2016 KAIKŌURA/HURUNUI EARTHQUAKE CLAIMS SETTLEMENT RESEARCH:

Evaluating the impacts of cash settlements on the long-term quality of the housing stock

HOUSING QUALITY REPORT

May 2023

Resilient ORGANISATIONS
kestrel group
Tonkin+Taylor
Infometrics
Funded by Toka Tū Ake EQC

AUTHORS

Cameron Eade, Resilient Organisations Ltd
Eric Bird, Tonkin & Taylor Ltd
Sophie Horsfall, Resilient Organisations Ltd
Charlotte Brown, Resilient Organisations Ltd
Dave Brunsdon, Kestrel Group
Nick Brunsdon, Infometrics

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2016 Kaikoura/Hurunui earthquake claims settlement research
Summary of research stages

Full references and weblinks to these reports can be found in Section 10.

REPORT TITLE	SUMMARY
Understanding the Outcomes of Managed Residential Repair Following the Canterbury Earthquakes (*Literature Review Report*)	This report summarises the outcomes, challenges, and benefits of the managed repair process following the Canterbury earthquakes of 2010/11, as a basis for informing broader considerations of appropriate insurance settlement models in future large-scale disasters and supporting research method design.
Evaluating the Impacts of Cash Settlements on the Long-Term Quality of the Housing Stock (*Housing Quality Report*)	This report investigates the impacts of cash settlement of insurance claims following the 2016 Kaikōura/Hurunui earthquake. In particular, the report focuses on the impact on the long-term quality of housing. The research draws on insurance claims data, building consent data, real estate data, and results from a 2022 claimant survey carried out by the research team. The analysis in this report focuses on the most significantly impacted districts of Kaikōura, Hurunui and Marlborough.
Claimant and Community Experiences and Impacts from the Kaikōura/Hurunui Earthquake Residential Repair Process (*Impacts Report*)	This report builds on this previous work by exploring the wider impacts of cash settlement. It looks at the process of cash settlement from multiple stakeholder perspectives (claimants, builders, professional services, building control authorities, insurers (including assessors), and real estate agents). The analysis is based on a series of interviews with key stakeholders and is complemented by results from a 2022 claimant survey carried out by the research team. The analysis explores issues such as timeliness of repair works, cost, claimant experience (including impacts on claimant wellbeing) and property transactions.
Key Principles and Considerations for Future Residential Recovery (*Discussion Paper*)	This discussion paper outlines key principles and considerations to inform decision-making for future residential recovery strategies. This draws on findings from previous reports and evaluates the advantages and disadvantages of cash settlement following a major disaster. The features and attributes that underpin an effective residential claim settlement approach are suggested, acknowledging the spectrum of approaches from claimant-led to third party-led. Key factors for early-stage decision-making as to the optimum claims settlement approach for a given event are also proposed.

EXECUTIVE SUMMARY

In New Zealand, damage to residential dwellings and land from natural hazards is covered by a combination of private insurance and the state insurance entity, Toka Tū Ake EQC (Earthquake Commission). The currently preferred method of Toka Tū Ake EQC and private insurers for resolving residential insurance claims following an event is through cash settlement. There is however some uncertainty over the extent to which cash-settling insurance claims could lead to poor outcomes for housing quality due to the reliance on property owners to manage and ensure repairs are completed. In addition, there may be other impacts of cash-settlement that should be considered, such as negative impacts on claimant wellbeing.

The Public Inquiry into the Earthquake Commission (referred to hereafter as the Public Inquiry) was tasked with investigating and reporting lessons from Toka Tū Ake EQC's operational practices, past claim settlement approaches, and to "make recommendations to improve the Commission's readiness to respond to future events" (Public Inquiry into the Earthquake Commission, 2020, p. 7). A final report was published in March 2020 and included a range of recommendations. One recommendation (5.1.3) provides the core basis for this research. It states to (Public Inquiry into the Earthquake Commission, 2020, p. 32):

> *Conduct a detailed assessment of the impacts of cash settlement of claims in the example of the Kaikōura/Hurunui earthquake, including the longer-term impact on quality of the housing stock.*

The aim of this report is to investigate the impacts of cash settlement of insurance claims following the 2016 Kaikōura/Hurunui earthquake. In particular, the report focuses on the impact on the long-term quality of housing. This report is part of a body of work funded by Toka Tu Ake EQC. The overall project aims to understand the impacts of applying a cash settlement model following the 2016 Kaikōura/Hurunui earthquake, with particular consideration to the long-term quality of housing stock; and provide lessons for residential recovery following future events in Aotearoa New Zealand.The research draws on insurance claims data, building consent data, real estate data, and results from a 2022 claimant survey carried out by the research team. The analysis in this report focuses on the most significantly impacted districts of Kaikōura, Hurunui and Marlborough. In total, 5,756 claims for building damage were paid by Toka Tū Ake EQC in these three districts.

To capture the main elements of concern identified in the Public Inquiry related to ongoing housing quality, three separate tests were used to measure the impact of cash settlements on housing quality. These are:

1. Were earthquake repair works completed?
2. Were:
   - Repairs for structural damage carried out?
   - Structural repairs undertaken with appropriate review and approval?
3. Were claimants satisfied with the quality of their repairs?

Overall, the results show that the majority of cash settled claimants chose to repair or partly repair their property. The survey results indicate up to 17% (including for survey margin of error) of cash settled claimants may have chosen not to undertake repairs. Taking into account properties where the insurer managed the repair, up to 15% of all insured properties affected may have gone unrepaired. For those that did undertake repairs, approximately 42% opted to undertake work themselves or use friends and family, likely in an effort to reduce costs. The potential range of skills and knowledge employed by those undertaking the repair works introduces potential questions around quality, which we currently cannot measure.

Focussing on structural damage, the results show that a number of claimants either chose not to repair structural damage or repaired structural damage without the necessary building consent. For large claims (generally assumed to include structural repairs), the claims and consent data shows that the majority (between 72% and 81%) did not obtain a consent, while survey results show that 43% of large cash settled claims did not obtain a consent. Both datasets indicate that approximately 10% of all insured and damaged properties in the study are either unrepaired or have non-consented structural repairs. Due to limitations in the data, there is uncertainty around the exact extent of this issue, however, it is evident that a portion of properties likely had structural damage repaired without a consent. It is possible that some of the unconsented structural work was still done to a satisfactory quality, however, there is no data available to validate this.

While the use of homeowner perception is often cited as a poor indicator of quality (in particular due to the inability of most homeowners to be able to identify issues that might affect the structural integrity of a building), there is an argument for allowing homeowners to self-define quality. Based on reported claimant satisfaction from the survey, approximately 7% indicated they were dissatisfied with the outcomes of the repairs. More analysis is needed to understand how this dissatisfaction relates to objective quality measures.

As well as what we have been able to measure, there are a number of aspects of quality that we are unable to measure. This includes the quality of workmanship used (particularly where claimants undertook work themselves), the repair of on-sold properties (properties sold 'as-is-where-is'), and the degree of future insurability (based on insurance attrition and non-repaired or unsatisfactorily repaired properties).

It is likely that there will always be a portion of claimants who do not wish to repair their properties. But how can quality outcomes be ensured for those that do choose to repair their properties? Our current construction system offers few checks and balances to ensure that quality outcomes are achieved for repairs. Outside the building consent process, there is a high reliance on professionals and property owners to manage and ensure quality. Further investigation is required to understand how housing quality, in particular the structural integrity of buildings, can best be restored (or where necessary, improved) following future major events.

The next stage of this research will investigate potential impacts of the cash settlement process, such as timeliness of repair works, cost, claimant experience (including impacts on claimant wellbeing) and property transactions. It will also look at the intention and rationale behind claimants' decisions to repair or not to repair. The analysis will also look at the contextual factors that contributed to, and resulted from, the repair/rebuild process and experience, from a claimant, tenant and community perspective.

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1.0 INTRODUCTION

In New Zealand, damage to residential dwellings and land from natural hazards is covered by a combination of private insurance and the state insurance entity, Toka Tū Ake EQC (Earthquake Commission). Toka Tū Ake EQC is established under the Earthquake Commission Act 1993 (the Act) and provides cover, up to a cap, for all property owners who hold a private house insurance policy that includes cover for fire damage.[1] The Act covers damage resulting from a specific list of natural hazards: earthquakes, natural landslips, volcanic eruptions, hydrothermal activity, and tsunamis, as well as fire resulting directly from any of these hazards. Damage from storms and flooding is also covered, but this is strictly in relation to claims made for residential land, not dwellings.[2]

The current preferred method for resolving residential insurance claims is through cash settlement (Public Inquiry into the Earthquake Commission, 2020). Cash settlements typically provide for faster settlements and can be easily adjusted where missing or inaccurate damage or costs are identified. There are, however, some concerns that cash-settling insurance claims may lead to poor outcomes for housing quality. Potential risks of using cash settlements in large-scale disasters include cost inflation, limited and inequitable access to building professionals and materials, and settlement money not being used by claimants to complete insurer-assessed repairs or rebuilds. These factors could result in reduced housing quality and leaving communities vulnerable to future hazards (Public Inquiry into the Earthquake Commission, 2020; Earthquake Commission, 2019b).

The Public Inquiry into the Earthquake Commission (referred to hereafter as the Public Inquiry) was tasked with investigating and reporting lessons from Toka Tū Ake EQC's operational practices, past claim settlement approaches, and making "recommendations to improve the Commission's readiness to respond to future events" (Public Inquiry into the Earthquake Commission, 2020, p. 7). The final report, published in March 2020, included a range of recommendations, including one (5.1.3) which provides the core basis for this research. It states (Public Inquiry into the Earthquake Commission, 2020, p. 32):

> *Conduct a detailed assessment of the impacts of cash settlement of claims in the example of the Kaikōura/Hurunui earthquake, including the longer-term impact on quality of the housing stock.*

In December 2021, Toka Tū Ake EQC engaged Tonkin + Taylor, Resilient Organisations, Kestrel Group and Infometrics to address this recommendation. The overall project aims to understand the impacts of applying a cash settlement model following the 2016 Kaikōura/Hurunui earthquake, with particular consideration to the long-term quality of housing stock; and provide lessons for residential recovery following future events in Aotearoa New Zealand. This report focuses on the impacts of cash settlement on the long-term quality of housing. Other potential impacts of the cash settlement process, such as timeliness of repair works, cost, claimant experience (including impacts on claimant wellbeing) and property transactions, will be analysed during the next phase of the project.

[1] Homeowners who are covered by Toka Tū Ake EQC currently receive a claim settlement value of a 'cap' plus GST (15%) for house damage. Claims of up to this value are referred to as 'under-cap', while claims which exceed this value are referred to as 'over-cap'. If a claim is 'over-cap' the balance is assessed and paid for by private insurers.

[2] Damage to residential land is also covered by Toka Tū Ake EQC, however the sum of this is calculated separately from the residential building damage cap, see Earthquake Commission Act 1993, Section 19.

Due to the lack of comprehensive data on the application and use of insurance claims, the research draws on insurance claims data, building consent data, real estate data, and results from 2022 claimant survey carried out by the research team. The analysis in this report focuses on the three most significantly impacted districts with regard to property damage: Kaikōura, Hurunui and Marlborough.

The report comprises seven main sections:

Section Two provides an overview of what is meant by the term 'housing quality'. This sets up the basis for analysing observed impacts of cash settlement on housing quality.

Section Three outlines the method used for the collection and analysis of the different data sets used within this report.

Section Four provides a general overview of the insurance response and claims made from the 2016 Kaikōura/Hurunui earthquake. This provides context for the insurance event and the type of residential damage incurred.

Section Five details the application of three tests to analyse the impact of cash settlements on housing quality. These tests include whether earthquake damage to homes was repaired or rebuilt, whether structural earthquake damage to homes was repaired or rebuilt, and the perceived satisfaction of claimants with earthquake repairs.

Section Six discusses the context for the limitations, or blind spots, of understanding the outcome of housing quality from cash settlement of insurance claims.

Section Seven provides a summary of housing quality outcomes from this report.

Section Eight provides an overview of the next steps in this research.

2.0 DEFINING QUALITY

The fundamental purpose of this report is to investigate the impacts of cash settlement on the long-term *quality* of houses damaged in the 2016 Kaikōura/Hurunui earthquake. To draw any conclusions from this research, it is necessary to first define what is meant by the term 'quality'.

The question of how to appropriately define and measure the quality of housing holds no obvious answer. Page and Gordon (2017, p. 4) emphasise that "quality is an elusive concept that is aspired to in the building sector yet difficult to achieve", and note that quality "will mean different things to different people". The Public Inquiry stressed the "need to review many of the provisions that underpin the quality of building and related practices" in New Zealand, with particular emphasis on the experience and perceptions of housing quality after the Canterbury earthquakes (2020, p. 27).

A variety of research projects have been carried out over recent years to improve the understanding and scope of housing quality in New Zealand. For instance, a report published in 2017 by the Building Research Association of New Zealand (BRANZ) identified broad requirements of quality in buildings (Page & Gordon, 2017). As an absolute minimum standard, "a building that fails to comply [with legal, industry, and contractual requirements] is missing the most basic level of quality" (p. 5). However, there are several dimensions of quality that extend beyond simply this minimum standard. Aside from structural integrity, aspects such as non-structural and internal finishings, and weather tightness components (i.e., warmth, dampness, mould) each contribute to an overall perception of housing quality (Curtis & Gordon, 2018).

In 2019, a housing quality framework was co-developed between BRANZ, the Ministry of Business, Innovation and Employment (MBIE), the Ministry of Housing and Urban Development (HUD), and Statistics NZ. This framework is pillared by four key, interconnected elements of quality: habitability, functionality, environmental sustainability, and social and cultural sustainability (Stats NZ, 2019). A broad definition of housing quality is provided (p. 5):

> *The degree to which housing provides a healthy, safe, secure, sustainable, and resilient environment for individuals, families, and whanau to live in and to participate within their Kāinga, natural environment, and communities.*

From this framework, *habitability* is arguably the most relevant element for the repair of existing buildings across a range of ages and conditions (Figure 1). Habitability is understood as "secure shelter that supports an individual's, family's, and whanau's physical health and safety… providing shelter, focusing on the condition of the house's physical structure and the facilities within it". The maintenance of housing quality needs to reflect both the individual and community level perspectives.

Figure 1: Conceptual framework for housing quality in New Zealand (taken from Stats NZ, 2019)

Within the scope of addressing Public Inquiry Recommendation 5.1.3, quality is understood to mean the extent to which cash-settled claims for earthquake-damaged homes in the Kaikōura/Hurunui event translated into repaired homes, and whether there is any indication that inadequate repairs, or a lack of repairs entirely, has led to overall material degradation of the affected housing stock, relative to pre-earthquake condition. This also includes consideration of whether cash settlement has impacted the vulnerability of houses to future natural hazards.

To capture the main elements of concern identified in the Public Inquiry related to ongoing housing quality, three separate tests were used to measure the impact of cash settlements on housing quality (Section 4). These are:

1. Were earthquake repair works completed?
2. Were:
   - Structural earthquake damages repaired?
   - Structural repairs undertaken with appropriate review and approval?
3. Were claimants satisfied with the quality of their repairs?

