Study Report SR451 [2020]

Mapping the consumer landscape

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Abstract

We need to improve the performance of New Zealand houses. There is a view that better-informed consumers could help by demanding better-performing houses.

This report examines the information currently available to consumers about house building. It finds there is a vast amount of information available but it is widely scattered. It also finds a considerable body of work – over 30 projects – that have researched the knowledge, experiences and preferences of New Zealand consumers on house building and allied topics.

It recommends that existing information be brought together into an accessible 'one-stop shop', with a particular focus on improvements that can be made at no or little additional cost. Information aimed at changing consumer behaviour should be presented in terms of health, comfort and aesthetics rather than in technical terms such as energy efficiency or performance.

Keywords

Consumer information, consumer behaviour, consumer demand.

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Executive summary

This report examines the information available to consumers about house building and related topics. It looks at what information consumers say they want and what industry practitioners say consumers are asking them for. It maps the information currently available. Finally, it considers the sort of information that consumers want, what is required for them to contribute to a wider effort to lift the performance of New Zealand houses and how that may be presented to them.

There are strong reasons why we need to improve the performance of New Zealand houses:

- Too many houses are damp and mouldy.
- Many new houses are constructed to just meet the minimum requirements of the New Zealand Building Code.
- New Zealand house construction and operation currently produces far too high a level of greenhouse gas emissions to contribute to net-zero carbon targets.

Helping clients become better informed is seen as an important step in addressing some of these issues. Clients who understand the benefits of energy-efficient or low-carbon features or building methods may be more inclined to ask for them in their home.

Following the introduction, this report addresses the issues around building information and New Zealand consumers in three sections:

- Section 2 considers BRANZ research data relating to consumer information.
- Section 3 identifies the organisations that work in this space and the consumer-related initiatives that already exist in New Zealand (including BRANZ initiatives) and in similar countries overseas.
- Section 4 identifies the essential information that New Zealand consumers need to know about building, altering, maintaining and living in their homes.

In recent decades, there have been over 30 projects that have asked New Zealand consumers for their opinions and experiences and explored their levels of knowledge through surveys, focus groups, interviews and other means. Over 20 of those projects have been conducted by BRANZ and are discussed in section 2. In some cases, the topic has been wide: the experience of consumers right through the process of building a new house or their experiences and level of satisfaction after moving into a new home. Other projects have had a very sharp focus, such as heat pump installation and operation or retrofitting thermal insulation.

In general, the findings have been that consumers have a low level of knowledge about building. Some work suggests that people have specific need of information in certain fields, such as the different roles and responsibilities in the building process. Other work suggests that a lot of information is already available, but people do not have the time or skills or interest to access it. A reoccurring theme in the research is that people place a very high degree of trust in their builder and that a large part of what research they do carry out is around builder selection.

Section 3 looks at the many hundreds of organisations providing information about building-related issues for consumers. Information is freely available across a very wide range of building-related topics. There is very strong information around topics such as

regulations and compliance, consumer rights, passive design and energy efficiency (including space heating, water heating, thermal insulation and glazing). There is a real depth of independent and up-to-date information available from Consumer New Zealand (although behind a paywall), government departments and agencies – particularly the Ministry of Business, Innovation and Employment (MBIE) and the Energy Efficiency and Conservation Authority (EECA) – and BRANZ. There is little readily available data that robustly measures the success of any of these initiatives, however.

Section 4 discusses information that consumers need to know to play an effective part in the move the better-quality, better-performing houses. There are a few areas where information is thin. An example is the specific payoff a consumer may receive from opting for an improved level of insulation or glazing. Some consumers have indicated that they would require this before considering a substantial financial investment in better-performing features.

Findings

1. There is a vast amount of information already available on just about every area of building in New Zealand, but this information is very widely scattered.
2. There has been a large amount of research conducted with consumers in past years.
3. The upfront cost of a new home is the overriding driver of many consumer decisions. The operating costs of a house are rarely considered.
4. Comfort and health are more important to consumers than building efficiency.
5. Consumers have relatively little knowledge about building and place a large degree of trust in their builder and building consent authority.
6. The interests consumers do express about building tend to be about functional and aesthetic features.
7. Where consumers do ask for something outside standard offerings or beyond the Building Code, they sometimes run into builder resistance.
8. Despite dozens of pieces of research directly involving consumers or asking industry practitioners about consumer thinking, no strong consumer demand for more knowledge about building performance overall has been uncovered.
9. There appears to be widespread consumer acceptance of their houses being built to comply with the Building Code but no clear demand for Code-plus houses.
10. The view that, if the 'right' information is found and provided to consumers, they will then demand better-quality and better-performing homes from the industry is too simplistic and unlikely to achieve change by itself.

Recommendations

1. Given the vast investment made in research of consumer opinion and experience in past years, it is extremely difficult to justify yet more research. We already hold a large amount of information.
2. Consideration should be given to how building information that is already available from many different sources can be brought together into a single location – an easier to find 'one-stop shop'.
3. As a well-respected independent organisation, BRANZ has a key role to play.
4. Information prepared for consumers should take account of cost/price sensitivity by prioritising features or construction methods that give high returns for no or little additional dollar cost – 'more bang for the same buck'.
5. New research should focus on the few information areas where gaps have been identified, especially around costs and benefits.

6. Information for consumers should stress health and comfort benefits rather than efficiency or performance issues.
7. Government interventions to drive better home performance, such as a mandatory home energy performance rating scheme or increased minimum requirements in the Building Code/standards, may be the most practical and effective approach.

1. Introduction

There is clear evidence of a need to improve the performance of New Zealand houses:

- Too many houses are damp and mouldy. 2018 Census results show that 318,891 homes were damp, with 44,520 damp all the time (3% of all homes). Visible mould larger than an A4 sheet of paper was always present in 4.3% of homes (64,536) and sometimes present in 12.6% (188,319).
- There is evidence that many new houses are constructed to just meet the minimum requirements of the Building Code and no more.
- In a recent survey of 500 industry practitioners – *Industry perspectives on exceeding the minimum* (MacGregor & White, n.d.) – approximately a third (34%) considered the quality of the New Zealand housing stock as poor or very poor.
- A 2019 study by Massey University and BRANZ scientists calculated how much carbon dioxide new 3-bedroom homes can emit in their lifetimes to help meet greenhouse gas-reduction targets. New Zealand house construction and operation currently produces too much carbon dioxide by several multiples.

For many years, the initiatives to improve our houses have travelled largely on two parallel paths. One path has been ongoing regulatory improvement, such as lifting the minimum level of thermal insulation required in our houses and introducing specific requirements around insulation, heating and ventilation in rental housing. The second path has been educating the industry and working to lift skill levels – for example, through the introduction of the Licensed Building Practitioners (LBP) Scheme.

There have been attempts to raise consumer awareness – for example, through EECA's television campaigns. Work targeting consumers has largely been a series of one-off projects conducted by single organisations.

There is a view that consumers have the potential to be significant agents for transformation in the building industry system and could be key drivers of system change through asking the right questions of their designers and builders. This interface between designers, builders and their clients (consumers) is a critical one when it comes to building and maintaining better houses – homes that are energy-efficient, low-carbon, sustainable, resilient, accessible, warm, dry and healthy.

Conversely, lack of consumer knowledge is regarded as a significant barrier to potential improvements to our housing stock. Research has suggested that consumers are not well informed and that information is ad hoc, hard to find and piecemeal. A number of different ideas have been proposed at BRANZ for informing/educating consumers, but there is currently little data on what consumers need and how best to deliver that information.

This project aims to provide a roadmap for an evidence-based, systematic and coordinated approach to consumer education and information and will identify the most effective role for BRANZ in this field.

Stage 1 of the project – this report – has the following objectives:

- Analyse relevant, recent BRANZ research data relating to consumer information. There are elements of this in a number of different reports.
- Identify the organisations that work in this space and the consumer-related initiatives that already exist in New Zealand (including BRANZ initiatives) and in

similar countries overseas and what data exists to evaluate the success of these initiatives
- Identify the essential information that New Zealand consumers need to know about building, altering, maintaining and living in their homes.

1.1 Consumer behaviour is already changing

While this report explores the idea of providing information to consumers to change their behaviour, it must be acknowledged that there have already been some marked changes by consumers in house building and house occupancy behaviour in recent years.

- Between the BRANZ House Condition Surveys of 2000 and 2015, the proportion of:
  - owner-occupied houses with heat pumps rose from almost zero to 46%
  - houses using open fires for heating fell from 24% to 6%
  - houses using portable LPG heaters fell from 20% to 6%
  - houses with ceiling insulation thicker than 100 mm grew from 2% to 53%.
- Domestic photovoltaic (PV) installations have grown from the low thousands in 2010 to 25,125 at the start of March 2020.
- Energy use in the average New Zealand household has been falling for two decades. In just the last decade alone (to July 2019), it has fallen by 15%, faster than other advanced OECD countries. MBIE forecasts the downward trend to continue at around 0.8% per annum until 2030.
- From the year ended April 2016 to the year ended April 2019, LED sales grew from around 248,500 to over 604,000 per annum, while sales of incandescent bulbs fell.

There are likely to be several explanations for the changes. Financial incentives and falling costs are at the top of this list:

- From 2009 to 2016, the Warm Up New Zealand programme provided $465 million in government funding to install insulation in almost 300,000 homes of lower-income households.
- Between 2009 and 2012, also under EECA, 40,000 efficient heaters were installed, including heat pumps, pellet burners and flued gas heaters.
- Some technologies have seen a rapid fall in price. The Electricity Authority reported that the installation cost of PV systems in New Zealand fell 75% in the decade 2008–2018. Many observers say this accounts for a large part of the growth in system installations.
- The rising price of domestic electricity supply, improvements in appliance efficiency and market competition around product prices have worked together to make some appliances such as heat pumps much more attractive to consumers. (There was a 26% improvement in the overall efficiency of heat pumps sold in New Zealand between 2004 and 2014.)
- The financial incentives of a much lower operating cost and longer lifespan may also be behind the significant growth in the use of LED lights, despite the fact that they remain more expensive to buy than incandescent bulbs. People may perceive them as better value for money.

With some changes, it is difficult to see a financial reason, and information campaigns are more likely to be the explanation. A good example may be the drop in use of portable LPG heaters. The dangers and disadvantages of these heaters have been well publicised by multiple sources (EECA, Consumer New Zealand, BRANZ and so on) over many years.

It should also be acknowledged that some of the changes have been encouraged by industry. There are industry practitioners, particularly architects and designers, who are encouraging house owners to think about performance in thermal insulation, energy efficiency and materials durability. *Industry perspectives on exceeding the minimum* found that, despite cost pressures, "exceeding the minimum is something that certain parts of the industry are attempting to change because of a core belief in wanting to improve the health of New Zealanders".

1.2 Misinformation, preferences, biases and barriers

It is important to recognise that changing consumer behaviour is not simply a matter of providing information where little or none currently exists. This work does not occur in a vacuum. There is considerable evidence of misinformation, preferences, biases and barriers that consumers already hold that affect the way they think and make decisions. This needs to be understood and accounted for in any work with them.

Consumers often misunderstand the actual performance of their homes. BRANZ House Condition Surveys consistently find that homeowners believe their homes are in much better condition than an independent assessor finds (Figure 1). If homeowners don't believe there is a problem, they are less likely to be open to finding a solution.

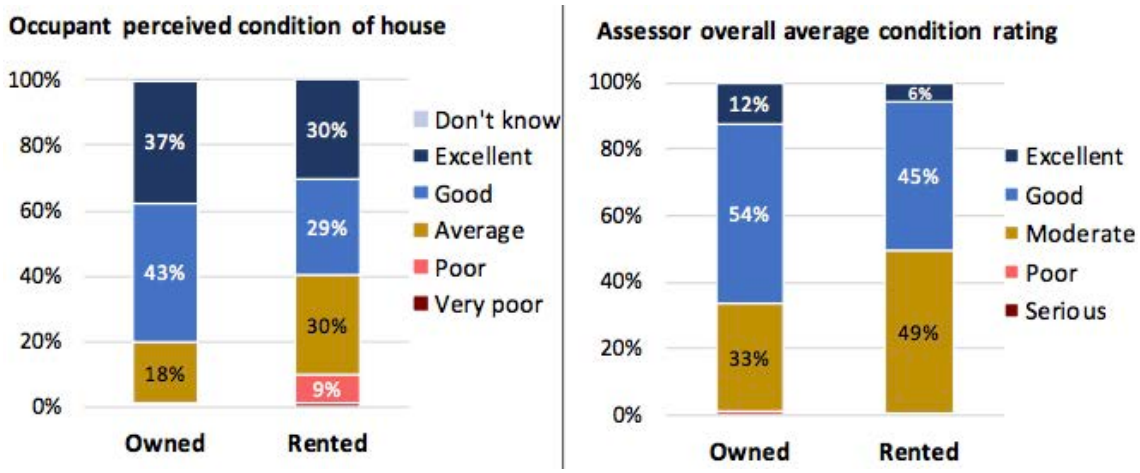


Figure 1. Occupant and assessor ratings of overall house condition (White, Jones, Cowan & Chun, 2017).

