spending the extra"? ... we sent a mystery shopper in there, and they started asking the salesperson about the house ... and energy efficiency and things, and it's like, "Oh, I don't really know about that. You'll have to talk ... to somebody else." (High-performance builder, expert focus group)

This highlights that a lack of industry knowledge about higher-performing housing is an important barrier in consumers' interactions with building professionals – in this instance, a group home builder. The challenge is to how to engender interest within the real estate and building construction industry in the features of higher-performing homes, such as energy efficiency. It may be too simplistic to suggest merely offering incentives. Before that can happen, there is a great need within New Zealand for a cultural shift towards housing and encouraging innovation within the housing market. One professional described how the sustainable building design requirements of the Proposed Auckland Unitary Plan (PAUP) – one of which included Homestar 6 and above – helped encourage the industry to construct higher-performing homes:

One thing that is quite illustrative in terms of how the case study in that area [is] what's happened in Auckland with the Special Housing Areas and their requirement under the [PAUP] to have 6-star homes built. So suddenly, a whole raft of companies that have never really come across Homestar properly before had to start getting their heads around how to design and build homes to that high standard. And I think that was responsible, actually, for bringing on quite a few innovations ... in some of the product spaces, so in terms of things like perimeter insulation around the floor, which the industry largely sort of scoffed at for years and years, saying, "No, no, we don't need that. That's nonsense." And then, because Homestar was a requirement, suddenly some of those industry suppliers came up with a commercial solution that could be put in place there. And what's gonna be really interesting now is ... now that they've withdrawn the need to get 6-star Homestar, to see how many of those companies that changed their procedures to provide a better home stick with it. (Building consultant, expert focus group)



As this participant suggests, if the building industry is able to construct higher-performing houses, but is not forced to do so such as being mandated within the Building Code, it is unlikely the industry will build higher-performing homes.

4.6 Earthquake-related rebuilds

Unsurprisingly, Earthquake Commission (EQC) and insurance company issues featured largely in the Christchurch focus groups. Complaints were made about the building professionals who were engaged as part of EQC or insurance rebuilds. The complaints mainly related to errors being made by builders, architects and councils as well as a general lack of communication and apathy about incorporating higher-performing features into the rebuilding of houses. In comparison to other participants who had taken an insurance payout, homeowners who were having EQC/insurance rebuilds tended to be excluded from the communication process. Their questions and suggestions (such as higher-performance feature to enhance energy efficiency or thermal comfort) were often ignored by the builders. The homeowners tended to attribute this problem to the builders having severe time constraints due to the scale of damage caused by the earthquake. This was also given as a possible reason for the builders not being interested in their suggestions to go beyond Code – they wanted to only do what they had always done as it was quicker.

This issue is illustrated in an exchange between two participants of the first focus group in Christchurch:

The builder was doing the build, and Southern Response were overseeing it through [a construction company], so there's three of them there, and they still couldn't get a window right. Three of them, you know. (AB, female, 50s, Christchurch, FG1)

So the issue here is that the options that you could have chosen were never costed, and you were never able to make sensible choices. And you might have said, if you could, "Yes, I will spend an extra ... whatever and have that one and that one." But that didn't come up. (BW, male, 60s, Christchurch, FG1)

No. No, no, no, no. And anything you did say, they were just like, "Why, why do you want that?" You know, it was like, "We need to get this ..." It was, "Hurry, up! Hurry up! ... We need to shove this, get it costed, get it consented, get it started." ... It was just boom, boom, boom!" (AB, female, 50s, Christchurch, FG1)

Even at the first focus group in Christchurch in which EQC issues tended to dominate, the person with the fewest complaints had had to take a payout. EQC would not deal with properties that had existing weathertight issues. This participant seemed to have more control over the rebuild process than those who were in the EQC system:

... in a way, I was glad to be thrown out of that process. And it was a builder that I had used. He was the foreman on site, originally ... and since then has built up ... a company and a really good reputation. But I knew he wasn't gonna go belly up and leave me with half a house or a shoddy job or whatever. (SP, female, 50s, Christchurch, FG1)

The consumers' experiences of the Christchurch earthquake rebuild help to highlight how a competitive and under-pressure construction industry can have difficulty



delivering houses that exceed the minimum, as there is often little time to procure beyond-Code products or learn how to install them if extra time is required.

4.7 Cost of building beyond Code

There was a general perception amongst consumers we talked with that an energy-efficient house was much more expensive than a standard house. But focus group participants who had done their research asserted that it need not cost more if you get the design right, which is particularly true of new builds rather than renovations:

So it would be different if I was building from scratch, so the fact that there's more possibility to, through design, to get the cost equation working better. (PS, male, 60s, Wellington, FG3)

So many of those ... the Homestar sort of principles are more about good design than cost. (KR, female, 40s, Christchurch, FG1)

We designed a house that ... the heating hardly ever comes on because ... there's so much solar going into the house ... and I just really like that. (CC, female, 40s, Wellington, FG4)

The building professionals from our expert focus group also echoed similar sentiments that exceeding the minimum does not need to cost too much, but is more about design decisions – for more, see Jaques, Norman and Page (2015). One participant discussed the creation of the NOW Home project:

We built the NOW Home in Auckland, which was about 2006/07 it was completed, and that really was just built to show that, for about \$250,000 in the Auckland market, you could build a home that didn't need to be heated at any time during the year. Well I think there were three periods in that year that it dropped below 18°C – 3 days – and so using conventional materials just built to a higher performance standard, you could get a home that didn't require any heating. (Building consultant, expert focus group)

The link between higher-performing housing and design was also emphasised by another builder at our industry expert focus group:

... I think a 6 star shouldn't really cost any more. It's just down to a good design. (High-performance builder, expert focus group)

Homestar was recognised by industry experts as a good way to signal the higher-performing aspects of a house. Cost had been identified as a key reason why Homestar was not often widely taken up by consumers. However, as a high-performance builder explained, the costs associated with Homestar were mainly attributed to assessment and certification rather than following the design principles. For example, the costs associated with Homestar certification are \$3,800 – \$1,213 for a Homestar administration and audit fee, \$2,070 for a Homestar assessor fee and \$517 for additional design fees (R. Jaques, personal communication, 28 February 2018):

You know it's really expensive and really time-consuming to do a rating. And I love it because it creates awareness about a whole bunch of stuff that goes into make a good home. And but bugger all people are actually getting a certificate to put on the wall. And that's a problem for them. I don't know where Homestar's gonna go, but that's a problem for them because, basically, all of their work that they've spent lots of money developing is just getting used



freely, and they're not actually gonna be financially sustainable ... they need people getting ratings to actually keep going. (Architectural designer, expert focus group)

Although design was an important part of achieving a cost-effective higher-performing and sustainable home, the understanding of design issues such as orientation were little understood within the industry. One industry experts who undertook a Homestar assessment for a local authority describes the experience:

They'd already designed it, and it was shocking in terms of the Homestar rating. The reason we were asked to be involved was to assist ... [a] 6-star minimum, because [the local council] had 6-star as a minimum standard. And we appraised the existing design, and 90% of it would be nowhere near that. And some of it, 90% was 3-star, even though that was written in the brief ... and it was ... row housing where there was long cave-like units that didn't get much sun access. (High-performance builder, expert focus group)

One participant from the consumer focus groups had also encountered this problem:

... for us, the hardest part was actually finding some land that actually suited the requirements ... so we could get the right orientation. (CC, female, 40s, Wellington, FG4)

The question of cost was viewed by consumers as an important issue. The issue of cost was also raised within our industry expert focus group. It was emphasised that cost should not just be understood in upfront terms, such as the cost of buying a house, but also in terms of cost of the life cycle energy use of the house and other measures such as the cost of not having a warm and dry house:

OK, so what does your home really cost you in terms of heating bills? What does [your] home really cost you or save you in terms of doctor's visits? (Researcher, expert focus group).

One way to establish a cost-effective and healthy home that exceeds the minimum is the use of an energy performance measure or system that outlines house performance with measures such as energy use and thermal comfort. This was put forward by industry experts and consumers alike who used car analogies:

I think the car analogy ... is a good one. You know, EECA did the ad – two prices to every car ... the window price and then the annual fuel cost, which, by law, has to be displayed in the side window. And, you know, people think about their car when they buy a new car more than their house. And houses are around for a hell of a lot longer ... when they buy even an existing house, they should be saying, "Please, can I see a copy of the power bill? I want to know how much it's going cost to run this house." But they don't even go there. They don't think about it. They just expect that it's gonna have a big power bill and put up with it ... but in terms of communication, that could be a good tool, using the car analogy. (Building consultant, expert focus group).

Nobody wants to buy ... the cheapest model car ... it vibrates like hell and everything else. Everyone wants to buy the model not so much with all the extra features, but ... [the one] that doesn't vibrate. And exactly the same applies with your house. If you build a Code-minimum house, it's not that great in terms of when your teenagers have a party. The floor bounces up and down.



When the nor'wester blows, even if it's braced to exactly Code, your house still shakes about ... and a southerly for that matter as well. And the insulation standards are now OK since they upped them 5 years ago, but they're still not fantastic ... Well, there's three areas where you can go well beyond Code ... and you end up with a house that is simply nicer to live in. (GS, male, 40s, Wellington, FG3)

The car analogy here acts as an assurance mechanism that helps to determine the level of performance of a house. A key aspect about quality assurance for building performance is that it is not solely about design but how the house performs over the life cycle of the building. Such an assurance would be of great benefit for the industry and consumers to build homes that are guaranteed to perform to a certain level over the building's life cycle.