Test one largely focuses on whether insurance money was re-invested into the housing stock, to restore properties to pre-event standard or better. Test two assesses whether repairs were undertaken such that houses are repaired to a standard that mitigates damage from future earthquake events and the repair work meets minimum building standards. Test three evaluates the subjective nature of housing quality through the perceived satisfaction of claimants with their repairs.

3.0 METHODOLOGY

3.1 OVERVIEW

This research drew on a combination of four data sets:

- anonymised claims data provided by Toka Tū Ake EQC,
- building consent data obtained from Kaikoura, Hurunui, and Marlborough District Councils,
- a claimant survey sent by the research team to Kaikōura/Hurunui earthquake Toka Tū Ake EQC claimants,
- data on dwelling sales obtained through CoreLogic.

Preserving the privacy of claimants for this research was critical to the design of our methodology. Anonymised claims and consent data were handled solely by Tonkin + Taylor.[3] The information provided did not include any identifying information. For the claimant survey, email addresses (only) were handled by Resilient Organisations. Tonkin + Taylor and Resilient Organisations did not share any raw data. The survey did not collect any personal information and responses could not be linked to claims data in any way. Preserving anonymity was critical to ensure that there was no risk to claimants that the information provided would adversely impact them in any way.

A review of the project methodology and ethics has been jointly conducted by the research team and their external reviewer Will Allen and Associates (ref ResOrgs-2022-01).

Below is a brief description of each data set and how each data set was individually analysed. The full methodology and analysis associated with each data set is included in the Supplementary Data Reports (see Section 10.0).

3.2 CLAIM AND EARTHQUAKE-RELATED BUILDING CONSENT DATA

Toka Tū Ake EQC provided anonymised claims data for residential building claims from the Kaikōura/Hurunui earthquake. This data set reflected Toka Tū Ake EQC's payments made to private insurers, so does not include claim values over the Toka Tū Ake EQC cap. At the time of the 2016 Kaikōura/Hurunui earthquake, the Toka Tū Ake EQC cap was set at NZD$100,000 plus GST (15%) for residential dwelling damage.[4] Detailed over-cap claims data from private insurers was not available for this study. Toka Tū Ake EQC also provided a data set containing building replacement values for residential houses nationwide.[5]

Toka Tū Ake EQC claims and national building data sets were combined, and claim settlement values (excluding claims made for damage to land and contents) were aggregated for each of the following regions:

[3] Anonymised means that the data we have contains no identifying information.

[4] Damage to residential land is also covered by Toka Tū Ake EQC, however the sum of this is calculated separately from the residential building damage cap, see Earthquake Commission Act 1993, Section 19.

[5] The national residential building data set was generated by Quotable Value Ltd and contains attribute data (e.g. cladding and roof types, number of storeys, floor area etc), and replacement values estimates for housing nationally.

- Kaikōura, Marlborough, and Hurunui District Councils
- Wellington Region Councils
- Canterbury Region Councils
- Nelson-Tasman Region Councils
- Rest of South Island
- Rest of North Island

The claims data clearly showed higher value claims (and therefore the more damaged houses) were predominantly located in Kaikōura, Hurunui, and Marlborough districts, confirming the study area of interest.

Next, we obtained building consent/exemption data from Kaikōura, Hurunui, and Marlborough District Councils for the period 14 November 2016 (the earthquake itself) through to April 2022. These data sets contained the property address, a brief description of work to be carried out, and an estimated value of building work for each issued building consent. Hurunui District Council also provided exemption data as several earthquake repairs were carried out under exemptions, so this was included in the consent data and analysis. Marlborough District Council recorded very few exemptions over this period, including none for earthquake repair work. Kaikōura District Council provided total numbers of exemptions that related to earthquake repair work but could not supply property specific data. The building consent data (and exemption data for Hurunui) were matched with the Toka Tū Ake EQC claims data. Consents for non-residential properties and non-earthquake related work (such as house extensions or replacement of existing log burners with clean air approved log burners) were removed. The resulting matching claims and consents indicated the number of claims where consent or exemption were granted. For those properties where consents were granted, the matching also enabled a comparison of the claim settlement value with consented works value to indicate whether the full insurance scope was likely carried out.

For more on claims and consent analysis, see the supplementary data report "*Claims and Consent Data Report for 2016 Kaikoura/Hurunui Earthquake Claims Settlement Research*".

3.3 CLAIMANT SURVEY

An online survey was developed by the research team to elicit claimants' experiences of the claims settlement and repair process, and the outcomes on housing quality. The survey was sent, via email, to 13,175 claimants in April 2022. Email addresses provided by Toka Tū Ake EQC included anyone who had lodged an insurance claim with the agency in the three-month period following the Kaikōura/Hurunui earthquake.[6]

The survey explored claimants' perceptions of the repair/rebuild process, whether repair/rebuild work was undertaken and when, who undertook the repair/rebuild work, experiences with access to contractors and other building-related resources, house sale information, ongoing insurance implications, and reflections of the cash settlement process itself. A full overview of the survey questions is provided in the survey data supplementary report "*2016 Kaikōura/Hurunui earthquake claims settlement research: Claimant survey analysis on housing quality*."

For this report, only survey responses that indicated damaged property in Kaikōura, Hurunui, and Marlborough have been included, to enable comparison with the consent and claims analysis. 293 valid

[6] Toka Tū Ake EQC provided a list of email addresses only to Resilient Organisations Ltd for this purpose.

survey responses were received from successful claimants in these three districts, constituting 5% of total Toka Tū Ake EQC claims made for residential building damage in Kaikōura, Hurunui, and Marlborough (5,756 claims).[7] The margin of error for the survey results is 6%, with a confidence level of 95%. Analysis of all survey responses (n=835) can be found in the supplementary survey data report.[8]

A comparison between survey results and claim and consent data for the three districts of focus (Kaikōura, Hurunui, and Marlborough) (Table 1), indicates survey responses slightly over-represent larger value claims and claimants who obtained building consents. By corollary, it is likely the survey results under-represent those who did not undertake repairs and/or did not follow the due process while undertaking repairs (e.g., obtaining consents and using qualified tradespeople). Differences between the two data sets, and interpretation of these differences, is explained further in Section 5. For more on survey representation, see the supplementary survey data report.

Table 1 Representation of survey data relative to claim and consent data (Kaikōura, Hurunui, and Marlborough only).

	EQC claims and council consent data	Survey response
Total claims	5756	293
Claims with consents (including exemptions)	493 (572*)	47
% of claims/respondents with consents (including exemptions)	3.6%-10.1%*	16%
Claims over $100,000**	15.1%	31%
Rebuilds	2.2*% (from consent data)*	6.8%

***** Including the consent exemption totals provided by Kaikōura District Council***

***** Note that $100,000** has been chosen to **represent large claims that are likely to include structural damage**. This does not represent over-cap claims.*

3.4 AS-IS-WHERE-IS DWELLING LISTINGS

As-is where-is (AIWI) sales represent an intermediate stage in the overall process of restoring housing after a disaster. Dwellings sold on an AIWI basis are typically in an uninsurable state due to damage, having either been uninsured at the time of the event or subsequently, cash settled by the insurer and the insurance policy cancelled.

AIWI sales (and un-insured dwellings) are not subject to an official register, so there is no conclusive way to monitor this segment of the market. AIWI sales data for this report was identified using the keywords 'as-is where-is' and 'uninsured' in residential properties listed for sale on Trade Me since the 2016 Kaikōura earthquake.[9] This approach likely captured the majority of AIWI sales, but does not capture private sales. The identified AIWI listings were manually connected to building consent data provided by Kaikōura[10],

[7] These 293 valid survey responses include claimants that received cash settlement and those who had insurer managed repairs. The majority of the analysis in this report focuses on the 250 respondents that had cash settled insurance claims.
[8] The overall survey response rate was 6.3%. We are unable to provide a response rate specific to Kaikōura, Hurunui and Marlborough because claimant location was not provided with claimant email addresses.
[9] Property listing data was provided by CoreLogic.
[10] This did not include building consent exemption data in Kaikōura, as this data was not linked to property addresses.

Hurunui, and Marlborough District Councils, with building consent descriptions scanned to identify if consents pertained to earthquake-related repairs or rebuilds.

For more on AIWI analysis, see the supplementary data report "*Kaikōura earthquake as-is-where-is listings analysis for EQC Kaikoura claims settlement project*".

4.0 OVERVIEW OF INSURANCE CLAIMS FOLLOWING THE 2016 KAIKŌURA/HURUNUI EARTHQUAKE

The M_w 7.8 Kaikōura/Hurunui earthquake ruptured a few minutes after midnight on 14 November 2016, centred in north Canterbury. Excluding the Canterbury earthquake sequence of 2010/2011, the Kaikōura/Hurunui earthquake is the largest insurance event in the history of Toka Tū Ake EQC, resulting in a total of 38,618 claims for residential dwelling, land, and contents damage (Earthquake Commission, 2019a).

Of these, 19,204 claims were for damage to residential dwellings.[11] Figure 2 shows a map of residential dwelling claims made across New Zealand from this event. Claims were heavily clustered around the Kaikōura district, where the most significant earthquake damage to residential dwellings was primarily located. Neighbouring districts, Hurunui and Marlborough, also received significantly larger proportions of higher-value claims than the rest of New Zealand.

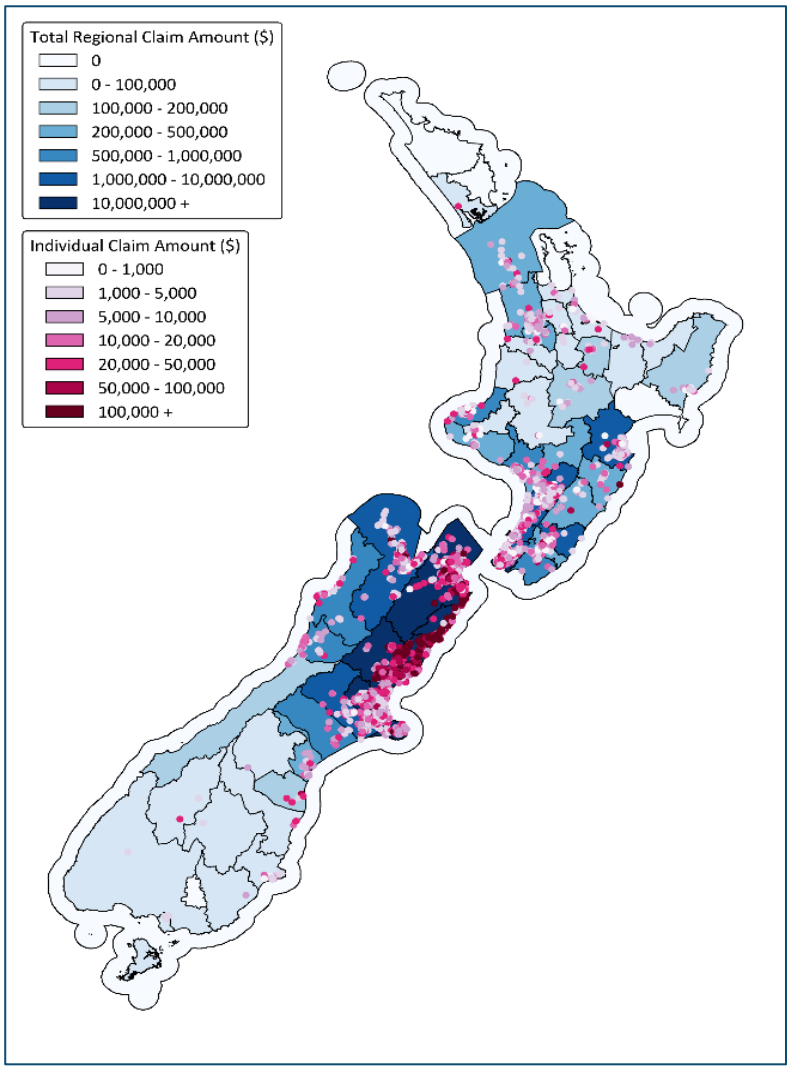


Figure 2: Map of New Zealand showing the total claim value across regions along with individual claim values (based on Toka Tū Ake EQC claims data).

[11] Claim numbers are based on residential building damage, so include all buildings covered by Toka Tū Ake EQC, but exclude any land or contents claims.

The proportion of houses within each region that had claims for earthquake-damage strongly correlated with the intensity of earthquake shaking. Peak ground acceleration (PGA) is a measure of earthquake shaking intensity experienced in different areas. Generally, the PGA in any given area is correlated with the distance from an earthquake's epicentre; the further away an area is from an earthquake's epicentre, the lower the PGA experienced will typically be. Figure 3 shows the proportion of sites with insurance claims within selected townships plotted against PGA, illustrating the areas that experienced higher PGAs also had a higher proportion of Toka Tū Ake EQC claims. Even in areas that experienced high shaking intensity, not all houses had claims: some may have been undamaged or uninsured. It is also possible, in areas such as Ward and Seddon, that some claimants had unrepaired damage from the 2013 Cook Strait earthquake, and their claims from the 2016 Kaikōura/Hurunui earthquake were, therefore, unsuccessful. This factor likely contributes to lower proportions of houses with a loss in Ward and Seddon, below. It is also important to note that this study can only assess those houses for which claims are made. In all regions, there are houses without claims that this study cannot assess.

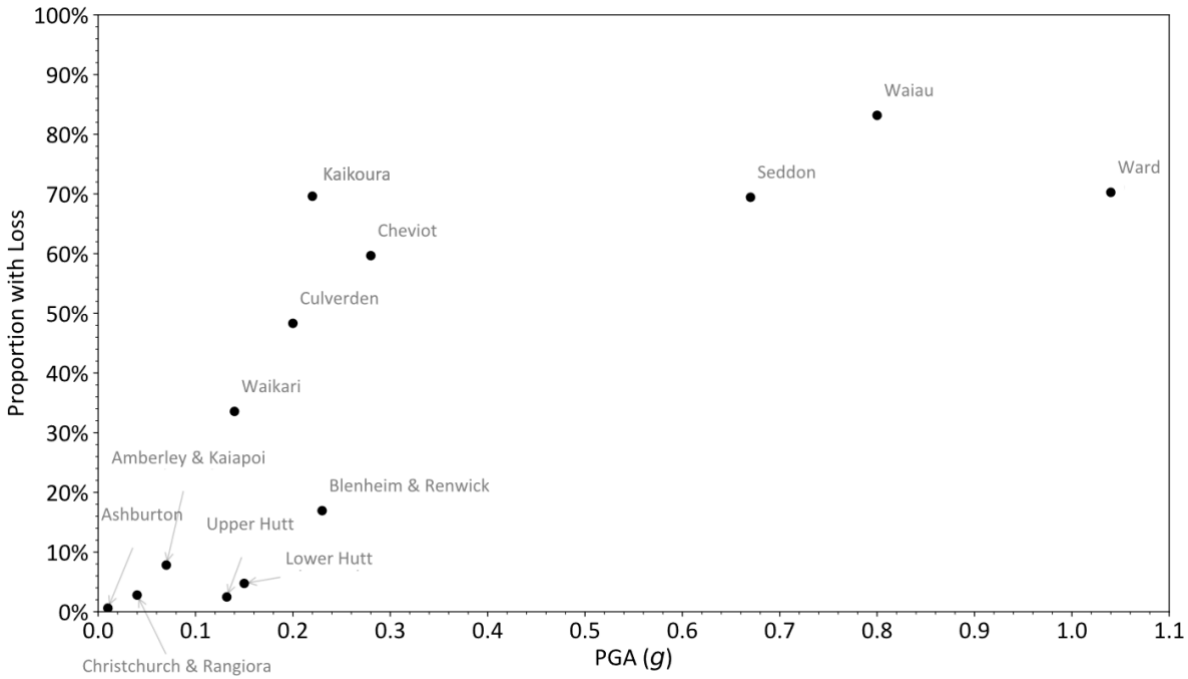


Figure 3: Proportion of sites with claims vs PGA for various townships based on Toka Tū Ake EQC claims data.