There is other evidence suggesting that consumers overestimate the performance of their homes. In the Beacon Pathway HomeSmart Renovation Project, over half of the 530 participating householders said their dwelling was in excellent or good condition, even though 80% said their home was still cold after an hour of heating on a winter morning. By contrast, in Christchurch, New Zealand's first house with a 10 Homestar rating – a home with genuinely excellent performance – has an indoor temperature of 22°C in winter without any added heating at all.

New homeowners may not have an accurate understanding of the performance of the house they are getting because building practitioners may be overly optimistic about the standard of houses they are constructing. In *Industry perspectives on exceeding the minimum*, 500 industry practitioners were asked to describe whether the last house they worked on met the minimum standard, incorporated substantial high-performance aspects or exemplified world best practice (Figure 2). Overall, 6% rated their last house as meeting world best practice, a proportion not matched by reality. None of the building control officers in the same survey selected this option. While just 43% of

builders/installers said the last house they were involved with met the minimum standards (the lowest performance category), almost double the proportion of building consent officers (84%) selected this option.

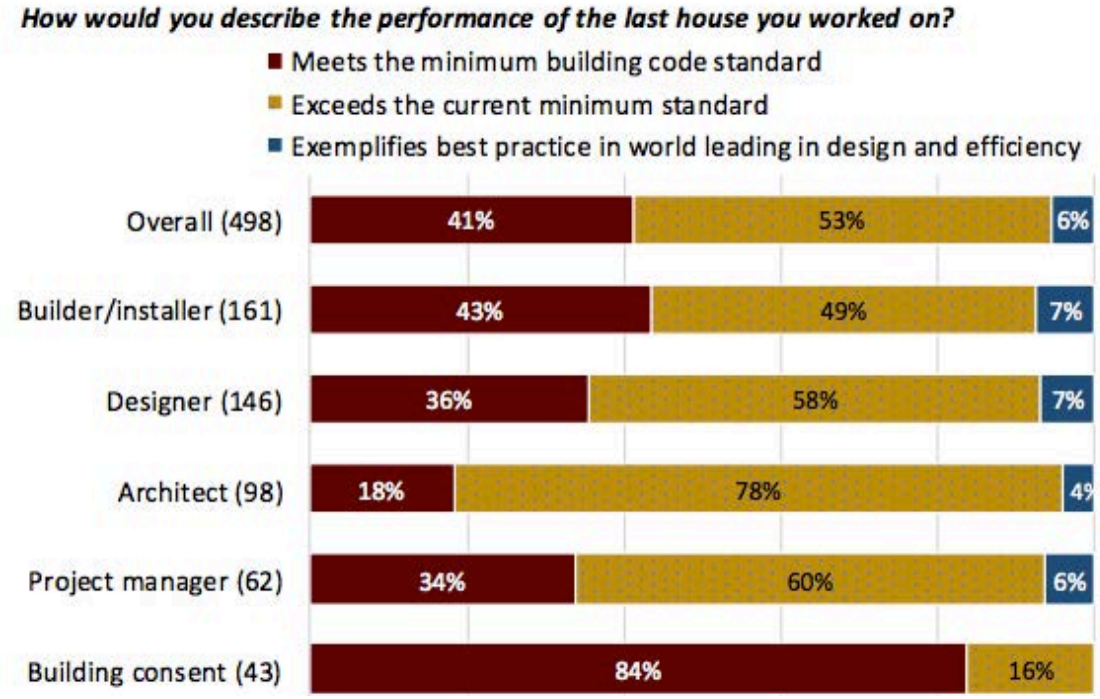


Figure 2. Respondent perceptions of the performance of the last house they worked on, overall and by role type (base count for each category of respondent shown in brackets) (MacGregor & White, n.d.)

There is evidence that builders see existing houses as being in better condition than do designers and architects. In the same survey, 17% of architects saw the existing housing stock as in good to excellent condition, and 46% saw it as poor or very poor. With builders/installers, however, 43% saw existing houses as in good to excellent condition, and only 28% saw them as poor or very poor.

There is evidence in several studies that consumers see the Building Code as a high-quality solution rather than the minimum that is a base to work from. In the BRANZ Home Performance study, for example, industry practitioners said that consumers believed that, if a home was built to Code, it was a good home.

There is compelling evidence from many research projects that managing the upfront cost of building work is one of the main drivers (if not the main driver) for consumers. The cost of higher-performance features is a barrier. Very little consideration is given to the operating costs of a house. This obviously draws into question the assumption that, given certain information, consumers will automatically demand better-quality and better-performing homes:

- The BRANZ Home Performance Study found that, overall, almost all interviewees at some point suggested that the cost of building was causing homeowners to compromise on the quality of their homes.
- The BRANZ study report *Knowing enough to ask* (Lockyer & Marston, 2020) identified that building beyond a Code-compliant home was cost prohibitive for most clients.

- The BRANZ study report *A consumer survey of attitudes to exceeding minimum standards for refurbishments and retrofits* (MacGregor, Magan & Brunsdon, 2019) found that "the challenge to normalise exceeding the minimum will continue, especially as cost is a prohibitive factor in consumer decision making within the current housing market".
- In *Industry perspectives on exceeding the minimum*, practitioners could select three barriers (from 12) that they saw as most prohibitive to building beyond Code. Build cost was seen as the most significant barrier.
- In the BRANZ study report *New House Owners' Satisfaction Survey 2018* (Brunsdon & Lockyer, 2019), after reputation, fixed price certainty was the second-most important feature in builder selection, identified by 46% of consumers. The same survey found that almost a quarter of owners (23.5%) had a dispute with their builder over the final cost.

It may be worth pointing out here that cost as a key driver is not limited to clients but is a view held within industry as well. In the BRANZ study report *Adopting new ways in the building and construction industry* (Duncan, Kingi & Brunsdon, 2018), based on the views of 751 industry practitioners, the single most important perceived enabler of change was identified as 'pricing, low cost and/or profitability'. This was nominated by 36% of respondents. The option 'better informed clients' as an enabler of change was selected by just 4% of respondents.

While part of the issue around cost is simply keeping a tight hold of the overall budget, there is also evidence of a perception that spending for better performance may not show a return in a higher-valued house. The BRANZ study report *Valuing sustainability and resilience features in housing* (Jaques, Norman & Page, 2015) found that higher performance is often not reflected in house values in New Zealand. This is significant in a country where house values are a common topic of conversation and media interest and people move house relatively frequently. Average first-home buyers own their home for a little over 5 years before selling up and buying elsewhere. The average is 4.7 years in Auckland and a little over 6 years in Christchurch. Several researchers (such as Christie, 2010) have identified the issue that consumers worry that, if they spend the money in these features, they will not recoup the expense when they sell.

Industry perspectives on exceeding the minimum found that a low expectation of economic benefits is shared by industry practitioners. They overwhelmingly see the most important benefits of higher-performance houses in terms of improved health (61%) as opposed to economic benefits (18%). This study did find that 30% of respondents said that, based on their industry experience, clients were willing to pay $10,000 or more on average to incorporate high-performance features into their new house. This apparent willingness of clients to spend significant sums beyond the minimum required is not commonly seen in other research – in fact, the reverse is typically found.

Many reports have identified social barriers and behaviours that need to be considered. People either don't want to take the social risk of being seen as different or they focus on visual elements that will let them get 'one up' on friends or neighbours. As an industry practitioner in the BRANZ Home Performance survey put it: "…most people at design stage are focused all about looks or better than the Joneses". In the BRANZ study report *The choice to exceed: Consumer perspectives on building beyond Code in New Zealand* (MacGregor & Donovan, 2018), one expert focus group member said: "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."

1.3 Behaviour change research

The understanding that consumers have misinformation, preferences and biases that affect the way they see the world and make decisions must be considered whenever work to encourage consumer behaviour change is being planned. BRANZ has recently carried out some work around behaviour change. A very brief overview of findings can be found in the fact sheet BRANZ Research Now *Strategies for changing behaviour* (May 2020), and a more detailed technical perspective is given in the BRANZ study report *Models of behaviour change relating to energy and the built environment: An analytical view* (Bell & MacGregor, 2020).

Our current understanding around what is required to achieve effective behaviour change can be used to address the underlying assumption behind this project: that if the 'right' information is found and provided to consumers, they will then be able to demand better-quality and better-performing homes from the industry.

The research finds that simply giving people information is by itself not enough to change behaviour. Interventions to change behaviour must consider the social environment people live in and their attitudes and skill levels and must provide people with support and resources. Importantly, people need to be empowered, rather than just told what to do.

Evidence to support this can be found in many research projects. The BRANZ external research report *Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance* (James, Saville-Smith, Saville-Smith & Isaacs, 2018) found that "an essential condition for improved performance is to enable the consumer to engage with the innovation, learn how to use it to maximise benefits, and easily incorporate it into their daily activities … Voluntary standards and information levers are considered to be important, but insufficient and often ineffective on their own."

This report identifies that, for innovations to become widespread, they need to jump a chasm between 'early adopters' and 'early majority' (Figure 3).

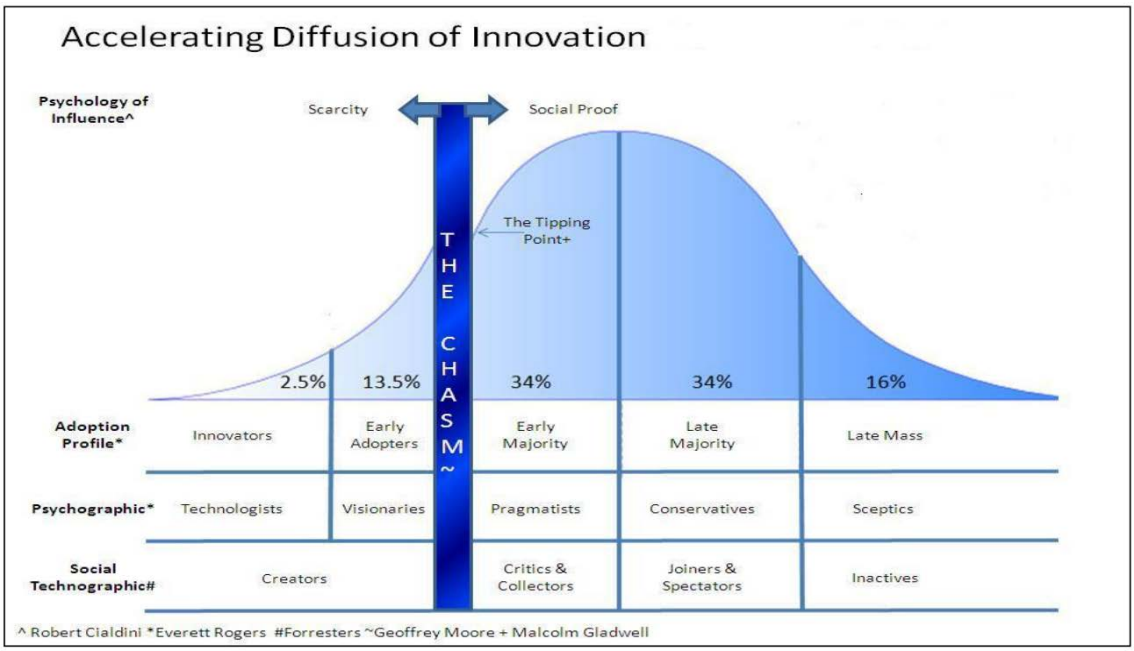


Figure 3. Innovation diffusion and take-up (James et al., 2018).

For this to happen, there needs to be, firstly, a demonstration of practicality of the innovation – innovations need to appeal because they address practical problems. Secondly, there needs to be social proof or social influence.

> That is, the phenomenon which sees adoptees taking up innovations simply as an emulation of previous adopters. Under these conditions, the take-up of new products, materials and designs become effectively self-propelling. (James et al., 2018, p. 6)

Consumer take-up of heat pumps is probably a good example.

Any work carried out with the objective of informing consumers and changing consumer behaviour needs to be designed with these considerations in mind.

1.4 Limited research into what works

While there is good research into how to change consumer behaviour, there is very little published research into the success of information initiatives for consumers, especially in New Zealand. It appears, for example, that MBIE, which administers the Smarter Homes website (see 3.2 Government ministries) has not conducted research with consumers. *Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance* considered tools such as Lifemark, Beacon Pathway's High Standard of Sustainability and the New Zealand Green Building Council's Homestar rating scheme:

> None of these tools has a great deal of market traction. Although both Lifemark and Homestar have some prominence, they struggle to generate mass innovation in the new-build stock. (James et al., 2018, p. 4)

Internationally, tools and information resources that have legislative or regulatory backing appear to have the largest impact. Studies from a number of EU member countries, for example, have shown a general correlation between the mandatory energy performance certificates (EPCs) and property prices – better-performing properties attract higher prices. The impact appears to be most significant for poorly performing buildings, and the impact on price is greater for property sales than rents. On average, EPCs have been shown to play a role both in renovation decisions and whether to rent/buy a certain flat. There is also evidence that the mandatory performance rating in Australian Capital Territory has had an impact on prices.

2. BRANZ research data relating to consumer information

BRANZ has undertaken many surveys or interviews of homeowners/consumers, with findings published in study reports, bulletins and *Build* magazine. Finding out what knowledge gaps exist and what information consumers say they want does not need to involve approaching consumers directly, however. Asking industry practitioners about what consumers are saying to them and asking them for is one obvious approach. This has the benefit of seeing what consumers are actually prepared to pay for, rather than just what they say they want.