4.8 New Zealand culture

Another major barrier to the uptake of higher-performing homes within New Zealand was seen by our industry and consumer groups as being centred on New Zealand culture (beliefs, ideologies and practices associated with housing). A key cultural norm that was discussed related to the acceptance of poor-quality homes, but the lack of choice should also be acknowledged. Consumer focus group participants made some tongue-in-cheek comments about poor housing standards being part of New Zealand's culture:

And the next thing is, well, hang on, our living conditions, we have leaky buildings. They got approved. We have cladding that falls off ... but they got approved. Well maybe we have to be a bit more lateral in our [thinking]. (NH, male, 50s, Wellington, FG3)

Are you suggesting that [we] should be approving stuff that doesn't conform to our cultural norms, that doesn't fall off and doesn't leak? (HS, male, 50s, Wellington, FG3)

New Zealand culture was also discussed within the industry expert focus group. Two key areas considered were the need to change the normality of living in a cold house (as there is often little choice not too) and valuing features like granite kitchen benchtops over things like energy efficiency and having a warm, dry house:

We find that consumers tend to go more for the wow factor – something they can see rather than something that's hidden in the building. (Building official, expert focus group)

Another expert focus group participant suggested that, instead of promoting larger houses because of the better profit margins, we should instead focus on quality over quantity:

[We should make] houses spatially aware. We can do smaller houses that still feel adequately spacious by having ... the openings in the right places and how they relate to the site. (Architectural designer, expert focus group)

One other industry workshop participant summarised the current situation within New Zealand where we see and value the home as a commodity rather than something that can bring us health and comfort:



We have a culture where a home is a status symbol for those who can afford it ... where you have a degree of discretion about your home. It's something that you can profit out of. It's about wealth and it's about wow! ... and we don't have a culture where a home is a habitat, where it's a place to be safe and dry and comfortable, apart from in places like Christchurch where it ... all of a sudden becomes not safe and dry and comfortable any more 'cause it's a tent, 'cause you've been out of your home. (Researcher, expert focus group)

The sentiment was also shared that, if you complain about your house being cold, others are likely to criticise you:

.. if you're cold in your house, you really do need to just man up ... that's shocking to me. But I mean connected to this is this idea that it's normal to be in a cold house here. (Government advisor, expert focus group)

Key barriers to the wider uptake of exceeding the minimum within the building industry and the housing market are how we value housing or our cultural acceptance of cold and poor housing. These are difficult issues as they require a change to New Zealand's culture. So how could we change the culture? One solution was put forward by an industry expert:

It's about kind of building a decent home, isn't it? ... you almost want [the] builder to say to the consumer, "I can build you the crap home that's in your plans or ... I can build you a normal, decent home." It's kind of gotta be the norm to ... go above the Code ... We've got to re-establish the norm. (Building consultant, expert focus group)

While part of the solution is a large number of builders wanting to build better houses, we should also extend this to including a role for consumers who should expect more too. There was a consensus amongst our industry experts that, in order to change New Zealanders' perceptions about adopting higher-performing housing, it has to be presented as a home-grown solution of 'Kiwi ingenuity' rather than being required to catch up to European or North American standards. Trying to change industry cultural practices is hugely complex and requires a multi-pronged approach. However, one significant element would be to change the way people speak about housing, reframing measures and using new terminology about how we refer to housing.

4.9 Changing expectations

A key challenge for the large-scale uptake by consumers and the industry of exceeding the minimum is to change people's expectations about housing. A change is needed in consumer and industry expectations in key areas such as cost versus quality and the house as an asset or commodity versus a healthy home that is warm, dry and energy efficient. A change in terminology was also considered necessary when referring to housing, such as Code minimum versus exceeding the Code or beyond Code to differentiate between standard homes and higher-performing homes. One industry expert discussed how consumers need to change their focus from the value of housing as an investment to be maximised to more thinking about the quality of housing:

I think still people go to the home-building company, and they are told, "Our spec is fine. You can get a bigger house for a smaller square metre rate." ... but that metric is wrong, and it seems to be driving people's decisions about ... if they do a bigger house, it'll be more valuable, so "I need to get on the property ladder and get as much as I can", even if it's got four bedrooms and they're



only gonna use two of them. They're still wanting to build a bigger house but to a lower quality because they think that's what's gonna sell. And, you know, 5 or 6 years is ... the period at which most people own a house and then they sell it. And they might think, "Well I could do Homestar and I could do all those good things. I'll do that next time. I won't do it this time, I'll do it next time." (High-performance builder, expert focus group)

This is linked closely with changing practices and attitudes. Perhaps one of the most challenging ones (along with changing industry practices) is to change how New Zealanders view a house. Participants spoke about promoting the use of different terminology to initiate a change in attitude and to focus on creating a comfortable, dry, warm and healthy home, rather than viewing homes merely as a commodity:

If we talk about warmth and comfort and if we talk about health and if we talk about manageable power bills going forward, then you start to get emotional triggers that positively engage people. (Researcher, expert focus group)

Many of the industry experts we talked with wanted the distinction between standard housing and higher-performing homes recognised more clearly. The building professionals also thought that the term 'Code minimum' would be more helpful than 'exceeding the Code' or 'beyond Code' to highlight that it is the minimum standard:

... I describe the Building Code as the worst possible house that we're legally allowed to build in this country. (High-performance builder, interview)

Recognising that houses built to current Building Code are a minimum standard is an important element in getting consumers and the industry to choose to build higher-performing homes.