The proportion of claims paid by Toka Tū Ake EQC in each region is shown in Figure 4. Kaikōura, Hurunui, and Marlborough districts (combined), as well as elsewhere in the Canterbury region (i.e., excluding Hurunui and Kaikōura) and the Wellington region, each had a similar proportion of claims, making up approximately 30% each.

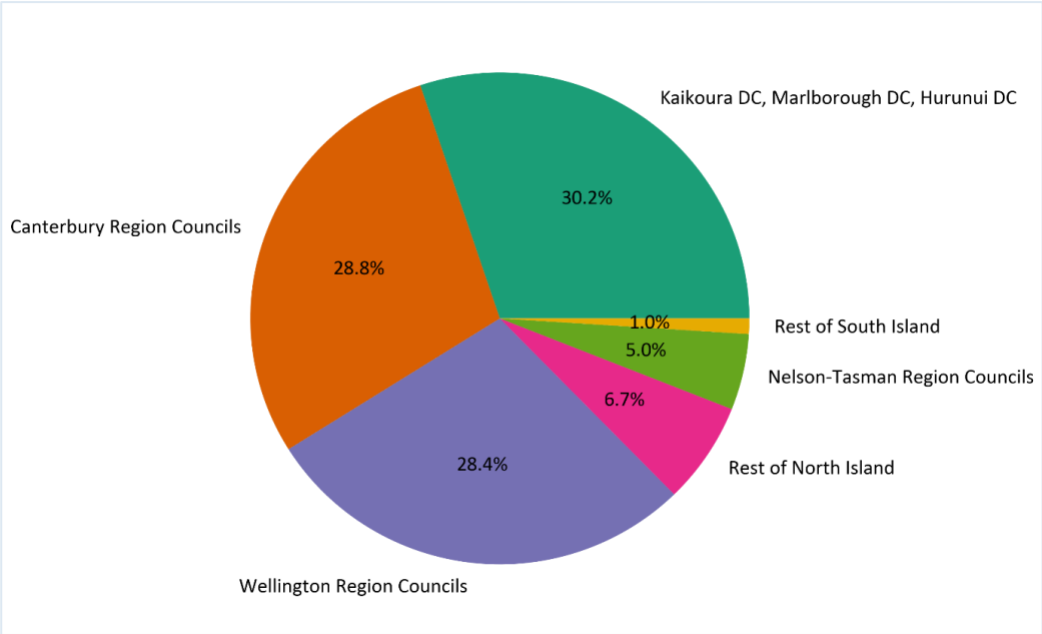


Figure 4: Number of Toka Tū Ake EQC claims by region based on Toka Tū Ake EQC claims data. 'Canterbury Region Councils' excludes Hurunui and Kaikōura.

Figure 5 illustrates the breakdown of the total Toka Tū Ake EQC claim settlement values across each region.[12] Kaikōura, Hurunui, and Marlborough districts cumulatively represented 60% of the total value of Toka Tū Ake EQC claims made across New Zealand from the 2016 earthquake. The next largest portions of claim values were in the Wellington region and elsewhere in Canterbury, representing 20% and 13% of claim values in New Zealand respectively. Kaikōura, Hurunui, and Marlborough districts cumulatively represented a much larger portion of total claim value, as individual claim values were overall significantly higher in these districts than elsewhere.

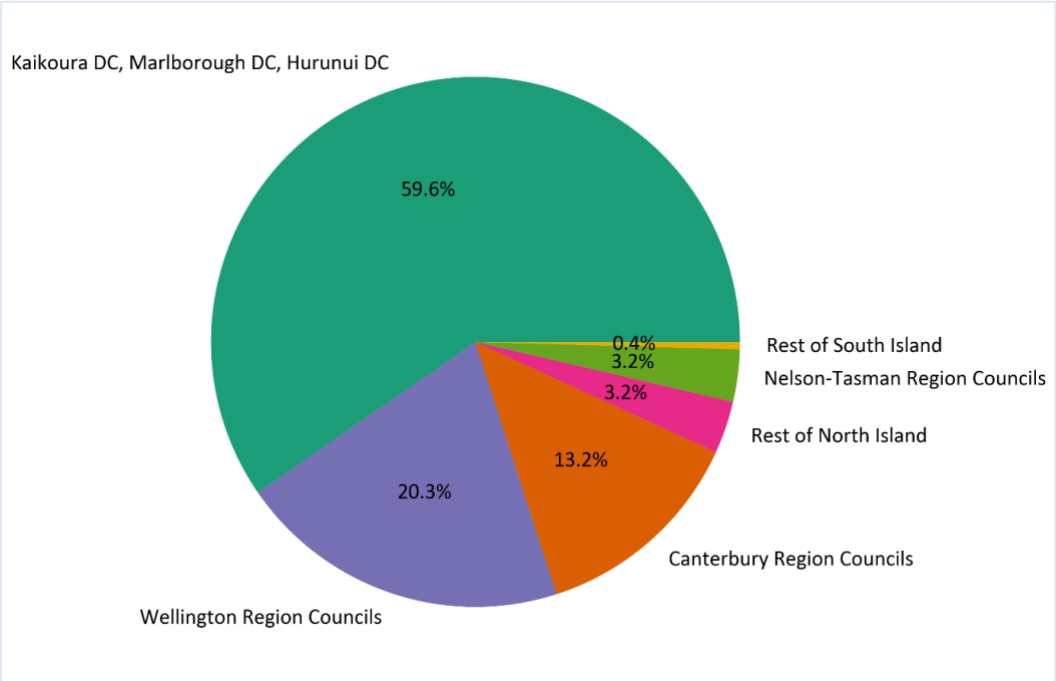


Figure 5: Breakdown of the total Toka Tū Ake EQC claim values by region (dwelling only, excluding land and contents). 'Canterbury Region Councils' excludes Hurunui and Kaikōura.

[12] Toka Tū Ake EQC claim values in this report relate only to the value of dwelling damage. Land and contents damage is excluded.

Excluding the comparatively heavily damaged Kaikōura, Hurunui, and Marlborough districts, Figure 6 shows a consistent median Toka Tū Ake EQC claim value of between $5,000 and $10,000 in all regions where claims were lodged. This is because there is generally a minimum cost to repair a damaged building, regardless of how lightly damaged it is. At lesser levels of ground shaking in areas further from the epicentre, house damage is likely to generally be light cosmetic damage of internal linings, such as hairline cracks. The resulting repair work has a minimum cost, regardless of the size or number of the cracks: a minor crack in a single room that occurs at very low shaking levels costs is effectively the same to repair scope as multiple larger cracks in a single room that occur at higher shaking levels. Comparatively, in Kaikōura, Hurunui, and Marlborough, where higher shaking intensities were experienced, the median claim value was closer to $25,000, illustrating more extensive damage.

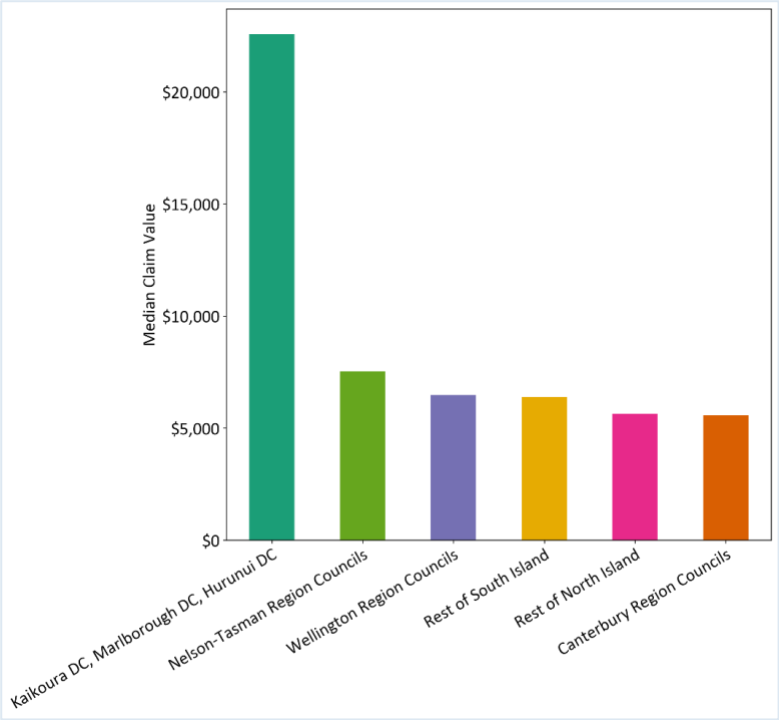


Figure 6: Median value of Toka Tū Ake EQC claims by region. Canterbury region excludes Hurunui and Kaikōura.

The extent of damage to individual houses can also be assessed using the Building Damage Ratio (BDR). BDR is the ratio of the insurance claim value (for building damage) as a proportion of the home's replacement value.[13] Typically, this is measured as:

$$\text{BDR} = \frac{\text{Insurance Claim Value (\$)}}{\text{Replacement Value (\$)}}$$

For example, a BDR of 30% would mean that an insurance claim value is 30% of the building's replacement value. Because BDR values incorporate the value of a house they better reflect the extent of damage than claim value alone, since claims can be influenced by the size and value of a house. Because Toka Tū Ake EQC insurance claim values in this report are capped at $115,000, the BDR values are not reliable for properties with damage over the Toka Tū Ake EQC cap. For instance, a house with a high replacement value and an over-cap claim will show in this data with a BDR that appears too low, since the actual claim value is

[13] The replacement value from the national building data set is an estimate made by QV Ltd. of the replacement value of the building, based on the attributes of the building.

not reflected. Therefore, BDR figures in this report illustrate approximate trends only and are likely to be conservative (i.e., they appear lower than in reality).

Figure 7 shows a breakdown of the number of houses across New Zealand with a BDR exceeding 30% from the 2016 earthquake. Approximately 87% of all houses with a BDR of greater than 30% were in Kaikōura, Hurunui, and Marlborough. This further illustrates that these three districts had the greatest proportion of houses with high levels of damage.[14]

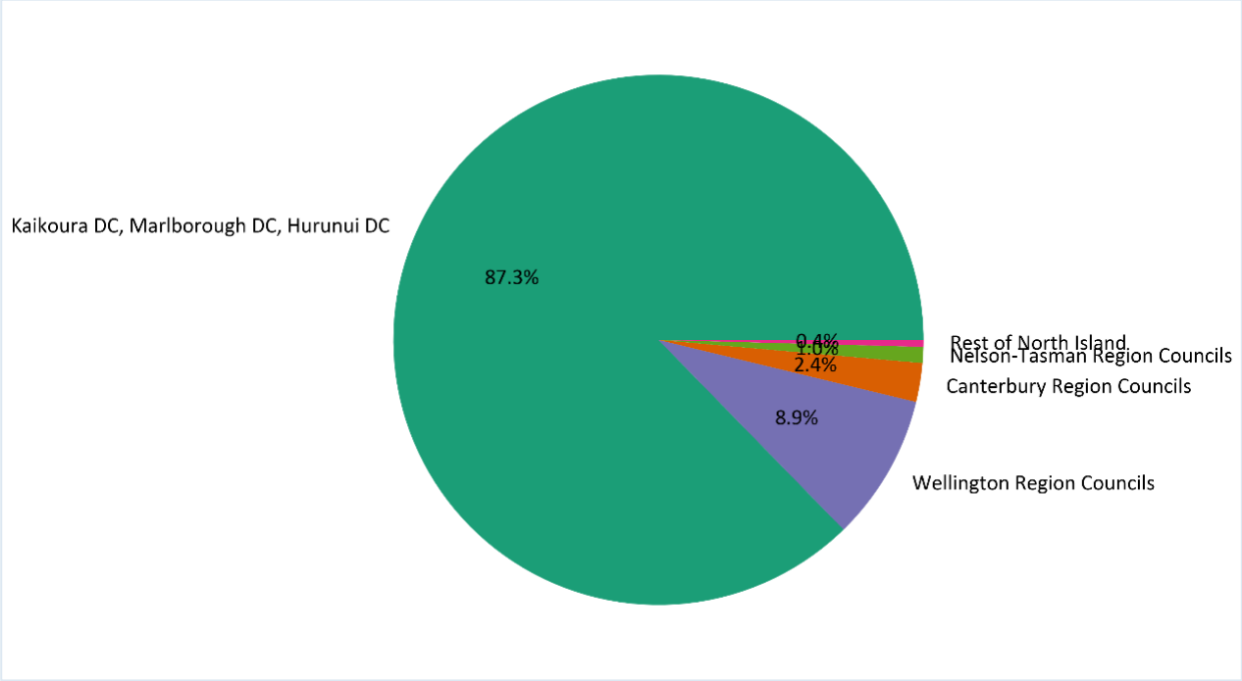


Figure 7: The number of properties with a BDR over 30%, compared between regions (excluding over-cap claims). (Based on Toka Tū Ake EQC claims data and Quotable Value data).

Given the clustering of significant house damage in Kaikōura, Hurunui, and Marlborough, the analysis of this report explicitly focuses on houses in these three districts.

In total, 5,756 claims for building damage were paid by Toka Tū Ake EQC in these three districts. Broken down by district, this included 1,226 claims in Kaikōura, 1,623 claims in Hurunui, and 2,907 claims in Marlborough. Kaikōura had a high proportion of large claims, including a significant number around the then-Toka Tū Ake EQC cap value of $115,000 (GST inclusive) (Figure 8). Claims values at or near this cap value do not reflect the total settlement values, as the data set is limited to Toka Tū Ake EQC claims only. Therefore, the true value of claims clustered around this cap will likely be higher, and are likely to be evenly distributed above the cap. The small number of above-cap claims shown here typically reflect multi-unit properties for which multiple over-cap claims may be paid out as a single claim. Compared to Kaikōura, Marlborough has a much higher proportion of smaller claims of up to $25,000, and significantly less claims at the cap. Hurunui lies somewhere in between these two districts. Across the three districts, an estimated 14% of the claims were over-cap: 5% in Marlborough, 15% in Hurunui, and 33% in Kaikōura.[15]

[14] Note that the BDR relationship is limited by the absence of actual over-cap claim values. The BDR is also influenced by the differences in replacement values across regions (e.g., Wellington region has higher property values than Kaikōura district). However, a similar analysis was carried out for BDRs of 10% and greater, and a similar pattern was observed.