2.1 Research conducted directly with consumers on building topics

There have been over 30 different projects in recent years that have included a survey, focus group(s) and/or interviews of homeowners and consumers – BRANZ itself has carried out over 20. Many others have been projects funded by the Building Levy or carried out with BRANZ support or assistance. Some research has been wide ranging and some focused narrowly on very specific topics. Consumers have been asked for their opinions in some cases and their experiences in others.

Table 1 details some of the research, with an asterisk indicating BRANZ research.

Table 1. Examples of research conducted with consumers.

	Project/report
*	*Active cooling and heat pump use in New Zealand – survey results* (French, 2008)
	HomeSmart Renovations – Beacon Pathway 2008
	Understanding New Zealand homeowners apparent reluctance to adopt housing-sustainability innovations (Christie, 2010)
*	*BRANZ 2010 House Condition Survey – condition comparison by tenure* (Buckett, Jones & Marston, 2012)
*	*New House Owners' Satisfaction Survey 2011* (Curtis, 2012)
	Eco Design Advisors – 2013
*	*New House Owners' Satisfaction Survey 2012* (Curtis, 2013)
*	*New House Owners' Satisfaction Survey 2013* (Curtis & Norman, 2014b)
	Eco Design Advisors – 2015
*	*Heat pumps in New Zealand* (Burrough, Saville-Smith & Pollard, 2015)
	Meeting the housing needs of multi-generational households (Lysnar & Dupuis, 2015)
*	*New House Owners' Satisfaction Survey 2014* (Curtis, 2015)
	Getting universal design into new builds and major renovations (Saville-Smith, Fraser & Saville-Smith, 2016)
*	*New House Owners' Satisfaction Survey 2015* (Curtis, 2016a)
*	*Recommendations for first-time new-build housing clients* (Curtis, 2016b)
*	*The value of sustainability: An investigation into barriers and enablers for solar power in New Zealand* (Stoecklein & Jaques, 2016)
*	*BRANZ 2015 House Condition Survey: Comparison of house condition by tenure* (White, Jones, Cowan & Chun, 2017)
*	*New House Owners' Satisfaction Survey 2016* (Curtis, 2017)

	Project/report
*	*The New Zealand housing preferences survey: Attitudes towards medium-density housing* (Bryson, 2017)
	The New Zealand rental sector (Witten et al., 2017)
*	*New House Owners' Satisfaction Survey 2017* (Brunsdon & Magan, 2018)
*	*Prioritising quality* (Curtis & Gordon, 2018)
	Retrofitting insulation in residential properties (Alkema, McDonald & Stokes, 2018)
*	*The choice to exceed: Consumer perspectives on building beyond Code in New Zealand* (MacGregor & Donovan, 2018)
	Eco Design Advisor: Customer Service Survey 2018 (Hoffman, 2019)
*	*New House Owners' Satisfaction Survey 2018* (Brunsdon & Lockyer, 2019)
*	*A consumer survey of attitudes to exceeding minimum standards for refurbishments and retrofits* (MacGregor, Magan & Brunsdon, 2019)
*	BRANZ Home Performance study – 2019/2020
*	*Knowing enough to ask* (Lockyer & Marston, 2020)

These projects are only part of the research work undertaken with consumers in New Zealand. Universities, for example, have carried out many consumer surveys (such as the University of Otago's work around home heating and healthy homes), and much of that data is publicly available. A few regional councils survey their residents on a regular basis. Some of the findings relate to home ownership and services, and much of that data is also publicly available.

Here are brief summaries of the findings of key projects/reports.

BRANZ Home Performance study (2019/2020)

The BRANZ Home Performance study sought to provide key performance metrics for new and existing New Zealand dwellings. The project was stage-gated, with the first part examining market needs and demands. Global Research was commissioned to conduct workshops with 45 consumers and in-depth interviews with nine industry representatives. After the first part was carried out, the decision was made not to progress to the second stage, which would have been exploring the practical aspects of a wider metric set for various consumer and industry-related groups.

The work in the first part concluded that:

- there is a very limited appetite for home performance metrics currently
- consumers don't understand or only have vague concepts around home performance
- understanding is largely directed around health – especially sun, good ventilation and warmth, but there is not much considered thought around this
- consumers value 'bling' over substance and are highly constrained (and driven) by price and (lack of) knowledge
- only through government mandatory intervention will there be a positive, significant and prolonged change in this area, and that will probably require something that has worked in many other regions internationally – a home energy performance certificate-style intervention.

Knowing enough to ask (Lockyer & Marston, 2020)

This project looked at the level of knowledge new-build clients in New Zealand have when beginning house building and how that knowledge develops as work proceeds.

The sample was 30 people, primarily consumers who had recently built a house. The research question was: How do we educate consumers to enable an improvement in quality?

These were the key findings:

- For many clients, most of the research went into choosing the builder. (The decision was often based on show homes, builder reputation and flexibility.)
- Going outside standard offerings or beyond the Building Code was difficult because of higher costs or builder resistance.
- In many cases, faults during construction were identified by the homeowners, adding to stress in the builder/client relationship.
- Clients commonly became more active during the build, but there was a limit to their ability to act as a quality assurance check because of their lack of knowledge.
- Unless clients had contacts in the building industry, it was difficult for them to know what they should be asking for and what they should be checking for.
- Homeowners' advance expectations were vastly different to what actually occurred.
- Poor builder communication was common, such as a lack of agreed updates.
- Consumers perceived information gaps around who does what during the build, who is the key channel of communications and homeowners' rights and responsibilities.
- Expanding and promoting services such as Eco Design Advisors would help offset the inherent power imbalance between builders and clients. Clients feel a pressure between being a 'good customer' and trying to not enforce their will too much on the build process while being pushy enough to get the quality of the product they want. Clients need an impartial reservoir of expert knowledge that they can call on and leverage in negotiations with their builder.

The choice to exceed: Consumer perspectives on building beyond Code in New Zealand (MacGregor & Donovan, 2018)

This research around consumer decision making about the choice to exceed minimum building requirements included focus groups with 22 consumers building a house, interviews and an industry expert focus group.

The research found challenges to building beyond Code through:

- consumer inability to access relevant information
- consumer perceptions that the Building Code is a quality assurance mechanism rather than the minimum standard
- consumer trust and confidence in building professionals being crucial to whether the consumer exceeds the minimum or not – when consumer and builder share similar values, exceeding the minimum is more likely to happen.

To encourage consumers and the industry to exceed the minimum, this research found that:

- consumer/industry practices must change to incentivise exceeding the minimum
- cost is one barrier but there are others
- consumer expectations need to change, especially around cost versus quality and seeing a house as a healthy home rather than just an asset/commodity.

Tight timeframes and an industry unwillingness to explore new building systems may make a builder reluctant to exceed the minimum even if a consumer wants to. The study found a need to encourage and give industry the capability to construct houses

that exceed the minimum at scale so the supply of these houses creates a new norm in the housing market.

The report recommended:

- using evidence-based information so that consumers can understand what exceeding the minimum is and its benefits to make an informed choice – information must come from a reputable evidence base, such as BRANZ Up-Spec
- improving existing information with multi-platform messages and media
- encouraging whole-of-building, whole-of-life approaches
- raising awareness of houses that exceed the minimum through demonstration and getting consumers and the industry to experience and interact with these houses.

Future work is required:

- Creating a behaviour change framework that outlines in more detail how to encourage the changing of consumer and industry practices to exceed the minimum and integrate this framework into research and a roadmap for change.
- Finding ways to encourage industry to adopt building performance practices to exceed minimum building standards.
- Supporting industry to develop better information and advice on exceeding the minimum for itself and consumers including design solutions.
- Outlining the performance requirements of what exceeding the minimum means in real terms so that consumers and industry can differentiate between Code-minimum, better-practice and best-practice building performance.

In a brief consumer information audit, the report found that a lot of the information available is directed at educated and informed consumers who know what they are looking for.

A consumer survey of attitudes to exceeding minimum standards for refurbishments and retrofits (MacGregor, Magan & Brunsdon, 2019)

A survey with 245 responses examined the attitudes and experiences of consumers who had undertaken a refurbishment/retrofit. It sought to learn more about consumer choices and decisions around exceeding Building Code minimums.

Consumers reported using many sources (Figure 4). The most popular were the local council (28%) and architects and builders or building firms (26%). More-specialist information sources, especially the ones most likely to advocate exceeding the minimum such as BRANZ Up-Spec (1%) and the Eco Design Advisor service (one respondent), were rarely used. Around 15% of participants did not seek any information.

The fact that consumers are most likely to seek information from building consent authorities suggests they are more concerned about regulatory compliance rather than information on exceeding the minimum. The Eco Design Advisor service, BRANZ Up-Spec and other industry sources are underutilised.

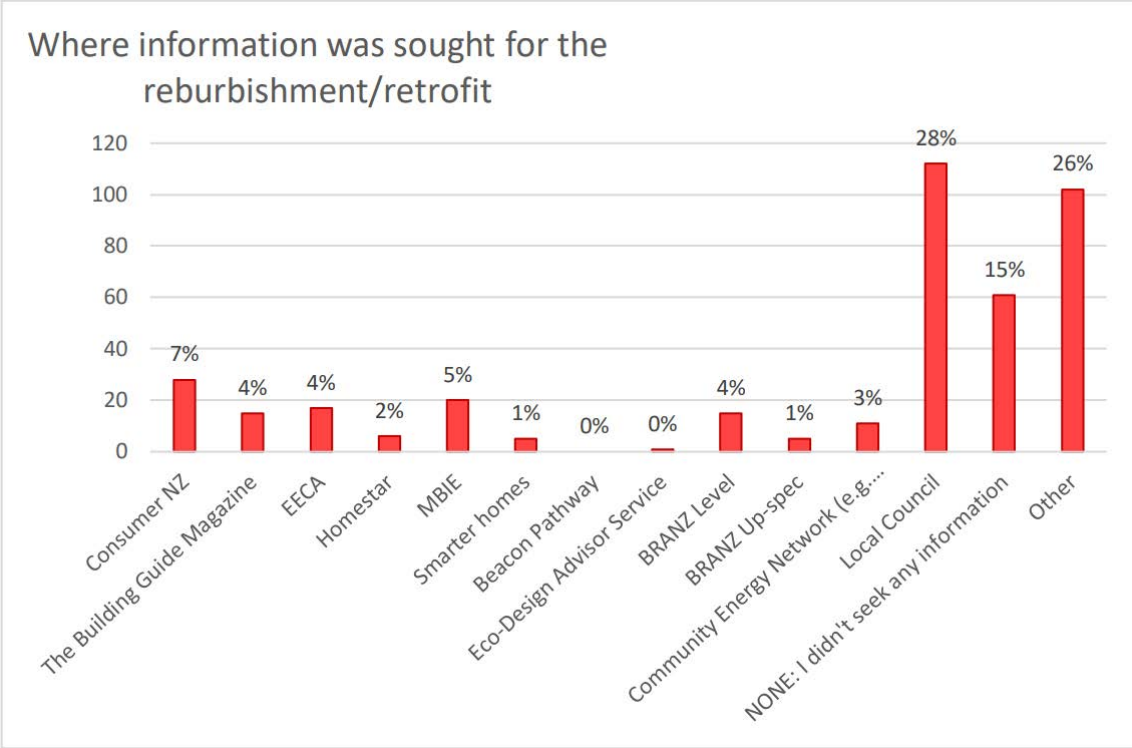


Figure 4. Where consumers sought information for their refurbishment/retrofit (MacGregor et al., 2019).

While we should not read too much into one graph, there is a point here worth noting. EECA and BRANZ Level were each used as information sources by 4% of consumers. This is interesting because Level has been created for the building industry and not promoted directly to consumers. EECA's information has been very heavily promoted in television campaigns costing tens of millions of dollars. For example, EECA's Energy Spot television campaign over 2009/10 alone cost $4 million. Perhaps content is king – what is important to consumers is the content or breadth of content in a resource, and perhaps heavy promotion will not necessarily lift the uptake of a source beyond other sources.

Consumers mainly looked for information concerned with regulations, consent and compliance, followed by product information and other building examples, designs or ideas. Information on whether a project was feasible, how to build something or how much a project would cost was sought by under one-quarter of respondents. Searching for contractors or information about contractors was conducted by a small proportion of respondents. Discussion about beyond-Code features did not appear in respondents' comments on this question.

Respondents were asked to rank certain barriers to exceeding the minimum. Build cost ranked top, with 102 participants ranking it first, followed by no barriers (48 participants). Lack of knowledge of owners was only selected by 29 participants.

The report made these recommendations:

- Consumers need more information about the benefits of going beyond Code, with more targeted evidence-based information. This should cover the range of options aligned with what benefits can be gained from using a particular feature or product.

- A social marketing campaign directed at industry and consumers is needed to help communicate what building beyond the requirements of the Building Code is and why it is important. High-performing buildings should become more normalised.
- BRANZ and other relevant industry organisations should work with local councils to help provide more accessible information and create greater awareness for existing services available to help consumers explore options for higher-performing building features. It may be worth promoting the Eco Design Advisor service more widely and frequently, as consumers are seeking advice from building professionals but underutilising this free service.