4.10 Challenges

These are some of the key challenges from our consumer and expert focus groups that need to be addressed to encourage a greater uptake of houses built beyond Code:

- Getting the design right at the very early stages for building whole-of-life gains. For example, developers of new subdivisions should be positioning roads in order to orient houses to sun. Thoughtful sustainable design need not cost more but encourages smarter design to allow a greater building performance, such as energy efficiency and lower power bills for consumers.
- Getting people (consumers and industry) to consider a whole-building, whole-of-life approach when designing and building their home. A key example when thinking about housing affordability would be to consider the energy performance of the house over its lifetime, not just the costs of buying the property.
- Raising awareness of the benefits of higher-performing homes, such as energy efficiency, as they are warmer, drier and healthier compared to Code-minimum houses. Part of this challenge is changing the cultural expectations New Zealanders have about housing away from the acceptance of cold, damp houses and to value greater housing performance over the wow factor.
- For consumers, a greater integration of web resources, such as having linked websites with concepts and products explained in easily understood language with comparisons of various options with costs. This would enable consumers to balance performance benefits with available budget.



5. Discussion

This report has so far highlighted a number of consumer and industry issues about the widespread adoption of exceeding the minimum. Economic rationalist models of supply and demand suggest that, if consumers' demand for a product increases, producers respond by increasing supply of that product. Within the New Zealand housing market, there is a need to move away from anecdotal evidence about consumer experiences of exceeding the minimum to the creation of an evidence base to help inform decision making. As widespread adoption of exceeding the minimum across the housing market is yet to occur, we need to explore why this is the case. In this discussion, we explore an understanding of why the housing market might be slow to respond to consumer preferences about exceeding the minimum. Standard economic concepts of costs and price are able to explain the lack of widespread adoption in part. However, greater attention to socio-technical issues highlights some of the reasons why innovation and change are difficult to enact within the market. The housing market is best viewed as a socio-technical system, whereby the social and technical are interlinked. Based upon this understanding of the market, we outline the challenge for changing industry and consumer practices with regard to exceeding the minimum.

Higher-performance housing – decision making

Previous BRANZ research (Jaques, Norman & Page, 2015; MacGregor & White, 2018) has highlighted a number of benefits associated with higher-performing houses, such as being quieter, warmer and healthier. The research suggests that, within the market, discussion about higher-performing housing should be reframed from a discussion about the willingness to pay to one about the willingness to afford. This requires the redistribution of risk and cost within the market to allow greater uptake of housing that exceeds the minimum (MacGregor & White, 2018). Such a distinction outlines that consumers may understand and desire the benefits of higher-performing housing but be unwilling within the market to translate this desire into a purchasing decision. As we can observe in our research, a lot of consumers were driven and passionate about exceeding the minimum. However, for a number of reasons, they were unable to adopt all desired features or unable to build a higher-performing house that exceeded the minimum. Some of the key barriers were a lack of information, cost or difficulties with getting the builder to incorporate higher-performing features into the build.

Actual purchasing patterns provide a reliable indication of the level of material demand (but of course not unmet demand). To date, higher-performing homes (Homestar 6) and purpose built high-performance homes (Homestar 10) are few. Indeed, since the introduction of rating tools such as Homestar, there has been poor uptake of Homestar certification that helps to verify the home's performance. NZGBC has seen a slow but steady increase in Homestar certifications from 2012 (18 certifications) to 2016, when 134 houses were certified (Archer, personal communication, 25 August 2017).

Higher-performing homes that exceed the minimum tend to cost more to build. For a higher-performing passive house, consumers can expect to pay \$3,000–3,500 per square metre in Auckland or \$2,200 per square metre outside Auckland (Hawkes, 2017). Stats NZ (2017) shows that the average consent value per square metre rate nationally for housing is currently \$1,930. In Auckland, this rate is slightly higher at \$1,990 per square metre. Consent values often do not accurately reflect the cost to the consumer, so the gap between the rates for higher-performing houses and the national average is unlikely to be as great as shown. However, these estimated costs do provide a good comparison.



Despite the emerging evidence of consumer demand for higher-performing houses, there are perhaps two reasons why large-scale uptake of building beyond Code has remained muted. First, when building a new house, the main purchasing decision is not simply housing quality¹ but incorporates a number of social and material aspects. Considerations include the surrounding neighbourhood such as parks, walkability and quality of local schools and distance to employment. Therefore, housing is not a discrete uniform commodity as perceived within economic models, but rather a more disparate and complex social-material assemblage. Building beyond Code increases risk for builders and developers because consumer demand remains difficult to quantify. Consumer demand for houses that are built beyond Code are difficult to quantify as higher-performing features such as the demand for low-energy housing will always be just one factor in housing purchasing decisions (Lovell, 2005).

Second, consumer demand for higher-performing housing is often limited to certain subsections of the market and are often bespoke designs. Consumer preferences for new products are unlikely to be fully developed within the market unless individuals have had the opportunity to interact with different types of housing such as Passiv Haus. This is particularly the case for many features of higher-performing homes, such as thermally broken windows or enhanced insulation, which are often 'invisible' (Guy & Shove, 2000). This research project suggests that, in order to help encourage consumers and industry to build beyond Code, consumers need to experience higher-performing houses and especially inhabit such houses. The experience of Beacon Pathway's Waitakere NOW home is a case in point. The NOW Home demonstrated great health, social and family benefits from living in this sustainable home. The occupants felt that the NOW Home was quieter. The family also felt healthier, as they had noticed fewer illnesses since living in the NOW Home. The mother noted after their first 3 months: "We haven't had to be home with the kids sick since we've been here." (Beacon Pathway, 2013). Other health benefits for one of the children who was an asthmatic was that they needed their nebuliser less. The mother also felt that the double glazing helped reduce bright light, which helped with recovery from migraines. The experience of living in the NOW Home had a lasting impact on the family, so much so that, when the family moved into their own house (after the demonstration experiment was over), the family sought to adopt a number of the key high-performance design features from the NOW Home. At the top of the list was insulation, double-glazed windows and replacing all the lightbulbs with energy-efficient compact fluorescent lightbulbs.