[15] 'Over-cap' was determined by payments made by Toka Tū Ake EQC. Some of these payments had excesses and other fees deducted, so the number of over-cap claims is estimated based on claims for which Toka Tū Ake EQC paid over $110,000 (incl GST).

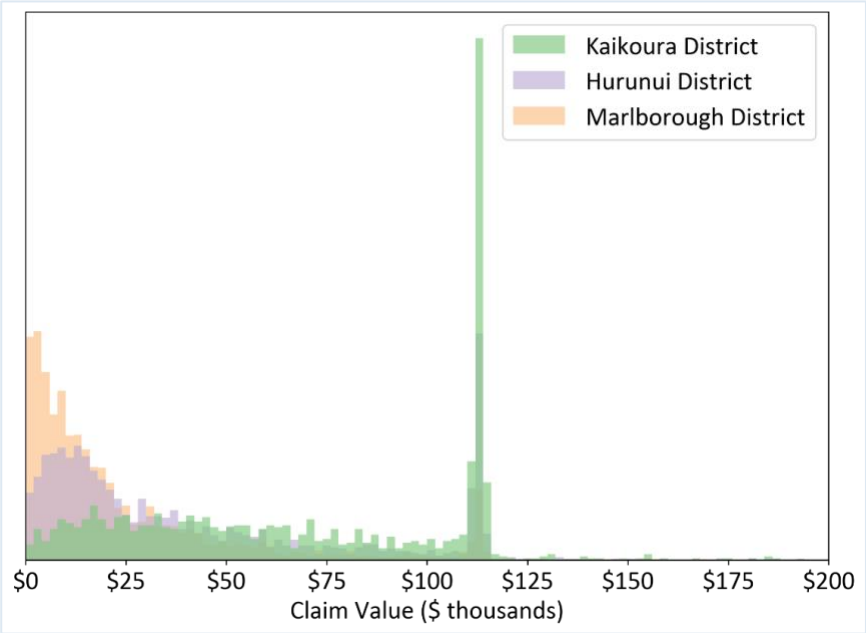


Figure 8: Distribution of claim values in Kaikōura, Hurunui, and Marlborough District Councils. (Each distribution is normalised to have an area of 1; The claim value axis (x-axis) is truncated at $200,000) (Based on Toka Tū Ake EQC claims data).

5.0 ASSESSING IMPACTS ON HOUSING QUALITY

5.1 OVERVIEW

As outlined in Section 2 of this report, three tests were adopted to assess the impact of cash settlement on the long-term quality of earthquake-damaged housing in Kaikōura, Hurunui, and Marlborough. The first test is whether earthquake repairs or rebuilds were completed at all. The second test is whether structurally damaged homes were repaired or rebuilt. Finally, the third test is whether claimants were satisfied with the quality of repairs. Each test is analysed in turn below.

5.2 TEST ONE: COMPLETION OF EARTHQUAKE REPAIR WORK

One way to evaluate the impact of cash settlements on the quality of housing is to analyse whether repairs or rebuilds were in fact completed. In general, the completion of earthquake repairs or rebuilds indicates cash settlements were used for their intended purpose and, by extension, this contributes to the restoration of the quality of the housing stock. To evaluate this test, we draw on data from both the survey responses and the consent and claims analysis.

Survey respondents with a successful claim were asked outright their intentions for completing earthquake repairs or rebuilds as per the damage assessed by their insurer (Figure 9). Of the 291 claimants who answered this question, 180 (62%) indicated they had already, or were planning to, either repair or rebuild their damaged property, 43 (15%) indicated that their insurer carried out repairs[16], 41 (14%) indicated they had completed or were intending to complete partial repairs only, and 27 (9%) indicated they either did not intend to repair or rebuild their damaged property or were undecided on undertaking repairs/rebuild. Overall, 91% (+/- 6%) have completed, or intend to complete, some repairs on their damaged property.

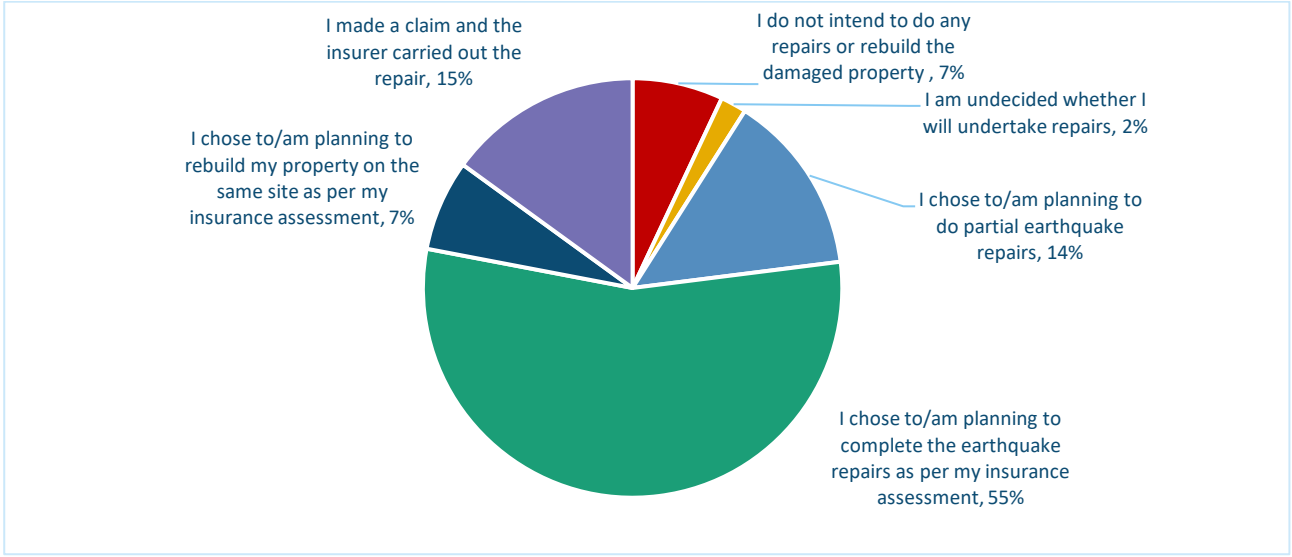


Figure 9: Repair/rebuild intentions of cash settled claimants from the claimant survey (n=291).

[16] 15% is commensurate with the market share that FMG holds. FMG undertook managed repairs for their clients following the 2016 Kaikōura/Hurunui earthquake. https://www.fmg.co.nz/__data/assets/pdf_file/0012/5124/FMG-Annual-Report-2017.pdf

Narrowing down to those that received a cash settlement only, 89% have already completed, or intend to complete, repairs on their damaged properties. 11% of successful cash settled claimants surveyed indicated they do not intend to repair or rebuild or remain undecided. Accounting for the margin of error in the survey (6%), this corresponds to between 5% and 17% of cash settled properties being unrepaired. As the survey likely over-represents claimants who did, or intend to, complete repairs or rebuilds, the proportion of those choosing not to repair/rebuild, or are undecided, is likely to be at the higher end of this estimate.

Focussing on cash settled claimants, repair intentions were then matched to the value of insurance claims to provide greater context around the likely extent of damage that was, or was not, repaired or rebuilt. Figure 10 compares the claimants' stated repair intentions against the value band of their claim (up to $50,000, between $50,001-100,000, and above $100,000) (n=238).[17] The data suggests claimants who completed, or intend to complete, full or partial repairs are more likely to have claim values of less than $100,000. By contrast, claimants who stated they do not intend to complete repairs or rebuild are more likely to have claims of more than $100,000. Although this is a small sample, it suggests that claimants whose properties sustained greater earthquake damage (high claim value) were less likely to repair or rebuild than claimants whose properties sustained less earthquake damage (lower claim value).

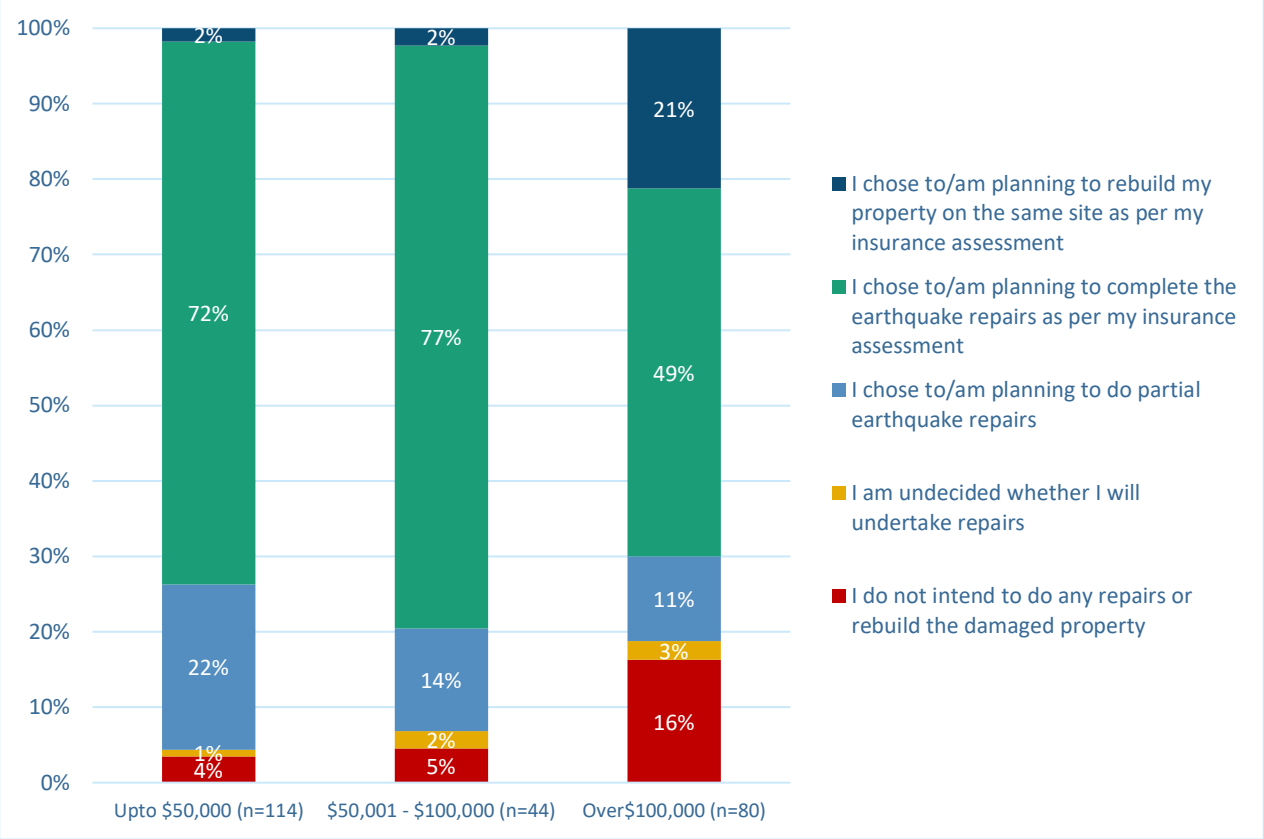


Figure 10: Repair/rebuild intentions and insurance claim value of cash settled claimants in Kaikōura, Hurunui, and Marlborough (n=238) (from claimant survey).

Toka Tū Ake EQC claim data and building consent data from councils also provide insights into the extent of repairs carried out. For each consent, Building Consenting Authorities record a description of the proposed

[17] 10 people indicated they did not know or did not wish to disclose the value of their claim. Those who stated their insurer managed their repairs were excluded from this analysis.

work and the estimated value of the building work. By matching claims with building consents, the value of a claim and the value of building work carried out under a building consent can be compared.

Figure 11 below shows a summary of the claims to consents matching process for the three districts. Since not every consent linked to a claim is necessarily for work related to earthquake damage, care was taken to analyse the percentage of Toka Tū Ake EQC claims linked to consents that were most likely for earthquake damage work. Earthquake-related consents were determined based on whether there were indicative references to earthquake damage (e.g., consent descriptions contained the term "earthquake"), or whether there was nothing to suggest consents *were not* related to earthquake damage (e.g., consent descriptions were blank). Following this method, of the 5,756 claims paid by E Toka Tū Ake QC for house damage across Kaikōura, Hurunui, and Marlborough, approximately 10.1% (572 claims) had a consent granted that possibly related to completing earthquake repairs. The number of claims with earthquake-related consents broken down by district are: 191 out of 1,226 claims (16%) in Kaikōura, 169 out of 1,623 claims (10%) in Hurunui, and 212 out of 2,907 claims (7%) in Marlborough.[18]

The large number of consents with no corresponding claim data is due to the prevalence of other consenting activity in the period following the earthquake. Examples include the replacement of log burners due to 'clean-air' requirements, and the construction of new housing in greenfield areas. As noted in Section 3.2, the exemption data in Kaikōura was provided in a form that could not be matched to claims. For the purposes of this analysis, it is assumed that the consent exemptions in Kaikōura corresponded to an insurance claim.[19]

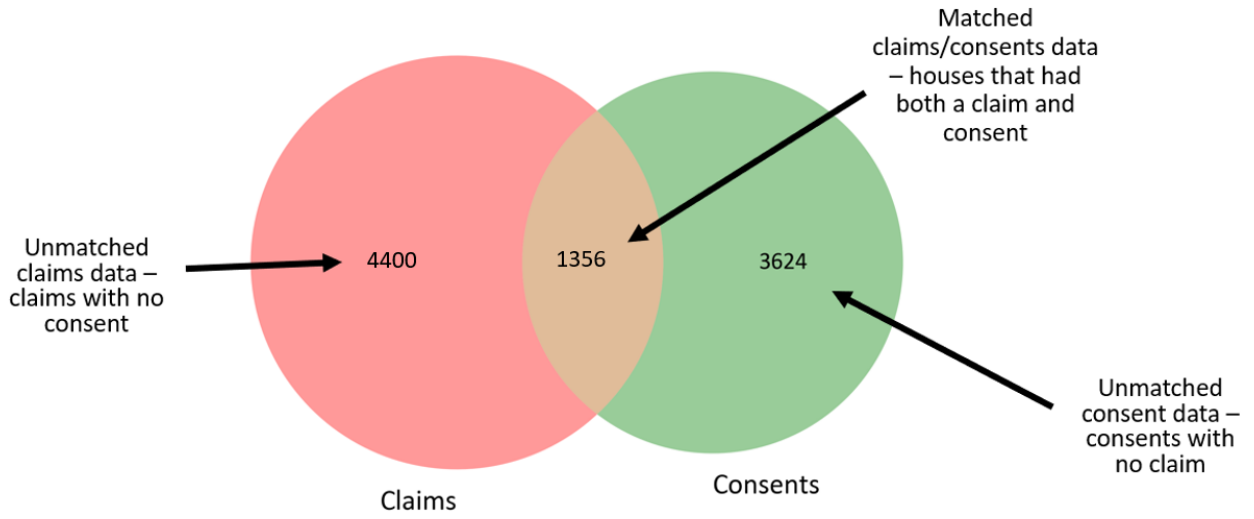


Figure 11: Claims to building consent matching overview – for all building consents, including non-earthquake work (Toka Tū Ake EQC claims data and council building consent data). It is assumed that all consent exemptions in Kaikōura have a matching claim.