Recommendations for first-time new-build housing clients (Curtis, 2016b)

The project came out of a New House Owners' Satisfaction Survey, which found that first-time new-build housing clients were scoring their builder significantly lower than those who had built previously. It aimed to find what information the industry should be passing on to first-time new-build clients to ensure a smoother process. There were two focus groups and an online survey of 246 people.

The report identified information gaps around:

- unforeseen additional costs for variations, council development contributions and so on
- builders' inabilities to commit to a finish date, timeframes not met and unrealistic timeframes
- contract issues and a sense that contracts favour builders
- whether or not what is being built will match the features/standard of a show home.

The report listed recommendations around key pieces of information that first-time new-house building clients should be aware of. These are given in Appendix A.

The value of sustainability: An investigation into barriers and enablers for solar power in New Zealand (Stoecklein & Jaques, 2016)

This report covers results from 301 householders who had bought a solar power system or been in contact with a supplier without buying a system. It identified information gaps around:

- the track record of the product and company
- the personal power cost savings
- how the solar power would affect the home's energy and sustainability performance
- the buy-back tariffs offered by power companies for surplus generation.

The New Zealand Housing Preferences Survey: Attitudes towards medium-density housing (Bryson, 2017)

This research gathered the views of 1,641 consumers about low, medium and high-density housing. Stand-alone houses were rated more favourably than other types of housing. Participants with medium-density housing (MDH) experience responded neutrally but disliked MDH less than participants with no experience. People believed MDH was more likely to leak and would be too small for them, indicating perceptions did not meet reality.

The report identified information gaps around the need to educate New Zealanders on the variety of MDH options available to them and the advantages these typologies can

offer. Other research backs this up. The BRANZ study report *Medium-density housing: Can we build it?* (Bryson, Kennerley & Duncan, 2018), based on the views of 103 building industry stakeholders, found a strong view that consumer education was required and that consumers need to understand what MDH has to offer them – more compact living at an affordable price compared to stand-alone houses."

2.2 Research conducted with industry practitioners including consumer opinions

Consumer opinions and preferences and beliefs are also found indirectly through a number of surveys of or interviews with industry practitioners. This is particularly valuable information because the consumers whose views are being talked about are usually those actively involved in building or renovation work, so their comments often come from experience. A few examples of this research include:

- *Industry perceptions of weathertightness failure in residential construction* (Nuth, 2020)
- *Adopting new ways in the building and construction industry* (Duncan, Kingi & Brunsdon, 2018)
- *Industry perspectives on exceeding the minimum* (MacGregor & White, n.d.)
- *Retrofitting insulation in residential properties* (Alkema, McDonald & Stokes, 2018)
- *Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance* (James, Saville-Smith, Saville-Smith & Isaacs, 2018)
- *Client and designer choices and their effect on new housing costs* (Curtis & Norman, 2014a)
- *Small firms work types and resources* (Page & Curtis, 2013b)

Industry perceptions of weathertightness failure in residential construction (Nuth, 2020)

Adopting new ways in the building and construction industry (Duncan, Kingi & Brunsdon, 2018)

In a survey of over 200 industry practitioners, almost two-thirds said that they had seen problems with weathertightness in houses less than 10 years old.

There is a view that building standards in New Zealand are often affected by a consumer market where clients largely gravitate towards low-cost contractors (who often demonstrate themselves to be less capable) to limit total project cost. One industry professional said: "Satisfying clients' expectations about money is always an issue around everything. The bottom line is always a fiscal one, isn't it? It's always money."

Practitioners believed that building consent authorities' inspection regimes provide clients with false confidence that issues will be picked up on site. One professional said: "There's a very broad impression within the New Zealand public that council are a proxy for a clerk of works on site. And they simply are not."

The research shows a significant lack of information or misunderstanding among clients:

- Consumers are focused on short-term cost and do not have an appreciation of the impact on construction quality and performance. They have a poor grasp of value for money.

- They do not understand the importance of construction work being supervised and are unwilling to pay for this.
- They often misperceive BCA inspections as a quality control or quality assurance mechanism.

Industry perspectives on exceeding the minimum (MacGregor & White, n.d.)

This study was based on an online survey with 500 responses, mostly from builders/installers (33%), designers (30%), architects (20%) and project managers (13%). These were the findings:

- The main driver to exceed the minimum was for health reasons.
- There is a consumer mismatch between real and perceived costs and benefits.
- Cost is the greatest barrier to exceed the minimum for consumers. We therefore need better cost-benefit methodologies for helping to align costs and benefits (both tangible and invisible) into a rigorous analysis at individual and public good levels.
- Exceeding the minimum is something that certain parts of the industry are attempting to change because of a core belief in wanting to improve the health of New Zealanders. Within industry, architects and designers were the main influencers in helping to exceed the minimum within building projects.
- In the current residential housing market, there is a mismatch between what the industry thinks and what buildings they are delivering.
- More research needs to be done to examine how the Building Code can be brought into line with international building codes and regulations in countries with similar climates to New Zealand.

Retrofitting insulation in residential properties (Alkema, McDonald & Stokes, 2018)

Researchers interviewed 15 industry stakeholders, 37 product suppliers and 14 consumers who had retrofitted insulation products. These were the key findings:

- The market supplies information that takes a one-size-fits-all approach, while consumers have different levels of knowledge and varying circumstances.
- What advisers tell consumers is mainly around compliance, product information and benefits.
- The advantages of exceeding the minimum and what precisely contributes to improved performance is not clearly explained. This seems to steer consumers towards minimum levels. Knowledge about the benefits of going beyond the minimum is needed to make an informed choice.
- The key driver for most consumers was to get a warm, dry, healthy home.

Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance (James, Saville-Smith, Saville-Smith & Isaacs, 2018)

This report found that, although the regulatory system gives the industry the flexibility to build above minimums, the potential for doing better than the Code has largely been unfulfilled. It found that there already exists a body of New Zealand research that would help the industry to push boundaries and there is a large range of research-based accreditation tools that are largely ignored by industry.

> … research into take-up of building performance enhancing solutions consistently show that a concerted and multi-pronged approach is necessary in order to achieve outcomes that exceed minimum performance requirements. (James et al., 2018, p. ii)

The report recommends three areas of work to encourage going beyond Code:

- Establishment of net benefits of adopting a higher performance standard.
- Identification of and solutions to particular barriers to transformation.
- Development of 'plug and play' solutions.

The report found that numerous studies have identified both industry and consumer attitudes inhibiting innovation including:

- a risk-averse industry
- an industry perception of lack of consumer demand
- industry and consumer beliefs that innovation is too expensive
- consumer views that product/design/innovation is not relevant to personal circumstances
- consumer tastes and aesthetics
- lack of consumer confidence in making change.

Client and designer choices and their effect on new housing costs (Curtis & Norman, 2014a)

Through interviews and a survey, builders were asked questions such as "Which common client design choices do you believe add the most to build cost?", "What role do you have in informing the client of cheaper/better design options?" and "Do you offer multiple spec levels for clients to choose from and what is the (cost and quality) difference between them?" The report covers consumer requests such as granite benchtops, gas central heating and so on. An index was developed to better understand the changes in quality consumers were asking for and their impact on affordability.

Small firms work types and resources (Page & Curtis, 2013b)

When asked about where they thought savings could be achieved in the work they did, many owners of small firms named areas involving client contact and client knowledge. Clarifying owners' needs before the build start was the second-highest area of cost savings (after good design details). Close behind this was rework as a result of clients making changes. The report found a need for client education, which would need to include how the building industry works, advice on obtaining designers and builders, minimising changes and the trade-offs between bespoke design and standardised design.

New House Owners' Satisfaction Survey (Curtis, 2012, 2013, 2015, 2016a, 2017; Curtis & Norman, 2014b; Brunsdon & Magan, 2018; Brunsdon & Lockyer, 2019)

The BRANZ New House Owners' Satisfaction survey has been running annually since 2011, allowing BRANZ to monitor trends in the quality of output for the new residential building industry.

BRANZ House Condition Surveys

The BRANZ House Condition Survey has been conducted approximately every 5 years for the last 25 years. Looking at the general data can give some information about householder values and preferences. What consumers see and are surrounded by is most important to them. Householders in the 2015 House Condition Survey more often carried our maintenance on the interior of their homes than the exterior despite the fact that exterior features were on average in worse condition. More recent surveys have included interviews with homeowners.

3. Building-related information available to consumers

There are many hundreds of sources of information in New Zealand about housebuilding. There is plain-English, accessible information already available on almost every aspect of house construction and renovation. There is particularly good information about:

- regulatory issues – MBIE/Building Performance, local councils, BRANZ websites
- consumer protection – Consumer New Zealand (largely behind a paywall), MBIE, BRANZ Weathertight website
- passive design, energy efficiency and energy-efficient appliances – EECA/Energywise, Consumer New Zealand, BRANZ Level website
- weathertightness – MBIE/Building Performance, BRANZ Weathertight website.

Overall, there is no evidence of a lack of general information about building available to consumers in New Zealand. There is a great deal of information. The problem is that is scattered very widely. It is very difficult for consumers to judge whether they have found the best or most up-to-date information available. In other words, the problem is around ease of access and convenience. A consumer has to be especially keen and tenacious and have the time available to find everything they need about building a house.

Knowing enough to ask used the phrase 'lost in a sea of information', finding that clients had difficulty in interpreting the sheer amount of information available to them unless they had social connections with expertise or their own expertise.

Despite the difficulties, there is evidence that consumers carry out research. *Knowing enough to ask* confirmed the findings of earlier work that choosing the builder was probably the most research-intensive area of the process for many clients. Beyond this, their research focused on designing the functioning and aesthetics of the house rather than performance issues.

3.1 BRANZ

Over the years, BRANZ has prepared information either directly aimed at homeowners or where homeowners were specifically intended as an indirect audience:

- *Maintaining Your Home* was aimed squarely at consumers from the start when it was originally published in book form. The book went through numerous editions and one especially large print run for a local bank to give copies to its customers. It has been redeveloped as a website – www.maintainingmyhome.org.nz. Various other websites recommend it and/or link to it, including Beacon Pathway, hardware retailer sites, local authorities and so on.
- A few study reports such as *House repair priorities* (Page & Curtis, 2013a) have had content of considerable interest to consumers. A note in the document says the report is intended for researchers, builders and homeowners. Similarly, *Recommendations for first-time new-build housing clients* contains a note that potential future new-build clients will find the findings and commentary interesting.
- The BRANZ websites www.level.org.nz, www.renovate.org.nz and www.weathertight.org.nz are aimed at industry but presented in plain English. There is evidence that they are consulted and recommended by consumers.

- Fact sheets being developed for the main BRANZ website (Research Now and BRANZ Facts) provide concise, plain-English guides to the findings of BRANZ research that some consumers may find relevant.
- The BRANZ helpline has handled calls from consumers for many years.
- BRANZ Find could be of interest to consumers looking for specific information.
- Various other tools and resources such as the Photovoltaic Generation Calculator were not originally developed for consumers but may be of interest to them.

3.2 Government ministries

There is a vast amount of information about housing provided by central government. The focus is largely on regulatory issues, health and safety, energy efficiency, environmental issues (such as contaminated land) and provision of services such as drinking water. What follows is an overview of the key central providers of information, but this is in no way a comprehensive or exhaustive list.

MBIE/Building performance

MBIE provides a considerable amount of information about house building work targeted at consumers, with a mostly regulatory focus.

- Homeowner rights and obligations – information is available in web pages and in downloadable brochures such as *Know your rights: A homeowner's guide to the consumer protection measures when building or renovating*:
  - https://www.building.govt.nz/assets/Uploads/getting-started/know-your-rights-consumers-booklet.pdf
  - https://www.building.govt.nz/getting-started/your-rights-and-obligations/homeowner-rights-and-obligations/
  - https://www.building.govt.nz/resolving-problems/resolution-options/activate-your-consumer-rights/
- Building controls – https://www.building.govt.nz/getting-started/how-the-building-system-protects-you/
- Stages of the building process – https://www.building.govt.nz/getting-started/stages-of-the-building-process/
- DIY work – https://www.building.govt.nz/getting-started/stages-of-the-building-process/diy-but-build-it-right/
- How renovations differ from new builds – https://www.building.govt.nz/getting-started/stages-of-the-building-process/renovations-differ-to-new-builds/
- Weathertight services – https://www.building.govt.nz/resolving-problems/resolution-options/weathertight-services/
- Smarter Homes – this stand-alone website was launched in 2007 to help consumers and the sector access good-quality, reliable and independent information. It provides guidance on topics that include siting, location and design, materials, water quality, heating, ventilation and energy saving. The two most frequently visited pages on the website are Thermal mass for heating and cooling and House orientation. These are followed by Collecting and using rainwater, Glazing, and Hot water options. On average, the site receives 17,000 visitors per month, the number fluctuating between 15,000 and 20,000 depending on the time of the year. Visitor numbers are normally higher during holidays and the winter season. Smarter Homes was developed by the Ministry for the Environment in partnership with the Department of Building and Housing, Consumers' Institute and Beacon Pathway Ltd. It is administered by the Building Performance branch of

MBIE with Beacon Pathway remaining a partner – https://www.smarterhomes.org.nz/

Ministry of Housing and Urban Development

Healthy homes standards – https://www.hud.govt.nz/residential-housing/healthy-rental-homes/healthy-homes-standards/

Ministry for the Environment

On its website and through publications in various formats, the Ministry addresses consumers directly on topics in its area of responsibility.