Without the experience of physically engaging with a higher-performing house, consumers have an imperfect knowledge of the housing product, and market failure is a likely outcome (Lovell, 2005). Within the current housing market, those in the building industry who voluntarily exceed the Building Code are few in number. Therefore, consumers are making purchasing decisions on limited experiences of

¹ BRANZ (2018) defines 'quality' in buildings around three key parameters:

1. **Functionality:** The building meets all of the functional requirements set out in the building contract
2. **Durability:** The ability of building materials, components and construction methods to satisfy performance and functional requirements of the Building Code for the expected life of the building without a reconstruction or major renovation (or repair)
3. **Performance:** Defined through measurable aspects of the building's design - thermal, structural, seismic, acoustic, etc. Performance, as built, must be verified during construction and upon completion of the building process.



different types of dwellings. Given the small number of higher-performing homes available in the New Zealand market, it is unlikely consumers would base purchasing decisions upon experiences with this form of housing. This is an issue, as houses are a durable, long-lasting and expensive product, meaning that people are unlikely to move frequently or buy many houses.

As Lovell (2005) citing Barlow and Ozaki (2003, p.91) explains:

Defining user requirements and adding value to increase 'satisfaction' presupposes that people know what they want and that their needs can be captured and translated into realisable [housing] products.

This suggests consumer demand for higher-performing housing within the market is likely to remain muted because consumer preferences are not well formed. This is especially true given the trouble consumers in our study expressed in finding relevant and useful information about building beyond Code in New Zealand. Lovell (2005) also demonstrates that it takes time for consumer preferences to change, as has been shown with the adoption of heat pumps in New Zealand (Buckett, 2007). Lovell (2005) uses an example of low-energy housing in the UK, where consumer preferences only changed as they adjusted to living in their new low-energy homes. It can be argued that the current lack of consumer experience and knowledge about higher-performing housing within New Zealand is likely to be one major factor curbing the supply and demand of this style of housing.

Industry barriers to higher-performing housing

One might expect the building industry to increase supply of higher-performing homes due to increased consumer interest. By diversifying the housing market to accommodate higher-performing homes, builders and developers could create a competitive advantage by keeping ahead of any possible policy change relating to climate change mitigation and adaptation within New Zealand. However, as previous research has outlined (MacGregor & White, 2018), there are few market incentives for builders to build beyond Code in New Zealand.

Some of the biggest barriers to building beyond code have been outlined in a recent survey (James et al., 2018; MacGregor & White, 2018). A recent survey of the building industry revealed the main barrier to exceeding the minimum was build cost. This was most commonly selected as the most significant barrier by 43% of respondents (MacGregor & White, 2018). Whilst cost was identified by industry as a significant barrier, what made construction costly was not widely understood. This comment from a survey participant positions cost in terms of something extra and nice to have, which is at odds with the benefits of exceeding the minimum such as thermal comfort:

The bespoke nature of housing construction in NZ and its high cost is a barrier to ticking additional 'nice to have' options. (MacGregor & White, 2018, p.49)

The second barrier was the lack of willingness of the house owner and developer to exceed the minimum. This was followed by a lack of knowledge of the owner and life-cycle costs and payback. Other barriers to exceeding the minimum building standard identified by industry respondents included:

- the building consent/compliance process (longer, more complex and/or more expensive for non-standard construction)
- existing Code standards being too low
- availability of products and materials



- documentation.

As an architect commented:

Building consents are harder to achieve for non-standard systems of construction or performance. (MacGregor & White, 2018, p.50)

The industry then faces a number of barriers to overcome to construct more houses that exceed minimum standards. A more structural reason why there is a market failure towards higher-performing homes is the market itself. The New Zealand housing market is currently experiencing a bubble (Tookey, 2016). There is currently high demand for builders, meaning there is a shortage. Given the ability of builders to be able to select specific jobs and the durability and capital cost of producing homes, there is little motivation to innovate and construct higher-performing homes due to the added cost. The added cost (which is still difficult to determine) may make consumers cost averse. It may also create high risk for the builder/developer, especially if the builder is unfamiliar with certain high-performance features and the challenges posed by learning to install new products. For example, obtaining certification for new window systems that may exceed the Building Code may be imported from Europe, but they need to meet New Zealand certification requirements. This can be costly for manufacturers and/or builders and take a long time, which provides a risk for builders who may be under tight time constraints. Longer project delivery times can mean less time to complete other jobs, meaning less money for the builder. Thus, the adoption of higher-performing features across the market includes consideration of an array of factors. These include the costs of production and also the time and effort spent in changing company procedures and changes in attitudes and practices within the construction process. Given the wider context, change within the housing market is difficult and hard to implement within such a socio-technical system. This is due to the tight housing market as there is an undersupply of new housing, meaning that home builders are in a strong market position to sell any new houses they produce. Further, in a downturn, builders may be even less willing to take risks and innovate. It has become an issue of quantity over quality (Tookey, 2016).