In theory, the value of a cash settlement for a given property should match the value stated in the associated building consent lodged with building authorities. This would indicate that insurance money paid in cash to claimants was used to remedy the damage as assessed by insurers. Broadly speaking, a claim value significantly greater than the value of a consent may indicate at least some claim money was not

[18] Note that the consent analysis does not distinguish whether a property was insured or not, nor was it possible to delineate where an insured property was cash settled or was one of the approximately 15% of properties that were a managed repair.
[19] More details on how claim and consent data was matched are provided in the supplementary data report "*Claims and Consent Data Report for 2016 Kaikoura/Hurunui Earthquake Claims Settlement Research*".

spent to complete repairs, while a claim value significantly less than the value of a consent may indicate that additional works were completed.

Figure 12 below shows the median value of identified earthquake-related consents relative to claims with a value of more than $50,000 in Kaikōura, Hurunui, and Marlborough.[20] In all districts, the consent to claim ratio was above 50%. It is likely that actual consent-to-claim value ratios are slightly lower than this, since the claim data only includes Toka Tū Ake EQC claims and is therefore capped at $115,000.

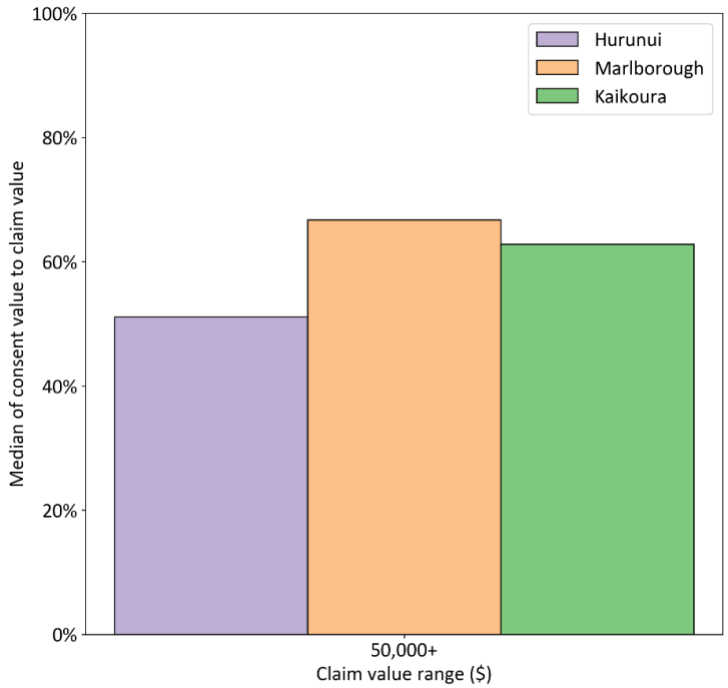


Figure 12: Median value of consents relative to claim value for claims over $50,000 (based on Toka Tū Ake EQC claims and consent data). Note Kaikōura does not include the exemptions data, as the value of the claim or the building work was not known.

It is important to note that a consent-to-claim value ratio of less than 1:1 does not necessarily indicate repairs or rebuilds are incomplete. There are legitimate reasons why the consent value may be somewhat lesser than the claim value paid to claimants. For instance, a claimant may choose to carry out repairs themselves or by contracting someone personally acquainted, rather than engaging a third party. Such actions may reduce overall typical construction costs (e.g., project management and tradesperson costs). Additionally, building consent fees are (in part) set by the value of the building work. This creates somewhat of an incentive for building consent applicants to under-report the actual cost of building work.

On this basis, it is reasonable to assume that where consent values matched more than 50% of the total claim value cash settlements were used to repair the majority of earthquake damage. Where this ratio drops below approximately 50%, there is a greater likelihood that not all claim money was spent to complete repairs and, therefore, a greater likelihood that at least some repairs were not completed. The median value of claims that exceeded $50,000 and had an associated building consent in Kaikōura, Hurunui, and Marlborough was above 50%, indicating a majority of these claimants likely carried out most repair work.

[20] For the analysis of claim value versus building consent value, we have adopted more stringent criteria for defining earthquake related consents, resulting in a lower bound of 3.6% of claims having an earthquake related consent (compared to the upper bound of 10.1%). Otherwise, the relationship tended to be skewed by lower building consent values where it was uncertain whether the consent work was earthquake related or not. Further detail can be found in supplementary data report "*Claims and Consent Data Report for 2016 Kaikoura/Hurunui Earthquake Claims Settlement Research*".

It is also important to note that this analysis is limited to claimants who obtained a consent. A consent is likely to be necessary only where building works of a more significant nature are to be undertaken, including structural work or repairs affecting the exterior envelope of buildings.

The assumptions made above, in relation to lower consent values relative to Toka Tū Ake EQC claim values, can be further tested by understanding who carried out physical works for earthquake damage. Survey respondents who received a cash settlement and completed repairs and rebuild, or intend to, were asked who completed the physical repair/rebuild work (n=168).[21] Of the 168 respondents, 98 (58%) indicated they engaged suitably qualified/experienced contractors to complete the work, 25 (15%) completed the work themselves, 5 (3%) used friends and/or family with experience in construction/renovations, and 40 (24%) indicated they used a combination of the above and the majority of those indicating the used suitably qualified/experienced contractors.[22] No respondents indicated they solely engaged friends and/or family with little or no building experience to complete the work.

These responses show a majority (80%) of people used professionals to complete some or all of the physical works for their damaged property, while slightly less than half (42%) completed at least part of their earthquake repairs themselves or through experienced friends and/or family. This supports the assumption that claimants may have potentially looked to save on overall costs by using their own labour or that of people close to them.

Overall, Test One suggests that the majority of claimants following the Kaikōura/Hurunui earthquake either completed, or intend to complete, full or partial repair to their property. Accounting for the margin of error and slight over-representation within the survey responses of claimants who undertook repairs, up to 17% of cash settled claimants may have chosen to not undertake repairs. Analysis of consent value data support the assumption that the majority of repairs were likely being completed. However, many claimants who responded to the claimant survey indicated they completed work themselves or potentially without the support of professional tradespeople, likely to reduce overall costs. This introduces potential concerns about the quality of repairs.

5.3 TEST TWO: LEVEL OF STRUCTURAL WORK COMPLETED

A second method for assessing the impact of cash-settled claims on long-term housing quality is by narrowing the focus of repair work to structural damage. Unrepaired structural damage is more likely to jeopardise the security and habitability of a house following a future hazard event, compared to non-structural damage. Homes that incurred structural damage from the 2016 earthquake, and where the owners have not or do not intend to repair or rebuild, can therefore be assumed more likely to be of poorer quality and less resilient against future events. Two connected sub-tests were developed: 1) was structural earthquake damage repaired, and 2) was this structural damage repaired (where necessary) with a building consent?

[21] Respondents (excluding insurer carried out repair claimants) were asked "Who undertook the 1) project management,2) physical repairs, 3) design and specification, and 4) building consent application for the repair of your property?". For each category the participants could select all that applied from the following list of options: "myself", "friends/family (with experience in building/renovations)", "friends//family (with no or little experience in building/renovations)", "suitably qualified/experienced contractors/consultants (e.g., tradespeople, building firm engineer, architect)", "not applicable".

[22] 37 out of the 40 respondents that selected multiple options included suitably qualified professionals.

Was structural damage repaired?

The survey directly asked claimants with a successful claim for the type(s) of earthquake damage their property incurred. Claimants could indicate three types of house damage (excluding land and contents):

- structural (i.e., foundations, walls, etc.),
- non-structural (i.e., roof, plasterboard, cladding, flooring, windows, etc.),
- ancillary (i.e., hot water cylinder, heat pump, water/power connection, etc.).

Of the 250 cash settled claimants who answered this question, 113 (45%) indicated their house had sustained structural damage.

Figure 13 shows the repair/rebuild intentions of these cash settled claimants with structural damage (n=112). 75 claimants (67%) indicated they had completed or plan to complete full repairs or undertake rebuilds, 18 (16%) indicated they had completed or plan to complete partial repairs, 16 (14%) indicated they did not intend to repair or rebuild, and only 3 (3%) were undecided. These repair/rebuild intentions are broken down by district in Figure 14.

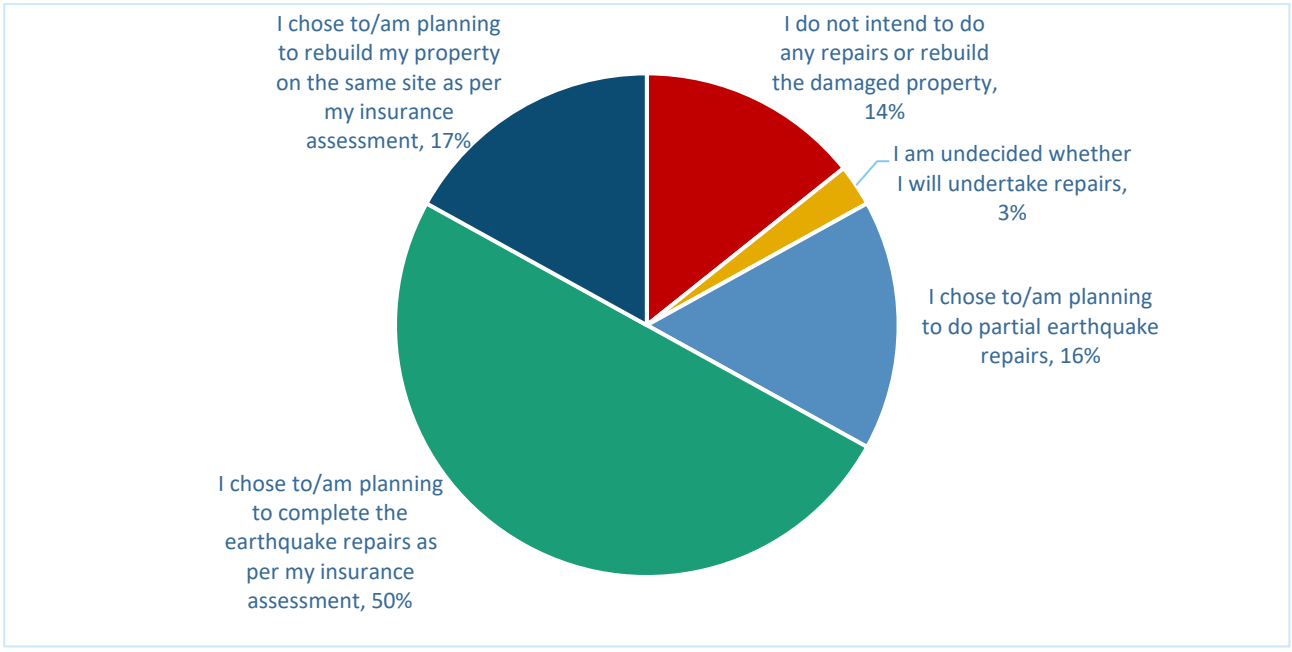


Figure 13: Repair intentions for properties with structural damage from claimant survey (Kaikōura, Hurunui, and Marlborough) (n=112). Cash settled claimants only.

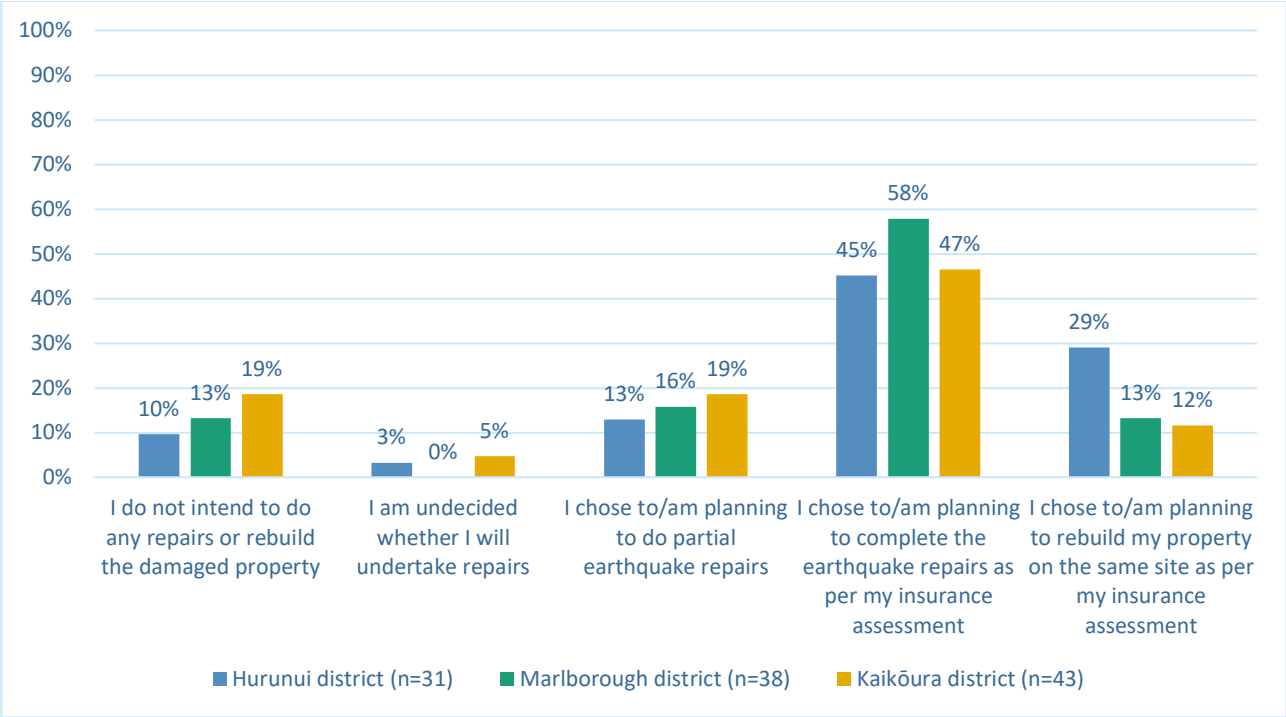


Figure 14: Distribution of repair/rebuild intentions for properties with structural damage for Kaikōura, Hurunui and Marlborough (n=112) from claimant survey. Cash settled claimants only.

These results, adjusted to include those with insurer managed repairs, can be extrapolated to a population level, to provide an approximate indication of unrepaired structural work across the three districts. Successful claimants who are undecided or do not intend to complete repairs for structural damage account for approximately 6.5% of all successful claimants. Accounting for a margin of error of 6%, this implies between 0.5% and 12.5% of insured properties have unrepaired structural damage. As previously indicated, the survey likely over-represents claimants who undertook repairs, meaning the percentage of non-repairs is likely at the higher end of this range.

It is important to note the possibility that respondents may have misinterpreted what was meant by "structural damage" when answering the survey. The difference between structural and non-structural damage is not always clear-cut, especially in timber-framed residential construction. For instance, a damaged wall may not be essential to the structural integrity of a house, yet the respondent may nonetheless have identified it as structural damage (or vice-versa).

To account for this, we triangulated the results by looking at repair intentions relative to claim values. The value of a claim can serve as a proxy for structural damage: the greater a claim value, the greater likelihood there is structural damage to a house compared to a low value claim. Claim values (excluding land and contents damage) of less than $50,000 are more likely to represent damage of a primarily cosmetic nature, such as cracking to internal and external finishes. This damage is typically repaired by targeted approaches followed by plastering and painting. Structural damage requires more intensive and invasive repair work and is likely to be valued at over $100,000.