- Air quality (wood burners/burning waste) – https://www.mfe.govt.nz/air, https://www.mfe.govt.nz/woodburners
- Climate change – https://www.mfe.govt.nz/climate-change
- Choosing water-efficient products – https://www.mfe.govt.nz/fresh-water/we-all-have-role-play/choosing-water-efficient-products
- Contaminated land – https://www.mfe.govt.nz/land
- Applying for a resource consent – https://www.mfe.govt.nz/publications/fresh-water/everyday-guide-applying-resource-consent/everyday-guide-applying-resource
- reducing waste – https://www.mfe.govt.nz/waste

Ministry of Health

Drinking water – https://www.health.govt.nz/your-health/healthy-living/drinking-water?mega=Your%20health&title=Drinking-water

Ministry for Culture and Heritage

Earthquake upgrade advice for heritage buildings (including residential buildings) – https://heritageequip.govt.nz/

Te Puni Kōkiri

- The Māori Housing Network provides a single point of contact for practical support and funding support for Māori housing initiatives. It is currently focused on supporting smaller-scale projects that improve the quality of housing, building capability in the Māori housing sector and increasing the supply of affordable housing – https://www.tpk.govt.nz/en/whakamahia/maori-housing-network
- Oranga Marae (provided by Te Puni Kōkiri and the Department of Internal Affairs) supports the physical and cultural revitalisation of marae as centres of Māori identity and mātauranga (housing, particularly for the elderly, is frequently part of a marae) – https://www.tpk.govt.nz/en/whakamahia/maori-housing-network/information

Ministry for Civil Defence and Emergency Management

Preparing for and dealing with emergencies and natural hazards including earthquakes and tsunami. Some of this information is relevant to housebuilding – https://getready.govt.nz/

3.3 Crown entities and agencies

Tenancy Services

Government agency Tenancy Services has information for consumers who are renting their homes.

- Healthy homes standards, including requirements around heating, insulation, ventilation etc. – https://www.tenancy.govt.nz/healthy-homes/
- Maintenance – https://www.tenancy.govt.nz/maintenance-and-inspections/

EECA/Energywise

Energy efficiency, tools and calculators covering appliances, PV systems and water heating options, government grants, energy rating labels, heating and cooling, insulation, ventilation, dampness, windows, lighting and renewable energy. One page has good information about new builds, another about additions and alterations.

- https://www.energywise.govt.nz/
- https://www.energywise.govt.nz/at-home/building/
- https://www.energywise.govt.nz/at-home/renovating/

Earthquake Commission

- Building resilience and safety in a natural disaster resource tailored to homeowners/apartment owners/buyers/tenants/landlords/consumers building and renovating – https://www.eqc.govt.nz/be-prepared
- Lodging a claim for property damage after a natural disaster – https://www.eqc.govt.nz/get-help-now-claims

NIWA

Climate data (sunshine hours, number of wet days per month and so on) and the SolarView tool, which estimates the solar energy that can be collected by a solar panel at a given address.

- https://niwa.co.nz/
- https://solarview.niwa.co.nz/

Land Information New Zealand

Property location, ownership, features, boundaries, rights as a property owner – https://www.linz.govt.nz/information-for/property-owners-and-investors

LBP Scheme

Registry search, guidance on resolving problems, making a complaint.

- https://www.lbp.govt.nz/
- https://www.lbp.govt.nz/complaints-and-past-decisions/dispute-resolution-options/

Environmental Protection Authority

Safer Homes programme – hazardous substance in houses – https://www.epa.govt.nz/community-involvement/

Electricity Authority

Electricity, smart meters, retailers, power bills, consumer rights – https://www.ea.govt.nz/

Fire and Emergency New Zealand

Home fire safety, smoke alarms and safety devices, home sprinklers – https://fireandemergency.nz/at-home/

Health Promotion Agency

Drinking water, harvesting drinking water and other topics on behalf of the Ministry of Health – https://www.hpa.org.nz/programme/health-resources

Kāinga Ora – Homes and Communities

Home maintenance, repairs, grants, loans, KiwiBuild – https://kaingaora.govt.nz/

Te Tumu Paeroa, Māori Trustee and Māori Land Court

Support and information for eligible landholders – https://www.tetumupaeroa.co.nz/about-us/te-tumu-paeroa-maori-trustee-maori-land-court/

Energy companies, including the mixed ownership model companies

Apps where people can monitor, compare and predict energy use in a house; information about renewables (particularly solar), smarter homes and energy efficiency.

- https://www.genesisenergy.co.nz/
- https://www.mercury.co.nz/
- https://www.meridianenergy.co.nz/

3.4 Local government

Regulatory issues including consents, services such as water supply, wastewater, stormwater and waste disposal, protected trees, natural hazards, earthquake-prone buildings, health and safety and energy efficiency.

- https://www.aucklandcouncil.govt.nz/building-and-consents/Pages/default.aspx
- https://wellington.govt.nz/services/rates-and-property/building-earthquake-resilience/strengthening-your-home
- https://ccc.govt.nz/consents-and-licences/building-consents/types-of-projects/inside-and-around-your-property/

Eco Design Advisors

The Eco Design Advisor initiative was developed by BRANZ to provide free and independent advice on sustainable new house design and renovations to homeowners, house designers and industry professionals. The service is run through a number of councils. Advisors are available for 2-hour face-to-face visits at seven council centres, building sites or architects' offices or by phone or email. A 2013 evaluation found that consumers felt the main improvement that could be made to the service was building awareness through better promotion – https://www.ecodesignadvisor.org.nz/

3.5 Industry bodies

It is very common for industry bodies representing different industries or sectors to provide information for consumers. Typically, they are relatively brief, and while they often contain good practical information, they are of course prepared in support of their industry/sector. In some cases, they describe accreditation systems for manufacturers/installers, which provide good consumer protection details. Here are just a few representative examples.

Solar Association of New Zealand

SANZ accreditation scheme – http://www.solarassociation.org.nz/

Sustainable Energy Association New Zealand

Solar Optimiser calculator, SEANZ member details – https://www.seanz.org.nz/

Window and Glass Association NZ

Plain English guides for consumers on glass, glazing and window topics including energy efficiency, quality and performance, dealing with condensation, double and triple glazing, window glass types, maintenance and others – https://www.wganz.nz/

3.6 Trade and professional bodies

Master Builders Association

Choosing a builder, working with a builder, building, renovating – https://www.masterbuilder.org.nz/

New Zealand Certified Builders

Finding a builder – https://www.nzcb.nz/

Master Electricians

Find an electrician – https://www.masterelectricians.org.nz/find-electrician/

Master Painters New Zealand

Find a painter – https://www.masterpainters.co.nz/

Master Plumbers

Find a plumber, tips and advice – https://www.masterplumbers.org.nz/

New Zealand Institute of Architects

Find an architect, what does an architect do?, working with an architect – https://www.nzia.co.nz/

Architectural Designers New Zealand

Find a designer, how to choose a designer – https://www.adnz.org.nz/

Engineering New Zealand

Find a qualified engineer, problems with an engineer? – https://www.engineeringnz.org/

NZ Institute of Building Surveyors

Find an NZIBS member near you – https://www.buildingsurveyors.co.nz/

3.7 Product manufacturers, distributors, retailers

A large number of building product manufacturers, distributors, retailers and installers have websites or brochures aimed at the consumer. Typically, these explain a company's products and help with product selection, installation and maintenance, but in some cases, there is wider educational material as well. Here are a few examples.

Retail chains

DIY video guides, fact sheets and calculators. Many suppliers provide consumer information in hard copy or through their websites. The focus tends to be tools and materials selection and simple DIY jobs. The Bunnings website has DIY fact sheets, videos and calculators on a wide range of topics, from laying a laminate floor to working out how much paint to buy for a specific project. Mitre 10 similarly has a range of video guides.

- https://www.bunnings.co.nz/diy-advice
- https://www.mitre10.co.nz/guides-and-advice

GIB

DIY and repair guides, wet areas, controlling noise, high-impact areas (in the 'Homeowners' section) – https://www.gib.co.nz/

Rheem

Product selector, video guides, brochures – https://rheem.co.nz/home-owners

Colorsteel

Project tips, specs and resources, sustainability – https://www.colorsteel.co.nz/

3.8 Consumer and community organisations

Consumer New Zealand

Consumer New Zealand has one of the largest independent resources of information about houses and building. The organisation has its roots in the government's Consumer Council, established in 1959. There was a name change to the Consumers' Institute in 1963, and in 1967, it became a separate government-funded entity. In 1986, it lost its government funding and by 1989 was an incorporated society funded by members' subscriptions. In 2007, there was another name change to Consumer New Zealand.

In 2004, Consumers' Institute and the Department of Building and Housing launched the ConsumerBuild website to increase consumer knowledge and enable consumers to be more informed in the building process. There were three target audiences:

- Consumers planning to build or buy or renovate a dwelling.
- Consumers wanting to maintain an existing home.
- Consumers needing general information on building and building processes.

The ConsumerBuild website closed in 2015, and Consumer brought the content back into its own website. Consumer New Zealand continues to provide substantial information about house building, maintenance, energy use, home appliances and so on. Its online resources include an extensive guide for building a new home – https://www.consumer.org.nz/topics/building-a-new-home

Consumer had input into the launch of the Smarter Homes website in 2007.

Consumer has operated the website Powerswitch for over 17 years, allowing homeowners to compare electricity and gas prices of different retailers. Powerswitch first received funding from the Ministry of Consumer Affairs and then MBIE, but today it is funded by Consumer, the Electricity Authority (EA) and energy supply companies.

Beacon Pathway

Beacon Pathway is an incorporated society. It grew out of a research consortium formed in 2004 to fulfil a 6-year research contract with the Foundation for Research, Science and Technology. The original shareholders were BRANZ Inc, Waitakere City Council, Forest Research Institute and Fletcher Building. Beacon Pathway (https://www.beaconpathway.co.nz/) focuses on bringing sustainability to New Zealand's residential built environment. It uses research and demonstration projects to show how New Zealand houses can be warmer, drier and healthier, cost less to run, be adaptable for the future and use less resources. It built demonstration homes – the NOW homes – one in Waitakere in 2005 and one in Rotorua in 2006. It also retrofitted nine homes in Papakōwhai in 2007.

Beacon Pathway developed the High Standard of Sustainability (HSS) tool, intended to help both industry and homeowners understand home performance. HSS sets benchmarks in five key performance areas.

The organisation is a partner in the website Smarter Homes (see under MBIE/Building Performance in section 3.2).

HomeSmart Renovations. completed in June 2010. was a large-scale Beacon Pathway research project testing what it takes to get consumers retrofitting to improve their homes' performance. The 530 participating homeowners were given renovation plans to bring their homes to a high-performance level. Surveys and interviews asked what steps the homeowner had taken or was planning based on the renovation plan (

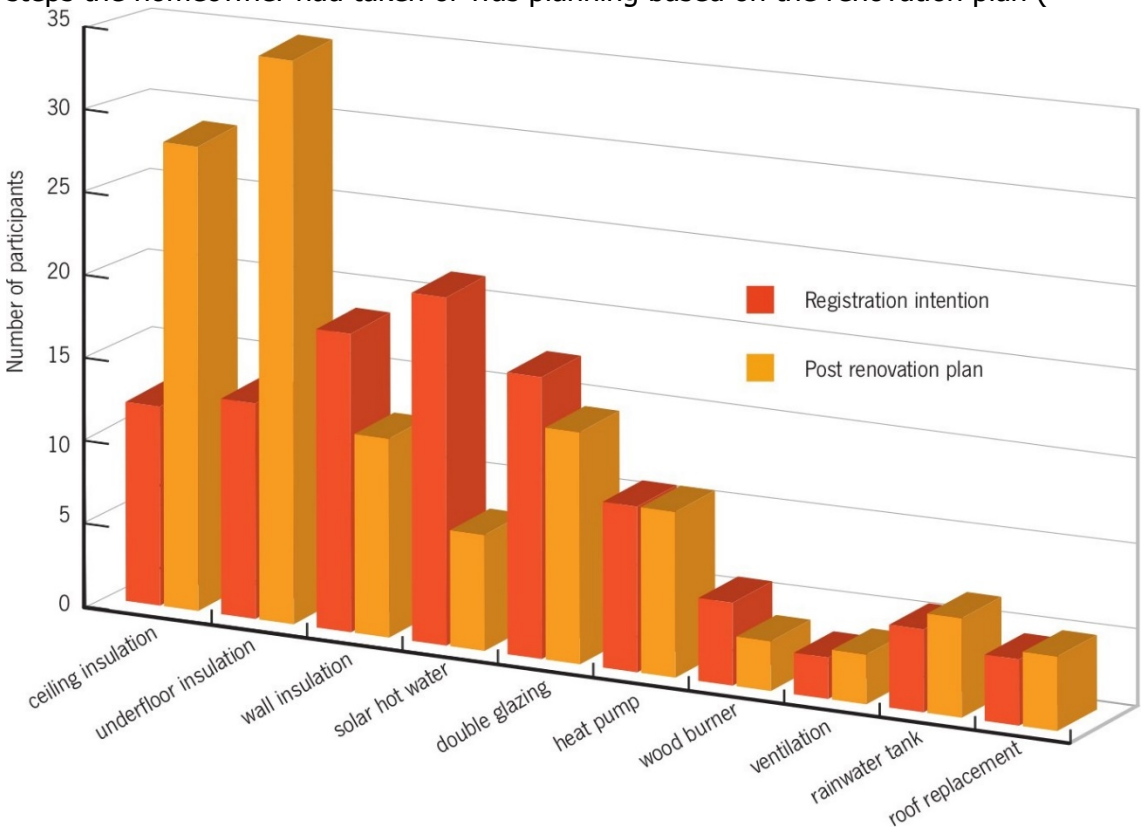


Figure 5). They would fund the work themselves but were encouraged to apply for any assistance available.