Lovell (2005) highlights how innovation in housing, such as the uptake of low-energy housing, will often only happen within protected innovation niches. This means that housing that exceeds the minimum will often only occur because of innovative builders who are driven by innovative design and sustainability or be driven by passionate consumers. To date, most of the higher-performing homes in New Zealand have been constructed by innovative building companies that are small to medium enterprises or driven by consumers. How can innovative building be taken up on a larger scale across the industry and market? The answer is a multi-dimensional approach including regulation, building industry capability, incentives, product development and many others (James et al., 2018). In helping to drive this change, we need to focus more on the consumer's perspective as they are central to the operation of the housing market.

Encouraging consumer choice

As Elizabeth Shove (2003) has observed with regard to a UK Government report entitled *Sustainable Design Opportunities for Change*, "consumers can have a huge impact on sustainable development through their influence as purchasers" (p.2). However, within such conceptualisations of the consumer as an influencer through purchasing power, it frames the consumer as an actor of rational choice. The rational consumer is often conceived in terms of individual behaviour that responds to stimuli. This is one of the reasons why many sustainability and energy-related interventions



aim to target stimuli triggers that attempt to nudge individuals to prompt behaviour change. Based upon this notion of choice as a rational action, behaviour can be modified by incentives, information flows or education (Shove, 2003). Choice then is conceived as an individual act rather than a shared cultural or collective enterprise. The focus on individual behaviours is of course not new within current capitalist market ideologies. For example, advertising is based upon influencing rational choice, well demonstrated in Adam Curtis's documentary series *The Century of the Self* (2002). Encouraging individuals to consume more due to behavioural triggers and cues taps into consumers' desires and expectations. Packard (1957) outlines the key role played by 'hidden persuaders' in consumer decision making. These could be commercial organisations or advertisers that have managed to change individual decision making.

The underlying assumption of rational choice decision making is that the stimuli creates a response. Brown and Cameron (2000) argue that, within the context of sustainability and as our study results have helped to demonstrate with the adoption of higher-performing housing features, the extent of success of the promotion of efforts to influence consumer choices depends on the consumer's commitment and beliefs. For example, for increased utilisation of sustainability, consumers would possess a strong underlying environment commitment. We saw this especially within our Christchurch focus groups. Consumers who were passionate about the issue or had recent experience were more likely to offer their views and experiences compared to the Wellington focus group, who could be described as more 'everyday' consumers. The Christchurch earthquake and the subsequent rebuilding of the city helped attune consumers to specific housing issues, such as increased sustainability and building beyond Code, mostly because they were confronted with such issues.

Motivated consumer actively seek out higher-performing housing features and design as they seek a healthier home or to reduce their ecological footprint. The key point about motivated consumers is that their strong belief means they seek to change their behaviour because they have an investment in it. This type of consumer can be contrasted with the normative consumer, who accepts the status quo. In the context of our study, these are the consumers who are happy with Code-minimum homes. Thus the motivated and the normative consumer help to highlight current practice within the present housing market. Such consumer behaviour highlights two key aspects. First, the housing market tends to focus on individual behaviour, especially rational actors who makes choices and decisions, which fails to account for the complexity of social life such as motivations like wanting a healthy home. The conceptualisation of higher-performing houses within the housing market needs to emphasise aspects that prompt action and mobilise belief, such as emphasising health and wellbeing over the cost of exceeding the minimum or stressing the better building quality of homes that exceed the minimum compared with Code-minimum houses. Therefore, when addressing why or why not consumers adopt higher-performing features within their builds, we need to address the wider socio-technical system rather than individual rational choice consumer decisions. By this we mean it is better to focus on practices – what people do to prompt action – rather than set about to influence and educate through emotional cues.

It is important to emphasise we are not advocating for a consumer choice sovereignty model for exceeding the minimum. This is because a market-based consumer choice approach narrows the space for dialogue about concerns outside the market such as health over build costs. This also ignores what's happening on the supply side. Under a market-based consumer choice approach, dialogue is no longer about the potential for government to regulate minimum standards for a whole sector in the public interest.



Rather, it would become a contest of certification and marketing schemes oriented towards certain segments of the market. The benefits are more likely to accrue to those most able to afford them, rather than those that need them. Likewise, another danger with solely focusing on consumer choice is that the market and policy discourse shifts to what consumers expect (Parker et al., 2017). For example, a policy discourse based on consumer expectation is open to both oversentimentalisation (advocates may promote unrealistic ideals of building beyond Code) and manipulation (consumer expectations may be conditioned by whoever can control the most sophisticated marketing and information campaigns such as group home builders). Simply focusing on educating or providing information to consumers may be cost effective, but it moves attention away from revising regulation and standards and the policing of compliance (Parker et al., 2017).