For this analysis, three claim value bands are identified:

- less than $50,000 (assumed unlikely to involve structural damage),
- $50,001 to $100,000 (assumed potential to include structural damage, though it is not certain), and
- more than $100,000 (assumed most likely to involve structural damage).

It is possible that claims over $100,000 do not include structural damage. For instance, claim values are influenced by the location of houses. In this sense, remote rural communities will typically have higher claim values than urban communities for the same levels of damage, due to allowances for additional travel, material delivery, dumping costs, and contractor accommodation. There will also, inevitably, be large, high specification houses with only cosmetic damage exceeding $100,000 and, conversely, smaller houses with structural damage under $100,000. Similarly, some smaller value claims may include structural repair.

Analysis of survey responses for cash settled claims over $100,000 (n=80)[23] gives similar repair intentions to self-reported structural damage, indicating there is generally good correlation between reported structural damage and claim value (Figure 15). 56 survey respondents (70%) indicated they had a claim value exceeding $100,000 and had completed or intended to complete repairs or rebuild. 19% (n=15) of respondents with claims over $100,000 do not intend to undertake repairs or are undecided. This equates to 5% of all successful claimants likely not undertaking structural repairs (+/- 6%). This is within the same margin of error as the analysis of self-reported structural damage.

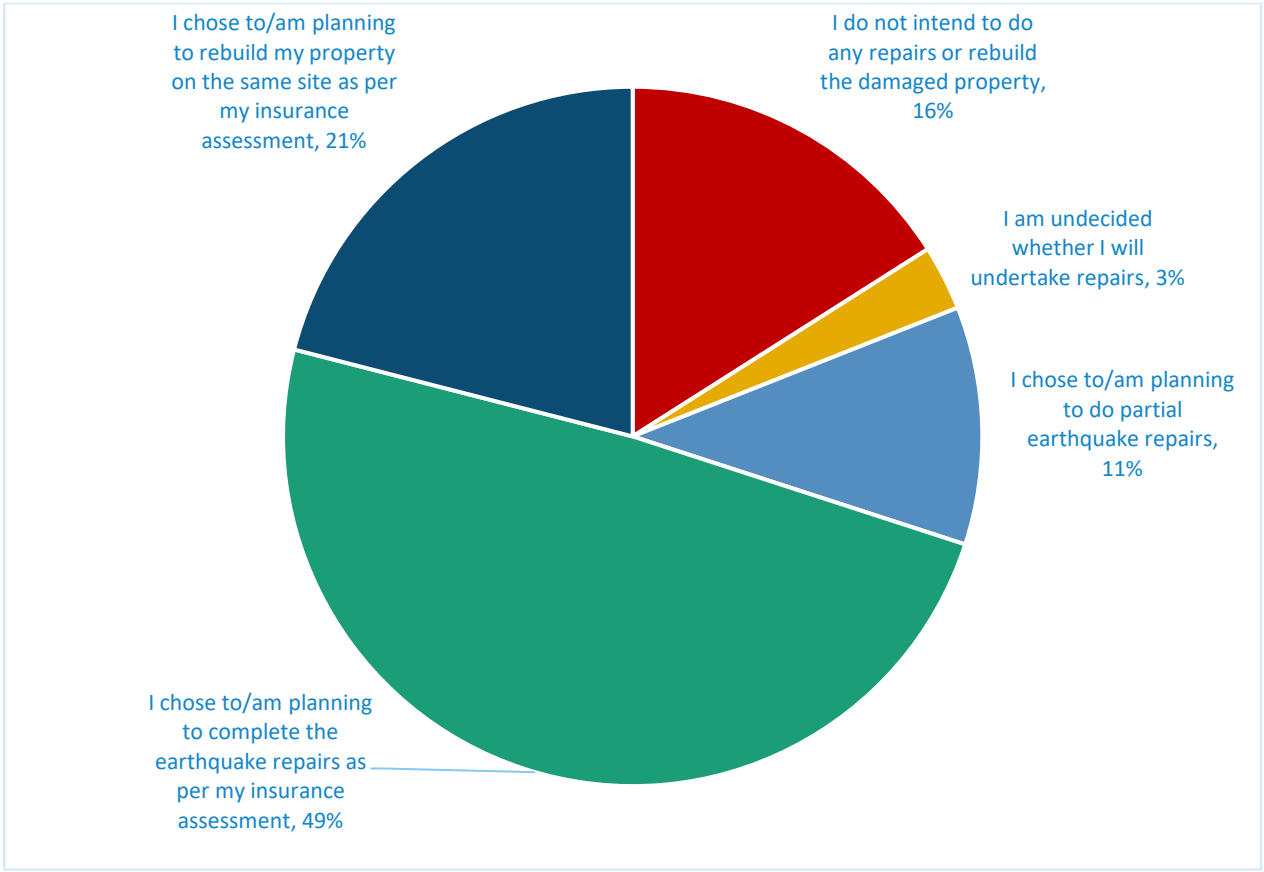


Figure 15: Repair intentions for cash settled claim values exceeding $100,000 from the claimant survey (n=80).

[23] This excludes those who had their repairs managed by their insurer.

Was a consent gained for the repair of structural damage?

The Building Act 2004 mandates the need for a building consent, or a consent exemption, for repairs to structural damage. Consents are granted by territorial authorities. The Act provides for a range of building works that may be considered exempt from requiring a building consent, two of which may apply with respect to earthquake damage.

The first of these exemptions is for minor building work. This includes general building repairs, maintenance, and replacement. This work can be completed without the need for a consent application to a territorial authority, and so no official record of this work is kept by authorities.

The second type of exemption is where territorial authorities use discretion to deem building work exempt (referred to as 'discretionary exemptions'). A formal application is made to a territorial authority for this exemption, similar in nature to a building consent application. The attraction for building owners to apply for a discretionary exemption is to avoid paying building consent fees.

Extracts from the Building Act for each type of exemption are provided in full below.

BOX 1: Selected provisions from Building Act 2004, Schedule 1

Schedule 1 - Building work for which building consent not required

PART 1 EXEMPTED BUILDING WORK

1 General repair, maintenance, and replacement

(1) The repair and maintenance of any component or assembly incorporated in or associated with a building, provided that comparable materials are used.

(2) Replacement of any component or assembly incorporated in or associated with a building, provided that—

(a) a comparable component or assembly is used; and

(b) the replacement is in the same position.

(3) However, subclauses (1) and (2) do not include the following building work:

(a) complete or substantial replacement of a specified system; or

(b) complete or substantial replacement of any component or assembly contributing to the building's structural behaviour or fire-safety properties; or

(c) repair or replacement (other than maintenance) of any component or assembly that has failed to satisfy the provisions of the building code for durability, for example, through a failure to comply with the external moisture requirements of the building code; or

(d) sanitary plumbing or drainlaying under the Plumbers, Gasfitters, and Drainlayers Act 2006.

2 Territorial and regional authority discretionary exemptions

Any building work in respect of which the territorial authority or regional authority considers that a building consent is not necessary for the purposes of this Act because the authority considers that—

(a) the completed building work is likely to comply with the building code; or

(b) if the completed building work does not comply with the building code, it is unlikely to endanger people or any building, whether on the same land or on other property.

Clause 1 (3)(b) above clearly establishes that structural damage repairs shall not be considered within the scope of general repair, maintenance, and replacement exemptions (specific examples can be found in MBIE, 2020). There is, however, broader scope for territorial authorities to consider structural repairs within the scope of discretionary exemptions (Clause 2).

Every territorial authority will have their own views and procedures around building work that requires a building consent. MBIE guidance recommends when making decisions around discretionary exemptions, territorial authorities should consider specific factors related to the likelihood of compliance with the building code. These include a demonstration of competence in completing similar previous work by those who will undertake the work, the complexity of work relative to the competence of those completing the work, and any independent quality control checks that are likely to be used throughout the course of work (MBIE, 2020, p. 15). In general, if earthquake repair work necessitates substantial repairs to the structural systems or weathertightness of a house then, at the very least, a discretionary exemption would need to be issued to lawfully exempt the work. In most instances, it can be assumed that territorial authorities would not generally consider structural earthquake repair work to be eligible for an exemption, and so most structural repair work would require a building consent to complete. However, following the Canterbury Earthquakes, given the volume of broadly similar foundation and superstructure damage to houses, Christchurch City Council accepted Part 1(2) discretionary exemptions in many cases.

Based on the above, it can be reasonably assumed that the claimants of houses that incurred structural damage should have applied to their territorial authority either for a building consent, or consent exemption, and the territorial authority would have a record of this. Evidence of a building consent, in turn, indicates a) structural repair was likely completed, and b) work was likely completed in compliance with the building code.

Cash settled survey respondents[24], who indicated they had completed or plan to complete full or partial repairs / rebuilds[25], were asked whether they obtained a building consent (Figure 16). Of the 202 claimants who answered this question, 150 (74%) indicated they did not obtain a building consent, 42 (21%) indicated they did, 6 (3%) indicated they had an exemption, and 4 (2%) were unsure. When compared against the 87 survey respondents who reported having structural damage (Figure 17), 44 (51%) indicated they did not obtain a building consent, 36 (41%) indicated they did obtain a building consent, 4 (5%) indicated they had an exemption, and 3 (3%) were unsure. This indicates that a number of claimants who reported they *did not* have structural damage nonetheless obtained a consent (potentially for improvement works), while less than half of claimants who *did* report having structural damage obtained a consent.

Based on this, 15% (+/- 6%) of all successful claimants likely undertook repairs without a building consent where they had some form of structural damage.[26]

[24] This only includes those that indicated that they were a cash settled repair or rebuild and does not include those who indicated their insurer carried out repairs.

[25] Cash settled rebuilds (n=20) were assumed to have gotten a consent and were not explicitly asked whether they obtained a building consent.

[26] Insurer managed repairs are not included in this analysis, so when comparing to claim and consent analysis, it is likely that the total percent of claimants with a consent is higher than indicated here.

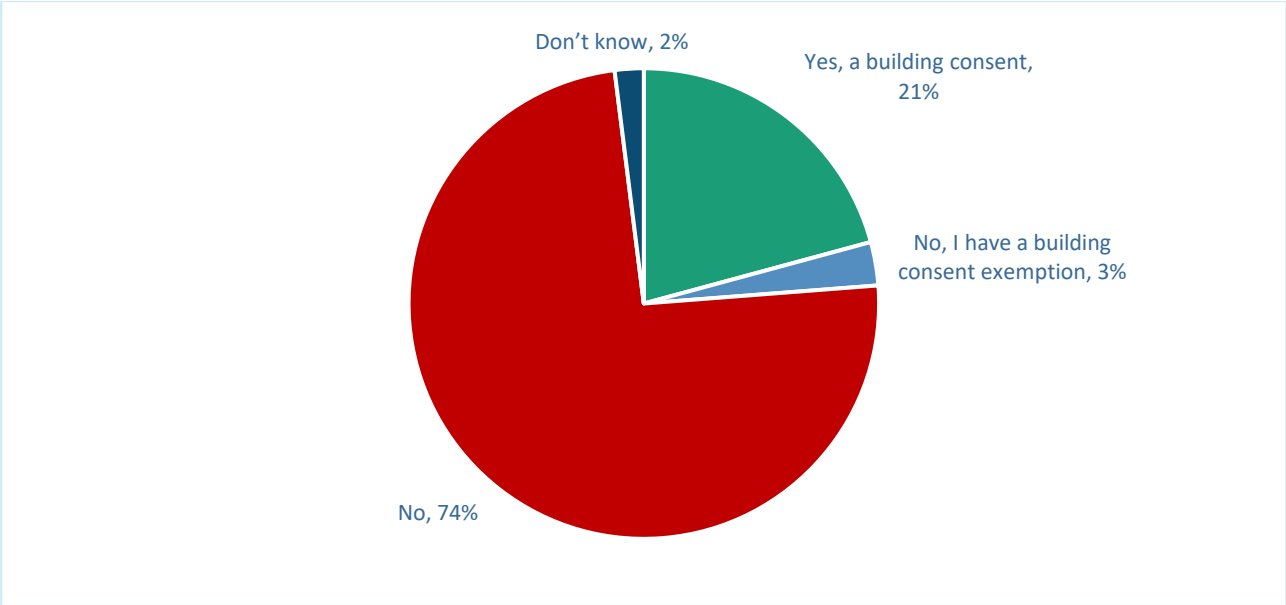


Figure 16: Building consents for all cash settled claimants who carried out, or plan to carry out, full or partial repairs/rebuilds from the claimant survey (n=202) (excluding those who indicated insurer carried out repairs).

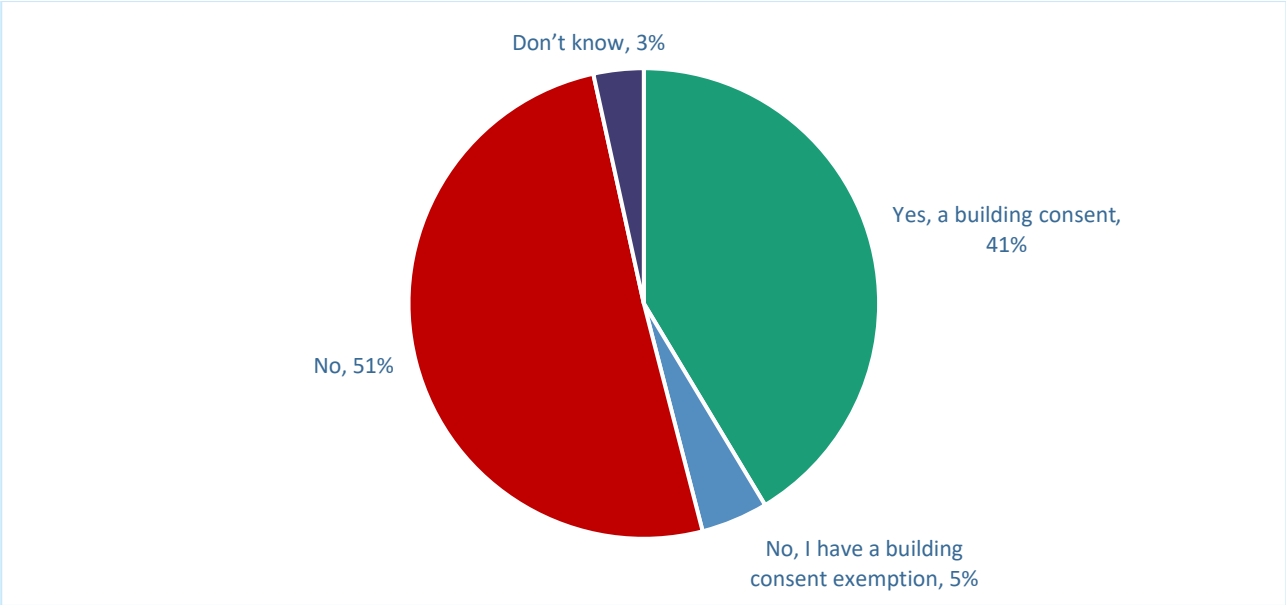


Figure 17: Building consents for cash settled claimants who are carrying out, or plan to carry out, repairs/rebuild and indicated structural damage (n=87), from claimant survey (excluding those who indicated insurer carried out repairs).