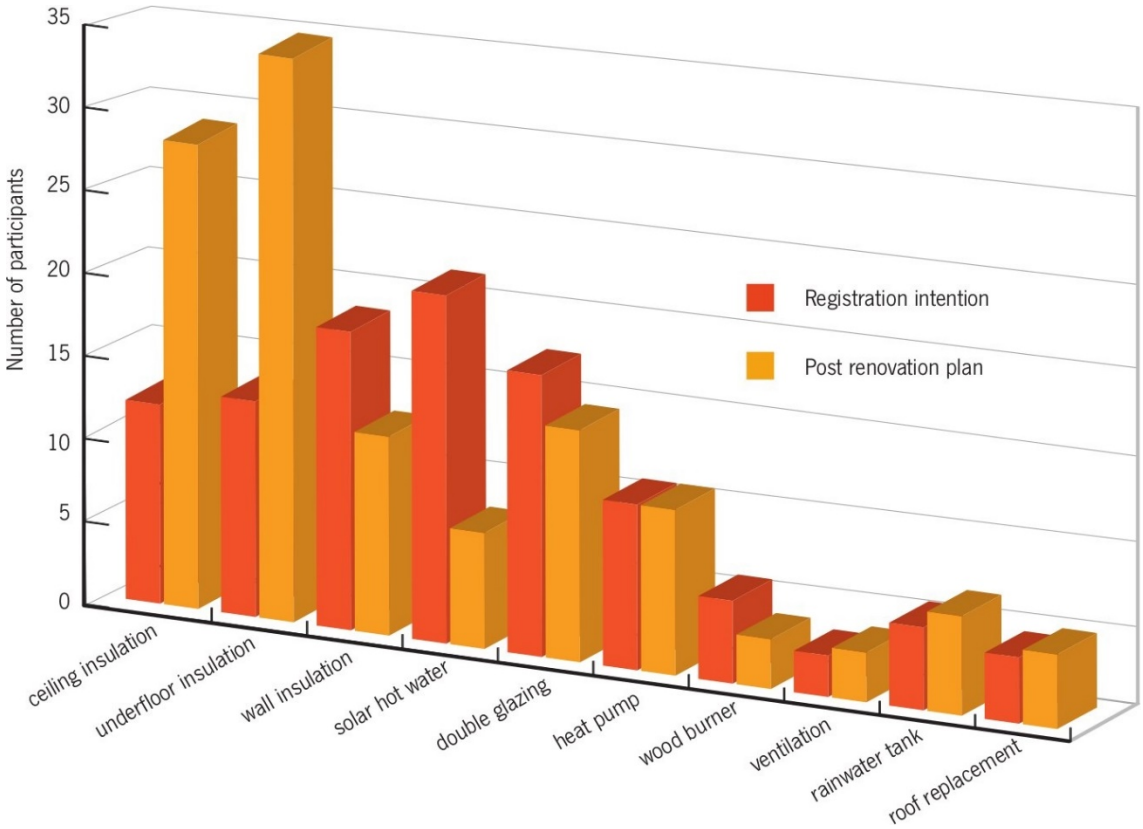


Figure 5. HomeSmart Renovation participants' retrofit intentions before and after receiving their renovation plans. (Easton, 2011).

The HomeSmart project found a significant and important gap in consumer understanding. Almost two-thirds of the householders (65.4%) acted on the recommendation to fit ceiling insulation, yet only 6.7% acted on the recommendation to install a rangehood or kitchen extractor, despite this being an easy, effective and relatively inexpensive way of reducing dampness and cold. Homeowners grasped the benefits of insulation but apparently didn't see the importance of extracting moisture and the link between drier and warmer homes. Comfort and health were the drivers for the vast majority of householders rather than energy and water efficiency or reducing the cost of these resources. This can be seen in the greatly increased intentions around ceiling and underfloor insulation.

Community Energy Network

Home performance advisors, healthy rentals assessment. This network is a collective of not-for-profit community organisations devoted to promoting warmer, drier and healthier homes across New Zealand – https://www.communityenergy.org.nz/

New Zealand Green Building Council

NZGBC has information for consumers about its Homestar rating tool, HomeFit certification standards and more. Homestar was launched in 2010 with support from BRANZ and Beacon Pathway and industry consultation.

- https://www.nzgbc.org.nz/homestar/forhomeowners
- https://www.nzgbc.org.nz/homefit

Lifemark

Lifemark is a champion of universal design in New Zealand. It has information for consumers about its star rating scheme, its Lifemark Design Standards, case studies and more – https://www.lifemark.co.nz/

Passive House

Passive House Institute New Zealand is a charitable trust that aims to raise awareness of the Passive House Standard. Some of its information resources are targeted at consumers – https://passivehouse.nz/

Superhome Movement

A movement promoting healthy and energy-efficient homes – https://www.superhome.co.nz/

Zero Energy House

Details about the design, construction, performance and operating costs of a 'zero energy' house in Auckland – https://zeroenergyhouse.co.nz/

Building Guide

The Building Guide (previously known as Homeowner's Building Guide) is a privately owned magazine/directory with a reasonable profile. In a study of 245 consumers who had undertaken a renovation, 4% said they had consulted The Building Guide – the same proportion as has looked at EECA (Figure 4). The Building Guide describes itself as "consumer advocates providing home building and renovation advice in New Zealand since 1989. We connect you with building products and companies, professional builders and help you plan your dream home." This company also publishes The Design Guide – http://www.buildingguide.co.nz/

3.9 Other countries

As may be expected, there is a vast amount of information provided around the world. Much is supplied by industry (manufacturers, retailers and so on), government and consumer organisations.

Australia

Your Home

The most significant single general information resource in Australia is a website published by the Australian federal government, Your Home (https://www.yourhome.gov.au/ – "Australia's guide to environmentally sustainable homes"). The website receives over 1 million unique visitors every year. The content is also available in hard copy book form. "Its content and design were informed by research with homeowners, architects, designers and builders to find out what information they needed most and how they wanted it presented."

Your Home is a collaboration between Australian governments and the building, architecture and design industries. It was originally commissioned in 2001 by the federal government and developed by the Institute for Sustainable Futures (ISF), University of Technology Sydney. ISF, other organisations and individual experts on behalf of the Australian Government have updated it. The website and book (6th edition due in 2020) are now managed by the federal Department of the Environment

and Energy. Content is provided under a Creative Commons Attribution 4.0 International (CC BY 4.0)

It is very much a collaborative effort. Before preparation of the 6th edition of the book, a consultative committee was established with representation from peak industry bodies, academics, consumer groups and government to gather stakeholder and industry views.

Your Home goes far beyond just basic or generic information. For example, "Design For Place" is a feature on the website that includes downloadable floor plans and elevations for a single-storey house available in three different versions depending on building site size. The architect-designed suite of plans includes specifications and construction techniques designed to achieve a minimum 7-star Nationwide House Energy Rating Scheme (NatHERS) energy rating.

The site also contains very well-detailed case studies – see https://www.yourhome.gov.au/case-studies/perth-western-australia

These are the most popular resources on the website:

- yourhome.gov.au/passive-design/orientation
- yourhome.gov.au/house-designs/plans-and-elevations
- yourhome.gov.au/passive-design/insulation
- yourhome.gov.au/materials/lightweight-framing
- yourhome.gov.au/passive-design
- yourhome.gov.au/passive-design/passive-cooling
- yourhome.gov.au/passive-design/shading
- yourhome.gov.au/water/wastewater-reuse
- yourhome.gov.au/energy/heating-and-cooling
- yourhome.gov.au/you-begin/construction-process

Nationwide House Energy Rating Scheme (NatHERS)

The Nationwide House Energy Rating Scheme (NatHERS) gives houses a star rating out of 10 based on an estimate of a home's potential energy use for space heating and cooling. NatHERS is administered by the Department of Industry, Science, Energy and Resources for Australian states and territories. NatHERS assessments are commonly used to demonstrate compliance with the energy efficiency requirements of Australia's national Construction Code. The Australian Capital Territory is the only region with mandatory disclosure of the energy rating when a house is sold or leased.

As with New Zealand, there is also a substantial amount of information provided by other parts of central government, local government, consumers groups (chiefly www.choice.com.au) as well as the building industry itself.

CRC for Low Carbon Living

A final notable resource from 2012–2019 was CRC for Low Carbon Living, supported by six universities and CSIRO. This was Australia's leading research and innovation hub dedicated to driving the nation's built environment sector towards a globally competitive low-carbon future. Of most relevance for this report was Programme 3: Engaged communities, which focused on understanding and influencing consumer behaviour and decision-making in order to reduce the carbon intensity of modern lifestyles. The organisation worked with councils and community groups, exploring attitudes and preferences around alternative technology and lifestyle options.

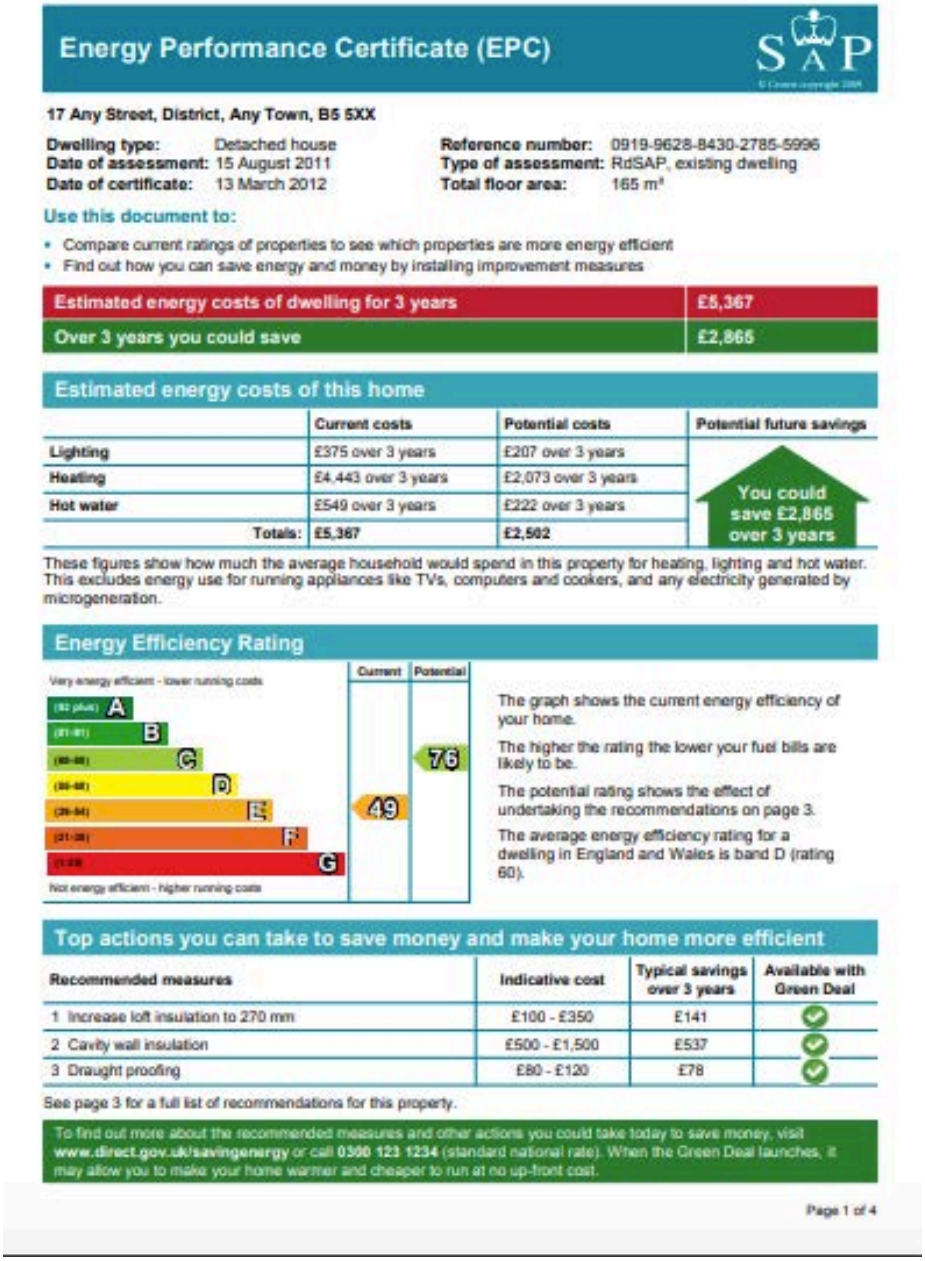
Projects included the Liveability Real Estate Framework to help prospective home buyers and tenants identify running costs and comfort. "The framework provides an incentive for owners to invest in features such as solar panels and double-glazing, and to orient new homes to maximise sunlight and shade." (CRC for Low Carbon Living, 2019, p. 29). The framework identifies liveability features that can reduce the costs of running a home. It was developed in collaboration with industry and covers floor plan and layout, energy and water saving and energy ratings and building orientation and location. Real estate agents are trained in using the tool.