How to encourage consumers to exceed the minimum

In this report, we have suggested there is a need to consider the role of socio-technical systems in shaping and structuring individual behaviour. By focusing on consumer choice, we often miss the complexity in which the housing market operates. So instead of focusing on individual consumers, a concerted effort is needed to focus on the socio-technical system, with the top challenge being the current organisation of market practices, especially within industry. By attending to practices rather than individual behaviours, a process can be adopted that focuses on involving and addressing the complex relations between meanings, skills and wider institutional and material aspects and how different communities of practice are implicated and emerge over time (Hargreaves, 2008, p.243). We have also suggested that we need to consider how we conceptualise the housing market, especially how we frame exceeding the minimum by moving away from discussions about cost to one localising social and health impacts and thus prompting the consumer to consider ways in which practices might be accomplished differently. It is therefore imperative that a transformational change programme be initiated that can challenge existing ideas and encourage practices that promote exceeding the minimum. A 'coalition of the willing' needs to be created to help facilitate cultural change and empower consumers and industry to provide higher quality and warmer, drier and healthier homes. Exceeding the minimum building standards is a necessary element in the future health and wellbeing of New Zealanders.



6. Conclusion and recommendations

This report examines consumer decision making about the choice to exceed the minimum. A particular focus of research has been to examine the interactions between consumers and the building industry surrounding the choice to exceed the minimum.

The research suggests that, within New Zealand, there is current market, industry and regulatory failure to build higher-performing houses that exceed the minimum. This is due to a number of issues. The perception within the market that the Building Code is a quality assurance mechanism, rather than a legal minimum, means that the choice to exceed is often difficult for consumers. Another issue that makes the choice to exceed the minimum difficult is the relationship, trust and confidence between consumers and building professionals. Strict time limits and an unwillingness of building professionals to explore new building systems may mean a builder is reluctant to exceed the minimum even if a consumer desires to do it.

Our research has drawn attention to several ways in which exceeding the minimum could be encouraged amongst consumers and industry. One of the main strategies is to help change the attitudes of consumers and industry towards exceeding the minimum and to acknowledge the benefits. By this we mean that we need to encourage industry and give them the capability to construct houses that exceed the minimum at scale, so the supply of these houses increases to create a new norm within the housing market. Another strategy is to acknowledge that cost is a potential barrier in the current housing market, mainly due to the lack of incentives to exceed the minimum. It also needs to be acknowledged that the delivery of higher-performing houses is not entirely related to cost. Low-cost design solutions that exceed the minimum and provide greater sustainability and health such as thermal comfort are achievable in the current housing market. For example, the NOW Home demonstrated that exceeding the minimum can be cost-effective to build a high-quality residential house. Further, there are a number of thoughtful design solutions that can be implemented in building projects to help consumers to exceed the minimum that can enhance building performance but not cost a lot of money. An example is making sure the house has a certain level of airtightness. A lot of these strategies require a shift in New Zealanders' attitudes, beliefs and values towards housing. Something that needs changing is consumer expectations around cost versus quality, house as asset/commodity versus a healthy home and Code minimum versus exceeding the minimum. There are also other aspects of New Zealand's culture that need changing, such as:

- focusing on building smaller houses
- adjusting standards of thermal comfort to better suit individual needs
- a need to revise the current Building Code to integrate higher-performing homes into future demand for industry and consumers.

If we are to encourage consumers and industry practices to build higher-performing houses that exceed the minimum, we need a context to support this change in practice by:

- improving existing information through the use of multi-platform messages and mediums that inform and encourage information flows between consumers and industry professionals



- using evidence-based information so that consumers can choose building performance options for climate, social circumstances, budget and what the industry can deliver
- encouraging consumers and industry to consider a whole-building, whole-of-life approach when designing and building houses
- raising awareness of houses that exceed the minimum through demonstration and getting consumers and industry professionals to experience and interact with these houses
- exploring options to enhance regulation to encourage the adoption of higher-performing design and construction for residential housing.

Recommendations

- Further research is needed that examines behaviour change for consumers, especially what this process looks like, and outlines how to engage consumers to adopt exceeding the minimum and how it will feed in to the 'Exceeding the minimum' programme's roadmap for change.
- Further research is needed on how to encourage industry to adopt building performance practices to exceed minimum building standards.
- Work with industry to develop better information and advice on exceeding the minimum for the wider industry and consumers, such as working with the Building Guide magazine to include higher-performing features and products within their information to promote awareness and demonstrate benefits to influence consumer decision making.
- Develop BRANZ-specific resources on exceeding the minimum and its benefits. This could include refreshing and updating the Up-Spec and/or Level websites with more user-friendly and consumer and industry-specific information.
- Outline the performance requirements of what exceeding the minimum means in real terms for building performance so that consumers and industry can differentiate between Code minimum, better and best-practice building performance. As understanding the different building performance options will give consumers and industry greater choice in their decision making.