Based on the Toka Tū Ake EQC claim value data, and building consent data obtained from territorial authorities, the percentage of all claimants who obtained a building consent for earthquake repair/rebuild work is estimated to sit between 3.6% and 10.1% of all claimants in Kaikōura, Hurunui, and Marlborough. The actual figure is likely to be closer to 3.6%, as this represents a more conservative approach toward determining a direct relationship between a consent and earthquake repair work (i.e., where a relationship was very obvious).[27] These figures also include rebuilt houses. While the presence of a building consent likely correlates to structural work being undertaken, these figures cannot ultimately show the extent of structural repairs that were undertaken *without* a building consent.

[27] see supplementary data report "*Claims and Consent Data Report for 2016 Kaikoura/Hurunui Earthquake Claims Settlement Research*" for a detailed explanation of how consents were classified.

As noted, it is expected that the majority of claims above $100,000 would include some structural damage and, therefore, should have required a building consent to repair. Figure 18 shows the proportion of claims with earthquake-related consents relative to the value of claims. It shows a large proportion of claimants (81%) with claims for house damage above $100,000 did not obtain a building consent to fix earthquake damage.[28] If it is assumed that all consent exemptions in Kaikōura relate to damage over $100,000, then this proportion reduces to 72%. Extrapolated to all claimants, it can be assumed that approximately 10% of claimants either did not complete repairs or completed repairs without obtaining a consent, despite likely having structural damage and therefore requiring a consent.

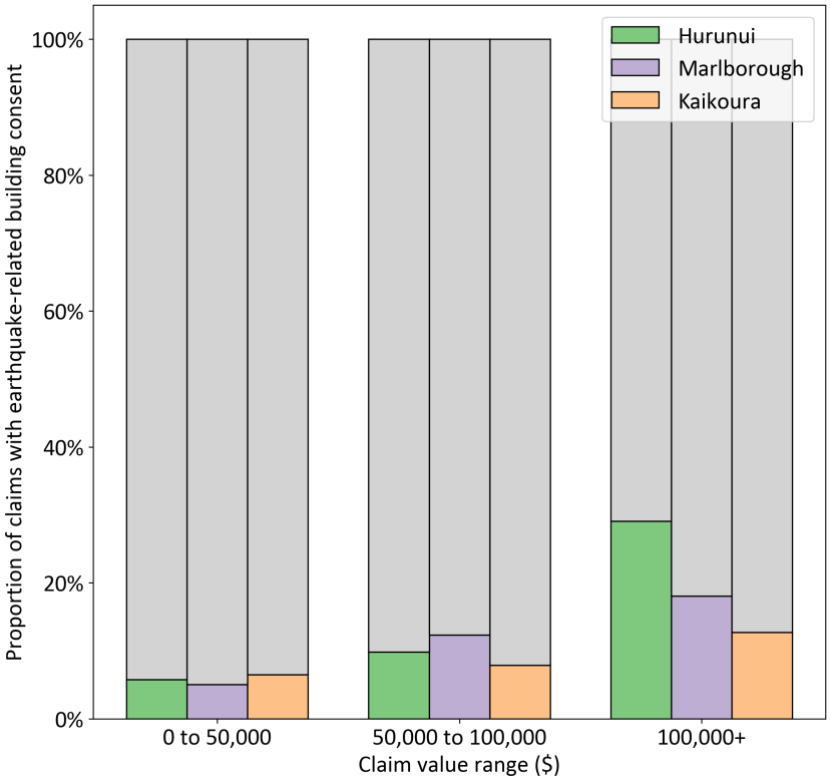


Figure 18: Proportion of Toka Tū Ake EQC claims with earthquake-related consents relative to claim value (building damage only; from building consent and claims data analysis) (n=493).

Analysis of the survey data for cash settled claims over $100,000 also indicates a reasonably high proportion of high-value claims without a corresponding building consent (Figure 19). Among survey respondents who indicated a claim value above $100,000 (n=62)[29], 34 (55%) indicated they obtained a building consent or exemption, while 27 (43%) indicated they did not[30].

Extrapolating out, 10% (+/- 6%) of all successful claimants likely undertook repairs without a building consent where they had claim values over $100,000.[31] As noted, because the survey over-represents claimants who undertook repairs (and correspondingly gained consents) it is likely the portion of large value claims (>$100,000) without a corresponding consent is likely to be at the higher end of the range. However, 10% corresponds well to results from the claims and consent analysis.

[28] This does not include the Kaikōura building consent exemption data, as the exemption data could not be linked to claim value.
[29] Including both cash settled repairs and rebuilds. Rebuilds (n=20) were not explicitly asked about obtaining a consent in the survey, but it is assumed they got a consent to rebuild.
[30] One person indicated they did not know whether they obtained a consent.
[31] Insurer managed repairs are not included in this analysis, so when comparing to claim and consent analysis, it is likely that the total percent of claimants with a consent is higher than indicated here.

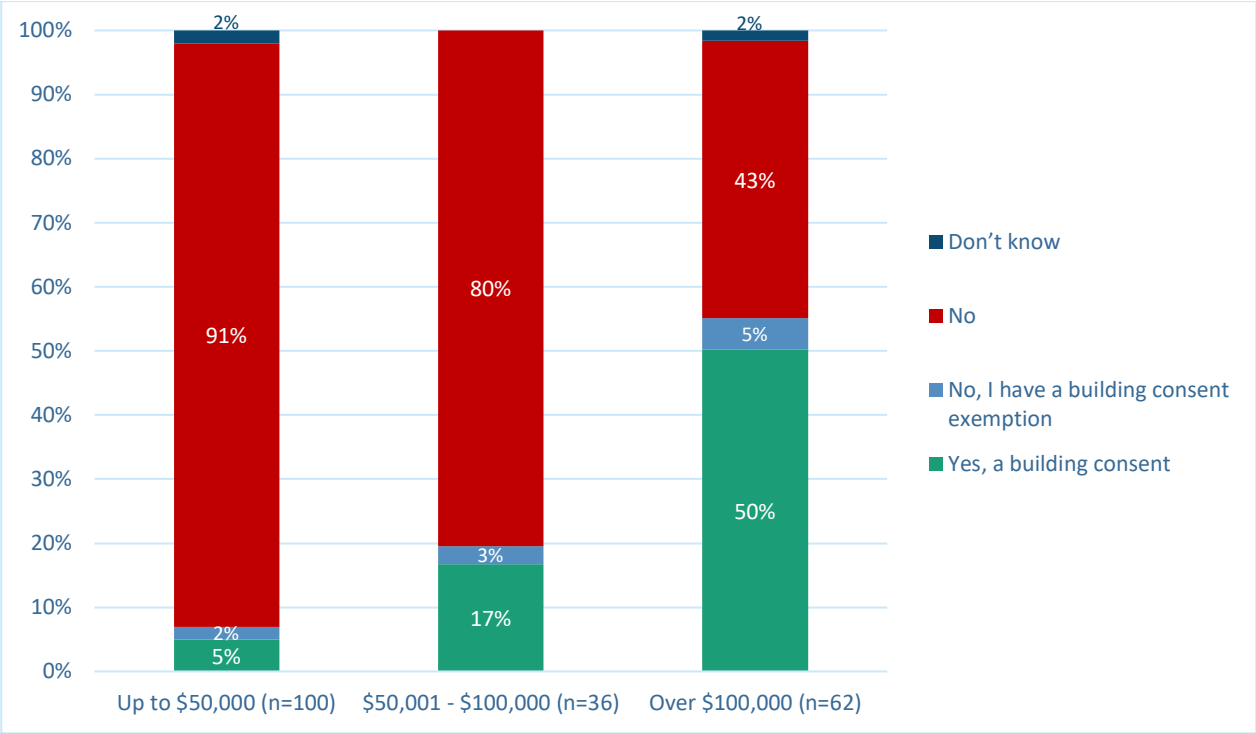


Figure 19: Portion of cash settled claim values that obtained a building consent from the claimant survey (n=198) (excluding insurer carried out repairs).

It is also possible that claims for large or high specification houses might be of a greater value (>$100,000) without the presence of any structural damage (and a corresponding need for consent). To assess the influence of this factor, analysis of Toka Tū Ake EQC claims was carried out for houses of a size both less than and greater than 200m^2 (Table 2). If claimants of larger houses (>200m^2) were consistently being paid over $100,000 for cosmetic (non-structural) house damage, it would be expected that these larger houses would have a consistently lower proportion of earthquake-related consents. Table 2 shows, however, there is very little variation in the proportion of consents for larger houses, indicating this effect was not significant.

Table 2: Proportion of Toka Tū Ake EQC claims with an earthquake-related consent according to claim value, by house size (excluding Kaikōura consent exemption data)

		Proportion with EQ-Consent			Total number of claims		
Claim Value Range	**District**	**All**	**<200m2**	**>=200m2**	**All**	**<200m2**	**>=200m2**
$0 – $50,000	Hurunui	5.8%	5.6%	6.4%	63	49	14
$0 – $50,000	Marlborough	5.0%	4.5%	6.6%	127	84	43
$0 – $50,000	Kaikōura	6.5%	6.8%	4.9%*	30	26	4*
$50,001 – $100,000	Hurunui	9.8%	12.4%	2.8%*	26	24	2*
$50,001 – $100,000	Marlborough	12.3%	13.0%	11.2%	29	19	10
$50,001 – $100,000	Kaikōura	7.9%	9.3%	4.5%*	25	21	4*
>$100,000	Hurunui	29.1%	28.7%	30.0%	78	54	24
>$100,000	Marlborough	18.1%	22.9%	8.0%*	28	24	4*
>$100,000	Kaikōura	12.8%	13.2%	11.9%	57	40	17

**** Insufficient data to provide reliable values***

As for the claim and consent data, the survey analysis was repeated for houses of a size less than 200m^2 only (Figure 20).[32] It shows 65% (n=28) obtained a building consent or consent exemption, compared to 50% for all houses. This demonstrates a slightly higher proportion of smaller houses (<200m^2) obtaining consent. This may indicate the damage to some of the larger houses (>200m^2) with claim values above $100,000 was cosmetic (non-structural), potentially not requiring consent. It could also indicate that the consents gained by those with lower value claims, were not earthquake related.

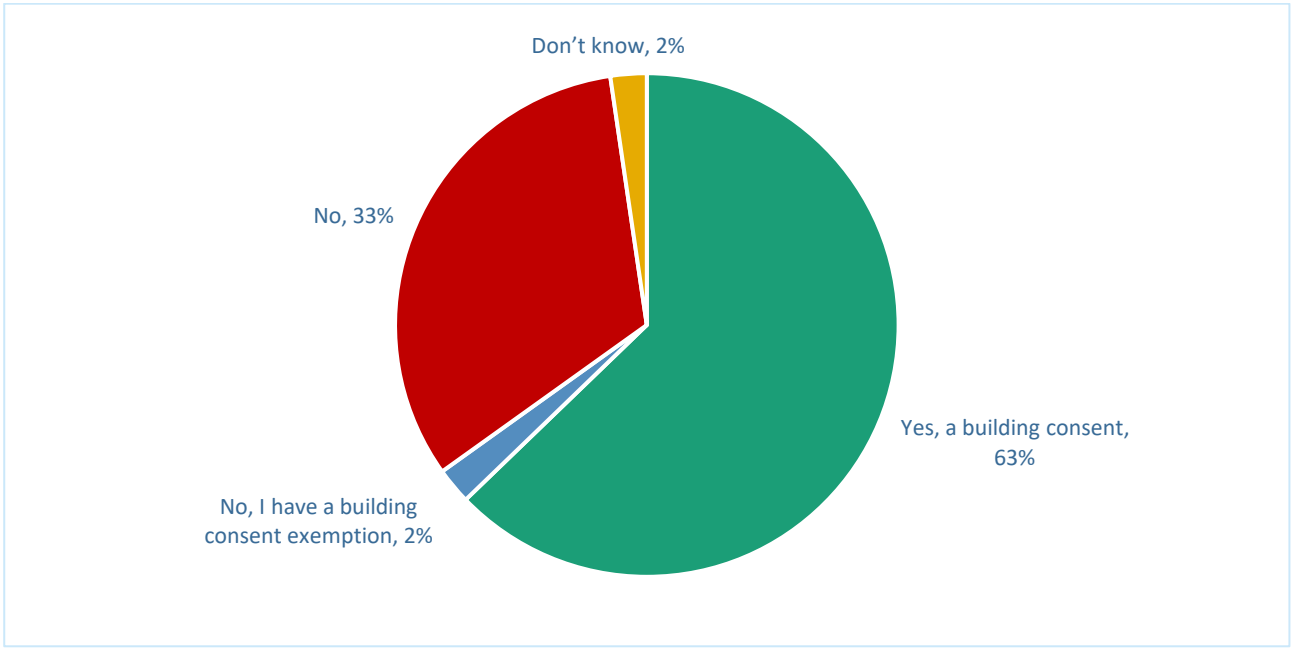


Figure 20: Building consents obtained by cash settled repairs and rebuilds with house sizes of less than 200m^2 and claim values over $100,000 for the three districts (Kaikōura, Hurunui and Marlborough) from the claimant survey (n=43)

Both data sets indicate a notable portion of large value claims (>$100,000) did not obtain a necessary building consent, or consent exemption, to complete repairs. This raises potential issues with regard to housing quality. Building consents provide an additional check and balance on the quality of housing, as territorial authorities are required to approve or disapprove work according to legal building standards.

Despite low consent numbers, claimants generally indicated their works were carried out by 'suitably qualified professionals'. Figure 21 shows 67% (n=35) of respondents who had a claim value above $100,000 indicated they used suitably qualified professionals to complete all repairs/rebuild work, while 17% (n=9) indicated they did for at least part of the work (84% in total). This compares to the 55% of claimants who received a claim value above $100,000 and indicated they obtained a building consent (Figure 19 above). This indicates some degree of structural work was completed without a consent but by, who claimants believed to be, suitably qualified professionals. In theory, suitably qualified persons, such as Licenced Building Practitioners (LBPs), should understand the requirements to obtain building consents where necessary. Therefore, it is possible that claimants engaged persons they believed were suitably qualified but were not. Alternatively, it is possible that even when qualified persons, such as Licenced Building Practitioners, were engaged to carry out repairs, these professionals may not have been fully aware of the requirements for obtaining consents for earthquake repairs. This is an area where further context will be sought through interviews for the second stage of this research.

[32] This only includes those that indicated that they were a cash settled repair or rebuild and does not include those who indicated their insurer carried out repairs. Claimants who had insurers carry out repairs were not asked whether they obtained a consent. Cash settled rebuilds (n=20) were assumed to have obtained a consent.