Rest of the world

There are millions of sources of information for homeowners, many similar to New Zealand. Perhaps the most significant difference between New Zealand and some other countries in information available to consumers is house performance rating systems, typically measuring energy or heating efficiency, that are mandatory in some countries. The goal of these is to influence consumer behaviour and ultimately reduce energy consumption.

In the European Union, for example, energy performance certificates (EPCs) are needed when a property is built, sold or rented. An EPC gives a property an energy efficiency rating from A (most efficient) to G (least efficient) and is valid for 10 years (Figure 6). It contains information about a property's energy use and typical energy costs and recommendations about how to reduce energy use and save money. The rating must be included in advertisements.

EPC schemes are slightly different between countries. In the United Kingdom, homeowners can be fined if they do not get an EPC when they need one, and EPCs are publicly available and can be searched online by address.



Energy Performance Certificate (EPC)

SAP

17 Any Street, District, Any Town, B5 5XX

Dwelling type: Detached house
Date of assessment: 15 August 2011
Date of certificate: 13 March 2012
Reference number: 0919-9628-8430-2785-5996
Type of assessment: RdSAP, existing dwelling
Total floor area: 165 m²

Use this document to:

- Compare current ratings of properties to see which properties are more energy efficient
- Find out how you can save energy and money by installing improvement measures

Estimated energy costs of dwelling for 3 years	£5,367
Over 3 years you could save	£2,865

Estimated energy costs of this home

	Current costs	Potential costs	Potential future savings
Lighting	£375 over 3 years	£207 over 3 years	You could save £2,865 over 3 years
Heating	£4,443 over 3 years	£2,073 over 3 years	
Hot water	£549 over 3 years	£222 over 3 years	
Totals:	£5,367	£2,502	

These figures show how much the average household would spend in this property for heating, lighting and hot water. This excludes energy use for running appliances like TVs, computers and cookers, and any electricity generated by microgeneration.

Energy Efficiency Rating

	Current	Potential
Very energy efficient - lower running costs		
(92 plus) A		
(81-91) B		
(69-80) C		76
(55-68) D		
(39-54) E	49	
(21-38) F		
(1-20) G		
Not energy efficient - higher running costs		

The graph shows the current energy efficiency of your home.

The higher the rating the lower your fuel bills are likely to be.

The potential rating shows the effect of undertaking the recommendations on page 3.

The average energy efficiency rating for a dwelling in England and Wales is band D (rating 60).

Top actions you can take to save money and make your home more efficient

Recommended measures	Indicative cost	Typical savings over 3 years	Available with Green Deal
1 Increase loft insulation to 270 mm	£100 - £350	£141	✓
2 Cavity wall insulation	£500 - £1,500	£537	✓
3 Draught proofing	£80 - £120	£78	✓

See page 3 for a full list of recommendations for this property.

To find out more about the recommended measures and other actions you could take today to save money, visit www.direct.gov.uk/savingenergy or call 0300 123 1234 (standard national rate). When the Green Deal launches, it may allow you to make your home warmer and cheaper to run at no up-front cost.

Page 1 of 4

Figure 6. The first page of an energy performance certificate for a UK house.

Some other home rating systems internationally:

- Canada – the EnerGuide Rating System covers new and existing homes and is not mandatory.
- USA – the Home Energy Score (developed by the federal Department of Energy) covers new and existing homes. It is not mandatory at national level but is a legal requirement in some jurisdictions around the United States. There is also the Home Energy Rating Standard (HERS) Index developed by the Residential Energy Services Network (RESNET).

4. Essential information that New Zealand consumers need to know

Research has indicated some clear gaps in knowledge, specifically in areas of:

- building beyond Code minimums
- high-level issues around building a new house
- new-build quality and weathertightness
- maintenance
- medium-density housing.

Building beyond Code minimums

This is clearly key information for consumers to have. Higher-performing homes will not come from continuing to meet the minimum requirements and little else. The industry will also need to move to lower-carbon construction materials and methods to make its contribution to New Zealand's net-zero carbon targets.

The information should focus around levels of comfort, warmth and convenience (see section 5) rather than the technical benefits of energy efficiency.

Given the intense focus consumers have on the upfront construction, free or low-cost options should be promoted first. There are many areas of passive solar design that apply here. For example, a BRANZ research project assessed 210 randomly selected new detached houses that met Building Code minimum requirements but did not take advantage of passive solar design (Jaques, 2019). Using modelling, BRANZ found that the average house required two to three times the amount of heating energy to maintain comfortable conditions compared to a house of similar price that incorporated passive solar design. In other words, much better performance is available without an increase in upfront costs.

While there is considerable evidence that, overall, consumers assess benefits in terms of warmth and comfort rather than technical measures, there is a strong case for detailed investment/return calculations to be made for some consumers.

High-level issues around building a new house

Several pieces of research point to the need for an independent, reliable source of information that consumers can turn to for high-level help around house buildings – how the roles and responsibilities are divided and practical guidance around dealing with disputes.

New-build quality and weathertightness

The fact that two-thirds of industry practitioners in one survey say they have seen problems with weathertightness in houses less than 10 years old points to a problem. Consumers need to understand issues around weathertightness and where they need to spend money.

Maintenance

BRANZ has estimated that the annual cost of maintenance required to keep a house in good condition is typically around 0.5–2.0% of the value of the house, excluding the land. In other words, for a house with a value of $300,000 (excluding land value), the owner should plan to spend around $1,500–6,000 each year on maintenance and

repairs. The House Condition Surveys have consistently found that owners are not spending this. In fact, the actual spend has often been around only a third of the amount required to repair the most serious defects.

Medium-density housing

A significant proportion of future housing will take the form of MDH, yet many consumers are wary of it.

5. Conclusion

This report examines the information available to consumers about house building and related topics. It looks at what information consumers say they want, and what industry practitioners say consumers are asking them for. It maps the information currently available. Finally, it considers not only the sort of information that consumers want, but what is required for them to contribute to a wider effort to lift the performance of New Zealand houses and how that may be presented to them.

There is plentiful evidence that many houses in New Zealand are in poor condition – cold, damp and mouldy. Many new houses are constructed to just meet the minimum requirements of the Building Code. Both new and existing buildings will need to produce fewer emissions to help meet net-zero carbon targets set in law.

Some changes are already taking place, particularly in the uptake of better levels of thermal insulation and efficient space heating appliances such as heat pumps.

Legislative changes in recent years have also increased the information that consumers must be given:

- For residential building work of $30,000 (including GST) or over, contractors must give clients a checklist and provide certain information about their business before entering into the contract. The checklist and disclosure information must also be given if the client asks for it, even if the work is below $30,000. The checklist gives the client information about the building process, their role and their rights.
- After the work is completed, other information must be given to the client, including details of insurance the contractor holds, copies of guarantees/warranties that apply and maintenance requirements.

Given that there have been some gaps in information identified, the question arises around how to provide that information to consumers in a way that will change their behaviour and result in better-quality, better-performing houses. There is a body of research around behaviour change that shows that simply providing people with information is not, by itself, enough to be effective. There needs to be consideration of the social environment and the attitudes and beliefs people hold. They need to be empowered and given support.

A 2012 study of international and New Zealand research around what is required for accessible housing features to be taken up (referenced in and confirmed by *Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance*) identified five key sets of levers, being:

- regulatory
- investment, subsidies and taxation
- accreditation
- planning and procurement
- capability development and demonstration.

Other studies of energy and thermal performance show very similar levers, being:

- regulatory and government controlled instruments
- economic and market-based instruments
- fiscal instruments
- information, leadership and voluntary action.

The overall finding is that encouraging improved building performance requires the engagement of multiple levers. Information/knowledge transfer is just one and may not be effective carried out in isolation.

The significance of the role homeowners play in building higher-performing homes is clear. This is clearly accepted by industry – in the report *Industry perspectives on exceeding the minimum*, 500 practitioners were asked, in their experience, who made the final decision to build beyond Code. Overall, 73% said it was the house owner, with architects a very distant second at 8%.

The house owner therefore needs to be taken very seriously as a player when looking at how to improve house performance and quality.

BRANZ has a key role to play in this. Many research projects talk about the importance of independence in the organisations providing information.

5.1 Findings

1. **There is a vast amount of information already available on just about every area of building in New Zealand, but this information is very widely scattered.**

One BRANZ report described consumers as 'lost in a sea of information'. There are certainly gaps in the information, detailed in this report, but a great deal of information already exists.

2. **There has been a large amount of research conducted with consumers in past years.**

A short examination quickly found over 30 different projects that have included a survey, focus group(s) and/or interviews of homeowners and consumers, with over 20 of these carried out by BRANZ itself. This is not a comprehensive list – there are a number of university projects in particular not addressed here but that have published information. Some research has been wide ranging and some focused on very specific topics. Consumers have been asked for their opinions in some cases and their experiences in others.

There have also been many interviews, focus groups and surveys of industry practitioners that have included the topic of consumer opinions and preferences. This is particularly valuable information because the consumers whose views are being talked about are usually those actively involved in building or renovation work – their comments come from experience.

3. **The upfront cost of a new home is the overriding driver of many consumer decisions. The operating costs of a house are rarely considered.**

There is compelling evidence for this across many research projects. This obviously draws into question the assumption that given the 'right' information, consumers will demand better-quality and better-performing homes. Providing more information to consumers is unlikely in itself to encourage them to invest in higher performance if this raises the build price by a significant sum.

Many studies have found that cost impacts on quality. *Industry perceptions of weathertightness failure in residential construction*, for example, found a widely held

industry perception of clients gravitating to low-cost contractors to limit total project cost. Some of the New House Owners' Satisfaction Surveys have found that people who chose their builder based on the lowest quote had lower levels of satisfaction than people who had made the choice from other criteria.

Adopting new ways in the building and construction industry found that over a third of the 751 industry practitioners identified main enablers/blocks around change as pricing and cost. Just 4% thought that 'better informed clients' are the key to change.

In the BRANZ Home Performance study, the view of the industry practitioners was that there seems to be little interest in running cost, and it did not seem to be something that consumers spent much time discussing or calculating.

4. Comfort and health are more important to consumers than building efficiency.

Research consistently finds that consumers are not driven by concerns around energy efficiency, building performance or the like, but the desire to be warm and comfortable:

- The BRANZ House Performance study found little demand for metrics around building performance and little understanding of it. Understanding is largely directed around health – especially sun, good ventilation and warmth.
- Beacon Pathway's HomeSmart research also found that comfort and health were the drivers for the vast majority of householders rather than energy and water efficiency.
- The key driver for most consumers in a small 2018 survey of households who had recently retrofitted thermal insulation was to get a warm, dry, healthy home.
- The 2018 customer survey of Eco Design Advisors asked the consumers' motivations in seeking an advisor (they could have several). 83% said a warmer house, 64% said reduced running costs and 40% said reduced environmental impact.

5. Consumers have relatively little knowledge about building and place a large degree of trust in their builder and building consent authority.

Knowing enough to ask found a large part of the research consumers do is into builder selection. *Industry perceptions of weathertightness failure in residential construction* found that consumers often misperceive BCA inspections as a quality control or quality assurance mechanism. As one industry practitioner expressed it: "There's a very broad impression within the New Zealand public that council are a proxy for a clerk of works on site. And they simply are not."

6. The interests consumers do express about building tend to be about functional and aesthetic features.

The BRANZ House Performance study found that the general consensus amongst the industry professionals interviewed is that building performance and efficiency are not highly valued by consumers. Two interviewees commented: "Most people at the design stage are focused on looks or better than the Joneses." "No-one really asks about the performance of the building and the products." Consumers are much more interested in the appearance of their kitchen or bathroom than about the performance of the insulation in the walls.

7. Where consumers do ask for something outside standard offerings or beyond the Building Code, they sometimes run into builder resistance.

In *Knowing enough to ask*, a consumer said: "[They] put pressure, it's not direct or in a nasty [way], but they pressurise you to use their materials which they've costed already so they know how much it's going to cost, and they know the suppliers and dah, dah, dah."

Another talked about failed conversations with their builder about trying to exceed Code minimum housing and said "the whole system wears you down".

The choice to exceed: Consumer perspectives on building beyond Code in New Zealand found that tight timeframes and an industry unwillingness to explore new building systems may mean a builder is reluctant to exceed the minimum.

Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance found that there is a long chain of research showing that, even where consumers ask for energy efficiency or thermal performance, they struggle to leverage those from the building industry.

8. Despite dozens of pieces of research directly involving consumers or asking industry practitioners about consumer thinking, no strong consumer demand for more knowledge about building performance has been uncovered.