References

- Beacon Pathway. (2013). *The benefits of living in the Waitakere NOW Home*. Retrieved from http://www.beaconpathway.co.nz/new-homes/article/the_benefits_of_living_in_a_now_home
- Bond, S. (2013). Assessing New Zealand householders' home use behaviours: How energy efficient are they? *Pacific Rim Property Research Journal*, 19(1), 17–41.
- BRANZ. (2017). *Exceeding the minimum research programme*. Retrieved from <https://www.branz.co.nz/etm>
- BRANZ. (2018). *Eliminating quality issues research programme*. Retrieved from <https://www.branz.co.nz/eqi>
- Brown, P. & Cameron, L. (2000). What can be done to reduce overconsumption? *Ecological Economics*, 32(1), 27–41.
- Buckett, N. (2007). *National impacts of the widespread adoption of heat pumps in New Zealand*. BRANZ Study Report SR169. Judgeford, New Zealand: BRANZ Ltd.
- Christie, L. (2010). *Understanding New Zealand homeowners apparent reluctance to adopt housing-sustainability innovations* (PhD thesis). School of Architecture and Design, Victoria University of Wellington, Wellington, New Zealand.
- Curtis, A. (Writer, Director & Producer). (2002). *The century of the self* [Television series]. London, UK: BBC Two.
- Easton, L. (2009). *Papakowhai renovations: Project summary and case studies*. Report TE106/18. Auckland, New Zealand: Beacon Pathway.
- Erhorn, H. & Erhorn-Kluttig, H. (2011). *Terms and definitions for high performance buildings*. Brussels, Belgium: European Union.
- Guy, S. & Shove, E. (2000). *The sociology of energy, buildings and the environment: Constructing knowledge, designing practice*. London, UK: Routledge.
- Hargreaves, T. (2008). *Making pro-environmental behaviour work: An ethnographic case study of practice, process and power in the workplace* (PhD thesis). University of East Anglia, Norwich, UK.
- Hawkes, C. (2017, 28 September). *Passive eHaus and multi-generational living provide many benefits*. Retrieved from <https://www.stuff.co.nz/life-style/homed/houses/97302604/passive-ehaus-and-multigenerational-living-provide-many-benefits>
- James, B., Saville-Smith, N., Saville-Smith, K. & Isaacs, N. (2018). *Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance*. BRANZ External Research Report ER27. Judgeford, New Zealand: BRANZ Ltd.
- Jaques, R. (2013). *Eco Design Advisor customer survey results: Years 2012–2013*. Available at http://www.beaconpathway.co.nz/images/uploads/Report_Eco_Design_Advisor_2013_Customer_Survey_Results.pdf



- Jaques, R., Norman, D. & Page, I. (2015). *Valuing sustainability and resilience features in housing*. Study Report SR333. Judgeford, New Zealand: BRANZ Ltd.
- Lindsay, H., MacGregor, C. & Fry, M. (2014). The experience of living with chronic illness for the haemodialysis patient: An interpretative phenomenological analysis. *Health Sociology Review*, 23(3), 232–241.
- Lovell, H. (2005). Supply and demand for low energy housing in the UK: Insights from a science and technology studies approach. *Housing Studies*, 20(5), 815–829.
- MacGregor, C. & White, V. (2018). *Evaluating the benefits of exceeding the minimum*. Unpublished BRANZ Report Judgeford, New Zealand: BRANZ Ltd.
- Mittermuller, P., Mardon, H. & Jaques, R. (2006). *Easy guide to eco-building: Design, build and live with the environment*. Judgeford, New Zealand: BRANZ Ltd.
- Oliver, J., Foster, T., Williamson, D., Kvalvisg, A., Baker, M. & Pierse, N. (2017). *Risk of rehospitalisation and early death for vulnerable children in New Zealand*. Unpublished paper.
- Osborn, M. & Smith, J. (1998) The personal experience of chronic benign lower back pain: An interpretative phenomenological analysis. *British Journal of Health Psychology*, 3, 65–83.
- Packard, V. (1957). *The hidden persuaders: On psychology and advertising*. London, UK: Longmans, Green and Co.
- Parker, C., Carey, R., De Costa, J. & Scrinis, G. (2017). Can the hidden hand of the market be an effective and legitimate regulator? The case of animal welfare under a labelling for consumer choice policy approach. *Regulation & Governance*, 11(4), 368–387.
- Sarantakos, S. (2013). *Social research*. Basingstoke, UK: Palgrave Macmillan.
- Sauro, J. (2015). 5 reasons to perform a qualitative study. Retrieved from <https://measuringu.com/qualitative-study/>
- Shove, E. (2003) *Changing human behaviour and lifestyle: A challenge for sustainable consumption*. Lancaster, UK: Department of Sociology, University of Lancaster.
- Smith, J. (1995). Semi-structured interviewing and qualitative analysis. In J. Smith, R. Hark & L. Van Langenhove (Eds.), *Rethinking methods in psychology* (pp.9–26). London, England: Sage.
- Smith, J. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health*, 11(2), 261–271.
- Stats NZ. (2017) *Building*. Retrieved from https://www.stats.govt.nz/topics/building?gclid=EAIaIQobChMI-4Ozv8vq2AIVRwQqCh0clQ70EAAYASAAEgKdFvD_BwE
- Tookey, J. E. (2017). *The mess we're in: Auckland's housing bubble from a construction sector perspective*. Auckland, New Zealand: The Policy Observatory.



White, V., Jones, M., Cowan, V., & Chun, S. (2017). *BRANZ 2015 House Condition Survey: Comparison of house condition by tenure*. BRANZ Study Report SR370. Judgeford, New Zealand: BRANZ Ltd.