There are some specific areas where consumers would like to know more (such as the specific payoff for going beyond Code), but in many areas, they leave the responsibility with their designer and builder. Often a sense of consumers being overwhelmed by the process comes through the research. In *Knowing enough to ask*, one consumer said: "We didn't do much research. We may have done a little bit here and there, but there's a thousand things that go into a home so you can't really research everything."

In the BRANZ Home Performance study, industry practitioners were asked if a set of house performance metrics might be useful for homeowners. Most respondents noted that there has been no real demand for such measures from consumers. While saying there was no demand, practitioners felt that such information would still be useful.

In *Adopting new ways in the building and construction industry*, 751 industry practitioners were asked about the key factors that would enable change. 'Better informed clients' was selected by just 4% of participants, compared to the 36% who identified 'pricing, low cost and/or profitability'.

In *A consumer survey of attitudes to exceeding minimum standards for refurbishments and retrofits*, respondents were asked to rank certain barriers to exceeding the minimum. Build cost ranked top, with 102 participants ranking it first. Lack of knowledge of owners was only selected by 29 participants.

9. There appears to be widespread consumer acceptance of their houses being built to comply with the Building Code but no clear demand for Code-plus houses.

In *A consumer survey of attitudes to exceeding minimum standards for refurbishments and retrofits*, when consumers were asked about what information they looked for, beyond-Code features were not mentioned.

10. The view that, if the 'right' information is found and provided to consumers, they will then demand better-quality and better-performing homes from the industry is too simplistic and unlikely to achieve change by itself.

There is good evidence that simply giving people information is by itself not enough to change behaviour. Interventions to change behaviour must consider the social environment people live in and their attitudes and skill levels and must provide people with support and resources. Importantly, people need to be empowered rather than just told what to do.

5.2 Recommendations

Actions should be approached with realistic expectations about what can be achieved, especially with regard to timeframes. Sometimes in the past, targets set or claims made for the scale of improvements that can be achieved appear to be overly optimistic. One study included a very ambitious statement that "improving client knowledge and understanding of the design and building process could reduce the time taken to finalise the design stage from 25 weeks to 10 weeks" (Duncan, Kingi & Brunsdon, 2018, p. 9). When Beacon Pathway launched in 2004, it had a goal that the majority of New Zealand homes (90%) achieve a high standard of sustainability by 2012.

1. Given the vast investment made in research of consumer opinion and experience in past years, it is extremely difficult to justify yet more research. We already hold a large amount of information.

The second part of this project was originally intended to be research with consumers to determine their opinions, preferences and experiences and to work out what information should be provided to them. It is recommended that this not proceed. Instead, the enormous amount of information already collected should form the basis of the next steps. There are three specific pieces of work that could be considered that are discussed further below:

- Scoping the concept of a 'one-stop shop'.
- Scoping knowledge transfer around benefits (such as orientation on site) that have no or little additional cost yet are underused.
- Looking into the few gaps in the research that have been identified, particularly around costs and benefits.

2. Consideration should be given to how building information that is already available from many different sources can be brought together into a single location – an easier to find 'one-stop shop'.

Many research projects have found that there is sufficient information already publicly available, but it is widely scattered and difficult to assess. *Industry perspectives on exceeding the minimum* found there was a sense that lots of information exists, but a central repository and clearer guidance to follow would be beneficial.

Retrofitting insulation in residential properties found a need for a one-stop shop that has independent advice with all the information about types of insulation and how to install it and more generic information on how to keep homes dry, warm and energy efficient. This could include a tool that allows people to calculate the best type of insulation for their region and house.

It should be made clear here that the term 'one-stop shop' does not imply a single channel, such as a single website. There is considerable evidence that both consumers and industry want information accessible through various channels, but especially in printable or printed form.

For example, BRANZ external research report *Acoustical design of medium density housing* (Dunn et al., 2018) described asking a large sample of design, construction and local authority respondents about how they would like to get information. Almost one-third wanted online resources that could be easily printed out, while not even 5% wanted a website alone. In fact, over four times more people wanted printed resources than purely online resources.

3. **As a well-respected independent organisation, BRANZ has a key role to play.**

It was noted earlier that BRANZ resources such as the Level website are already being used by consumers in their research and planning. Respect for the expertise and independence of BRANZ is found in many areas. *Acoustical design of medium density housing* asked who respondents thought should run a 'go to' information source on acoustic design. By a very wide margin, BRANZ was the preference.

Any one-stop building information resource should involve a partnership between BRANZ, the building industry, government and probably other bodies such as Consumer New Zealand. Single high-profile services can be enormously effective in New Zealand. Trade Me, for example, has 1.8 million active members.

When the New Zealand Government has crucial information to impart to the public, it also delivers this chiefly through a single high-profile channel. Information about COVID-19, for example, is delivered through a dedicated website, which states: "This website has everything you need to know in one place."

4. **Information prepared for consumers should take account of cost/price sensitivity by prioritising features or construction methods that give high returns for no or little additional dollar cost – 'more bang for the same buck'.**

Given the intense focus consumers have on the initial cost of a house and clear resistance or inability to spend larger sums, when it comes to providing information, no-cost or low-cost options should be promoted first. Passive design considerations such as building orientation and window placement are examples.

There is scope for substantial benefits to house performance from this approach. For example, a BRANZ research project assessed 210 randomly selected new detached houses that met Building Code minimum requirements but did not take advantage of passive solar design (Jaques, 2019). Using modelling, BRANZ found that the average house required two to three times the amount of heating energy to maintain comfortable conditions compared to a house of similar price that incorporated passive solar design. In other words, much better performance is available without an increase in upfront costs.

There are a number of steps that BRANZ could take immediately to promote 'more bang for the same buck' through industry – a *Build* magazine special issue, a hard copy publication bringing all the research together, a seminar series and so on.

5. New research should focus on the few information areas where gaps have been identified, especially around costs and benefits.

These include the specific payoffs people can expect from investing in higher-performing features. *A consumer survey of attitudes to exceed minimum standards for refurbishments and retrofits* found that tailored advice based on cost-benefit analysis is necessary to achieve a technically and economically efficient market solution that encourages building beyond Code.

When respondents in the project *Industry perspectives on exceeding the minimum* were asked what advice or messages the industry should give consumers about high-performance houses that go beyond Code minimums, the most common response was the importance of considering the long-term cost-benefit. Lower running costs were frequently mentioned. Cost was recognised as one of greatest barriers to exceeding the minimum with a need for better cost-benefit methodologies for helping to align costs and benefits (both tangible and invisible) into a rigorous analysis at individual and public good levels.

Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance found in recent literature the importance of clear value cases around the rewards and benefits of take up.

The analysis and presentation of benefits must match consumer realities. For example, if first-time house buyers only stay in a home for a little over 5 years, they won't be convinced to invest in high-performance features if those feature will not be reflected in a higher house value or will not be paid back within 5 years.

It should be borne in mind that this is niche work. Many pieces of research have found that financial benefits, lower running costs, greater energy efficiency and so on are not the drivers for most consumers.

6. Information for consumers should stress health and comfort benefits rather than efficiency or performance issues.

The 500 industry respondents in the project *Industry perspectives on exceeding the minimum* said that the health and comfort benefits should be stressed. *The choice to exceed: Consumer perspectives on building beyond Code in New Zealand* found that a cultural shift is required so consumers perceive houses as warm and healthy places to live rather than as financial assets or commodities.

7. Government intervention to drive better home performance may be the most practical and effective approach.

It is sometimes said that building quality will not change without consumer demand changing. This is not correct. Change can come as a result of government intervention. There is a widespread view that the current approach to building quality has not had the expected outcome.

> … the current regulatory framework was envisaged as one that would allow designs and products to push beyond performance minimums. It was hoped that the building industry would choose to deliver, and consumers would demand, buildings that would exceed those minimums. Anticipation of innovation, increased productivity and stock diversification has been disappointed. (James et al., 2018, p. 2)

There are two possible approaches in this area: introducing a mandatory home performance certification scheme or lifting the minimum requirements in the Building Code and standards.

A certification scheme was raised as a possibility in the BRANZ Home Performance study, finding that only through government mandatory intervention will there be a positive, significant and prolonged change in this area. This will probably require something that has worked in many other regions internationally – a home energy performance certificate-style intervention.

Some industry practitioners in *Industry perspectives on exceeding the minimum* also saw the absence of a widely used home performance rating system as a barrier to communicating and selling the benefits of high-performance homes to homeowners. Some suggested such a system should be mandatory as is the case in some locations overseas.

In many pieces of research, there have been industry practitioners who believe that the minimum requirements today are too low and that raising them will be the only way that the performance of new houses increases. In the BRANZ Home Performance study, interviewers made comments that the only way to get people to improve the quality of their homes would be to increase the requirements in the Building Code, as people will naturally build to minimum requirements because it is the cheapest option. It may be that the fastest and most cost-effective option for improving the performance of New Zealand houses is to increase the requirements in the Building Code and standards. As higher-performing specifications become standard and supply of materials and elements grows significantly, costs – the primary barrier – may be expected to fall.

This has been the pattern with thermal insulation in our houses. The first minimum levels of insulation became mandatory in 1978, and the requirements have been modified on three occasions since then. Thermal insulation in rental accommodation was introduced as a legal requirement. It is extremely unlikely that the significant advances New Zealand has made in this area would have come about purely from consumer demand.

Doing better in residential dwellings: Going beyond the Code in energy and accessibility performance confirmed the findings of an earlier report (Saville-Smith & Saville, 2012) that there is support for legislation and regulation as a fundamental component to drive change and that voluntary standards and informational levers are considered to be important but insufficient and often ineffective on their own.

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Appendix A: Recommendations for first-time home builders

The table displays the most important recommendation (rank 1) to the least important recommendation (rank 34) as ranked by 246 new-build clients responding to a survey. This is drawn from *Recommendations for first-time new-build housing clients* (Curtis, 2016b).

Table 2. Recommendations in order of importance.

Rank	Recommendation
1	Determine your final budget before entering the process.
2	Consider the impact of views, wind, sun etc. for your site.
3	Get an engineering report on your section before building, especially if the section is not in a new subdivision.
4	Eliminate or minimise variations by planning carefully upfront.
5	Only pay for stages of work after they have been completed.
6	Budget for additional unforeseen or hidden costs.
7	Visit houses built by the actual builder before signing a contract.
8	Seek legal advice before signing the building contract.
9	Hold back a retention payment until the Code Compliance Certificate has been issued and any major defects have been fixed.
10	Check if your builder is backed by a reliable guarantee scheme.
11	Visit several show homes to identify exact fixtures, fittings and materials you would like.
12	Get the builder to specify in writing what is excluded from your contract.
13	Insist on getting a guaranteed completion date in the contract with damages paid if construction is not completed on time.
14	Consider upgrades such as higher studs, thermally broken windows, wider doorways/hallways, additional power points, extra insulation etc. earlier rather than later.
15	Understand clearly the release of funds and your mortgage before you sign a contract.
16	Prioritise upgrades that are not easily retrofitted if money is tight.
17	Take the time to look into the council's policies on building and resource consents.
18	Understand what fixtures and finishes are included in your contract and whether they differ from the show home.
19	Physically check that all service connections are available at your section boundary and price up those that are missing.
20	Minimise PC sums in the contract and independently assess the cost of those that remain.
21	Agree fortnightly visits with your builder.
22	Ask friends and family who have built recently to recommend which builder to use/not use.
23	Budget for landscaping.
24	Gather information (books, magazines etc.) on styles you prefer before entering the design stage.
25	Opt for low-maintenance materials where possible.
26	Measure key pieces of furniture when designing the house to ensure they will fit in the proposed space.

27	Consider the ideas and concerns of your designer about your design ideas.
28	List all defects for your builder in writing.
29	Limit your deposit to 5% of the build cost.
30	Ask for your designer's recommendation on which builder you should use (if your designer is independent).
31	Be realistic about the likely occurrence of minor defects.
32	Investigate whether or not development contributions need to be paid.
33	Consider insulating the garage or check that the door between the garage and house provides insulation.
34	Ask to receive training on any equipment that you have not used previously.

This list was refined down. Items not physically possible were removed, and regulatory changes – such as the requirement that builders provide a checklist – were taken into account. A final list of recommendations was prepared in a way that roughly follows the building process.

List of final recommendations

1. Determine your final budget before entering the process.
2. Understand clearly the release of funds and your mortgage before signing any contracts.
3. Take the time to look into the council's policies on building and resource consents.
4. Physically check that all service connections are available at your section boundary and identify the cost of those that are missing.
5. Visit several show homes to identify exact fixtures, fittings and materials you would like.
6. Consider upgrades such as higher studs, thermally broken windows, wider doorways/hallways, additional power points and extra insulation.
7. Prioritise upgrades that are not easily retrofitted if money is tight.
8. Understand what fixtures and finishes are included in your contract and whether they differ from the show home.
9. Talk through with your builder what is excluded from your contract.
10. Eliminate or minimise variations by planning carefully upfront.
11. Minimise the number of PC sums in the contract and independently assess the cost of those that remain.
12. Consider the impact of views, wind, sun etc. for your site.
13. Budget for additional unforeseen costs.
14. Get an engineering report on your section before building, especially if the section is not in a new subdivision.