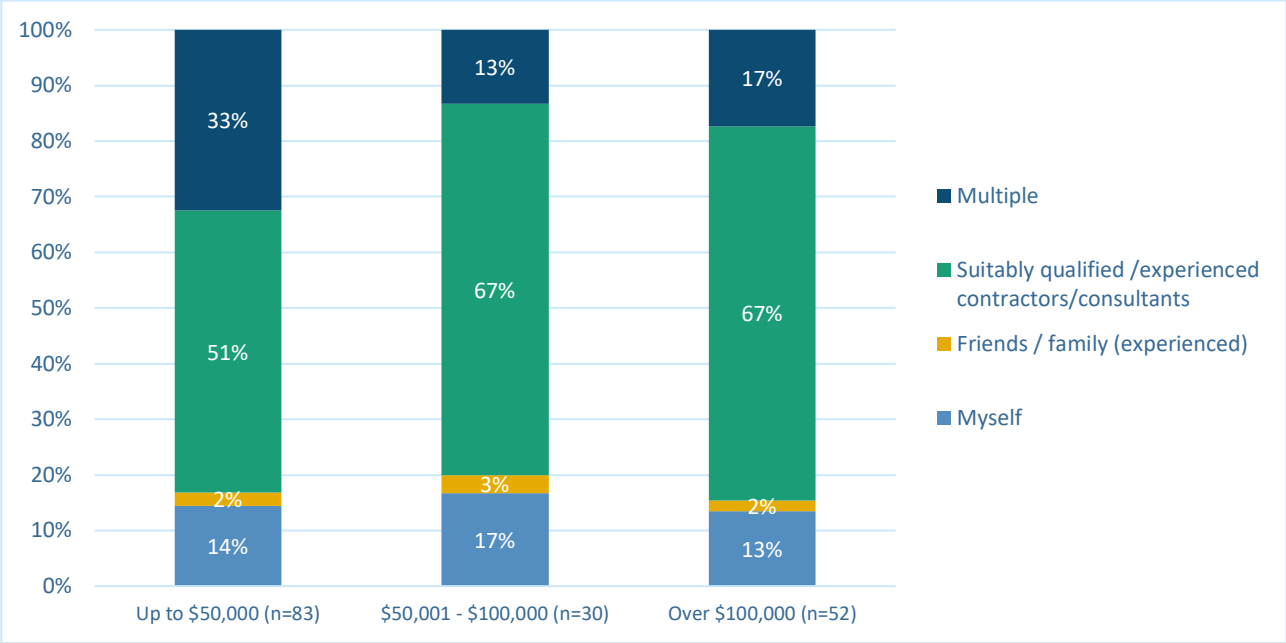


Figure 21: Claim values and who completed the physical earthquake damage repairs as indicated by claimants in the claimant survey (n=165) (excluding insurer carried repairs).

Overall, Test two indicates while most claimants intended to undertake structural repairs, it is likely that many of these repairs were not carried out with the necessary regulatory quality controls (i.e., building consents). Consequently, these repairs likely do not meet the minimum standard for quality as defined by Page & Gordon (2017). The total amount of repairs for structural damage completed without a consent is most clearly represented in the available claims and consent data. In particular, this data shows the majority (between 72% and 81%) of large value claims (>$100,000), and therefore assumed likely to have some form of structural damage, did not obtain a consent for completing repairs. The survey data also shows a number of large cash settled claims did not obtain a consent (43 +/-6%). While it is possible that some claims over $100,000 did not require a consent (and some claims below $100,000 did require consents), this data demonstrates that a notable portion of claimants did not obtain a consent when they likely should have.

Based on the survey response and extrapolating the findings to all claimants in the three districts, between 5-6.5% (+/-6%) of properties likely sustained structural damage and did not undertake repairs, while a further 10-15% (+/-6%) undertook structural repairs but without a building consent. This represents 15-21.5% (+/-6%) of properties with either unrepaired structural damage or non-consented structural repairs. This aligns closely with the consent data, which indicates at least 10% of all claimants did not obtain a consent for work when they likely should have (i.e., the claim was over $100,000). Due to limitations in the data, there is uncertainty around the exact extent of this issue, however, it is evident that a portion of properties likely had structural damage repaired without a consent. It is possible that some of this unconsented structural work was nonetheless completed to a satisfactory standard, however, there is no data available to validate this.

While there is significant uncertainty around the exact extent of this issue, it is evident that a portion of properties likely had structural damage repaired without a consent.

5.4 TEST THREE: PERCEIVED CLAIMANT SATISFACTION WITH QUALITY OF REPAIRS

The third and final test applied in this report to understand the impact of cash settlement on housing quality was assessing claimants' perceived satisfaction with repairs. On one hand, cash settlement affords greater freedom for claimants to undertake repairs most important to them and therefore define quality for themselves. On the other hand, there is a greater responsibility for claimants to both understand the potential implications of their repair decisions, and to be able to identify and manage any quality issues.

Using homeowner satisfaction as a measurement of the quality of construction work has been cautioned by a number of authors. For instance, homeowner satisfaction with earthquake repair/rebuild quality was surveyed amongst claimants following the Canterbury earthquakes, including by Toka Tū Ake EQC and MBIE (Earthquake Commission, 2019b; MBIE, 2015). These surveys often yielded high rates of homeowner satisfaction with the quality of repairs/rebuilds, while simultaneously indicating high rates of necessary re-repairs or remedial repairs (Controller and Auditor-General, 2015). As reported by BRANZ, high self-reported satisfaction should be approached with some caution given that most homeowners are "unable to check" potential defects beyond the cosmetic and so "rely on the industry to do its job" (BRANZ, 2014, p. 16). Despite these caveats, however, homeowner satisfaction with earthquake repairs is an important aspect of the subjective nature of quality and therefore a useful lens to apply when assessing the impact of cash settlements on long-term housing quality.

The claimant survey asked respondents to indicate their level of satisfaction with different aspects of the cash settlement process, including the quality of repairs both at the time of completion and at the time of completing the survey (to account for potential changes in satisfaction over time). Figure 22 shows the proportion of cash settled claimants who indicated positive satisfaction (satisfied or very satisfied) with repairs at the time of completing the survey was 82%, which was slightly less than 88% indicated at the time repairs were completed. By contrast, the proportion of respondents who indicated dissatisfaction (dissatisfied or very dissatisfied) with repairs was 7% both at the time works were completed and completion of the survey. The proportion of respondents who indicated they were neither satisfied nor dissatisfied effectively doubled, from 5% at the time repairs were completed to 11% at the time of completing the survey.

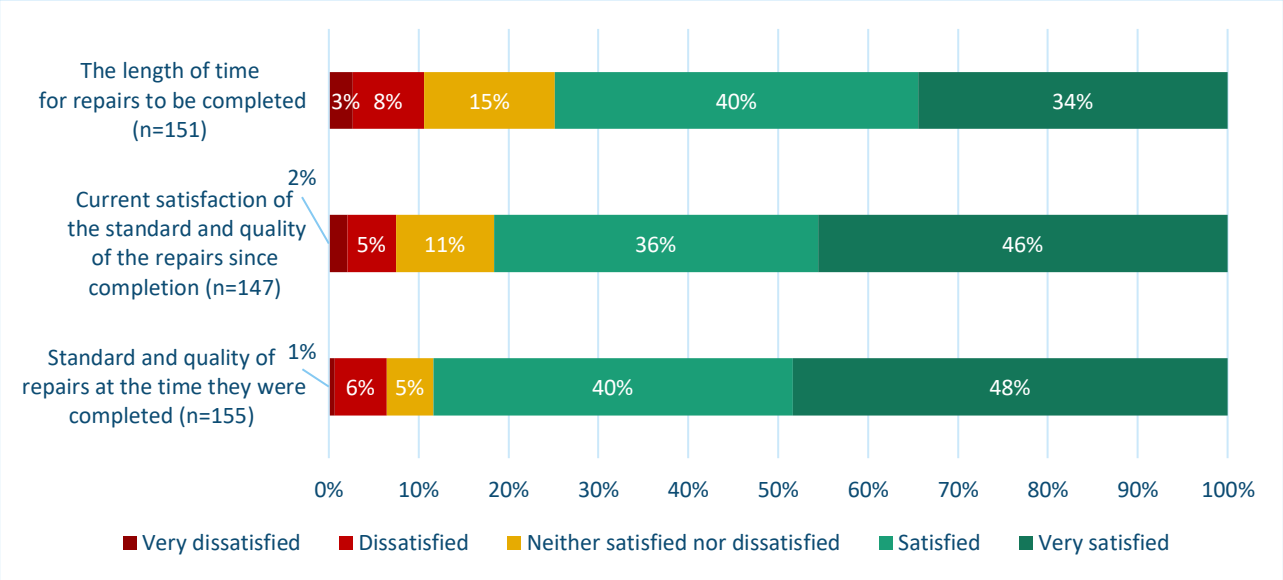


Figure 22: Cash settled claimant satisfaction with quality of repairs from the claimant survey (n=147-155) (excluding cash settled rebuilds and insurer carried out repairs).

Remedial repairs were sought by only 3% of successful claimants surveyed (Figure 23).[33] When broken down by the type of damage incurred, 1% of respondents who indicated they had structural damage (n=71) sought remedial repairs, while 2% of respondents who indicated they had non-structural damage (n=164) sought remedial repairs.[34]

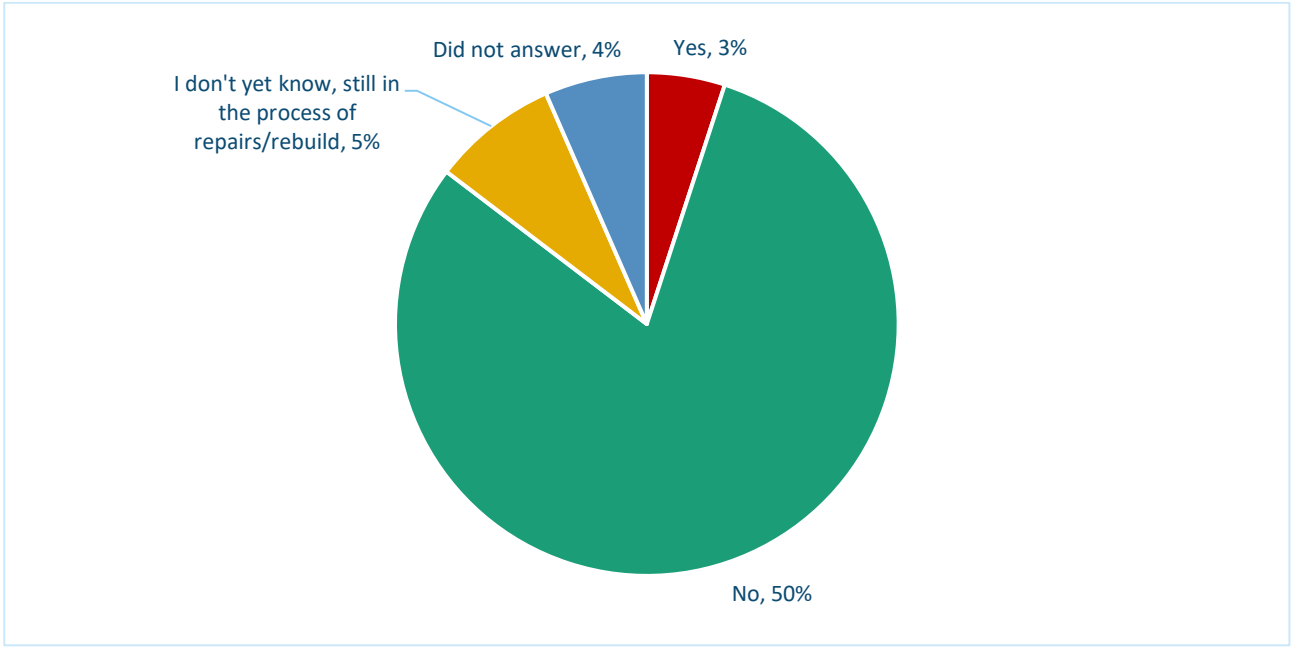


Figure 23: Percent of successful claimants requiring remediation work to be carried out on repairs from the claimant survey (n=194) (excluding cash settled rebuilds and insurer carried out repairs).

The 3% of survey respondents who indicated seeking remedial repairs corresponds to the overall drop in reported satisfaction from the time of completed repairs to the time of completing the survey. This is demonstrated in Figure 24, which shows a clear dissatisfaction amongst cash settled survey respondents who indicated they sought remedial repairs, compared to those who did not.[35] This relationship highlights that the identification of repair quality issues, where they exist, largely relies on a claimant's ability to identify and rectify the issues through remediation. What we cannot see from this data is any quality issues that have not been identified by claimants (e.g., because it is not visible, or they do not know what to look for).

[33] Cash settled repairs only (excluding cash settled rebuilds and insurer carried out repairs).
[34] Respondents who indicated they intend to undertake cash settled repairs and have started.
[35] This does not include cash settled rebuilds or insurer carried out repairs.

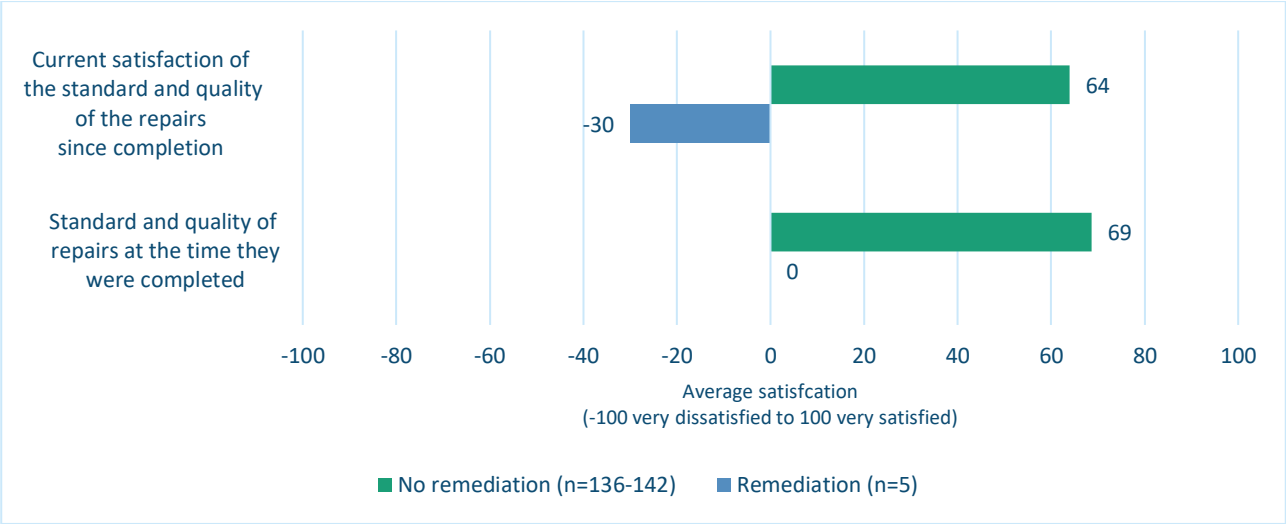


Figure 24: Comparison of the average satisfaction scores of cash settled claimants who undertook repairs and did or did not require remedial repairs, from the claimant survey.

As noted in the Stats NZ Housing Quality framework document, quality needs to reflect both the individual and community level perspective. This is the premise of including self-defined levels of quality within the overall assessment of housing quality. However, as emphasised, this should be balanced against the capacity for individuals to assess quality issues and to understand the impacts of poor-quality workmanship, which is particularly difficult with regard to repair of more complex and potentially less visible structural damage.

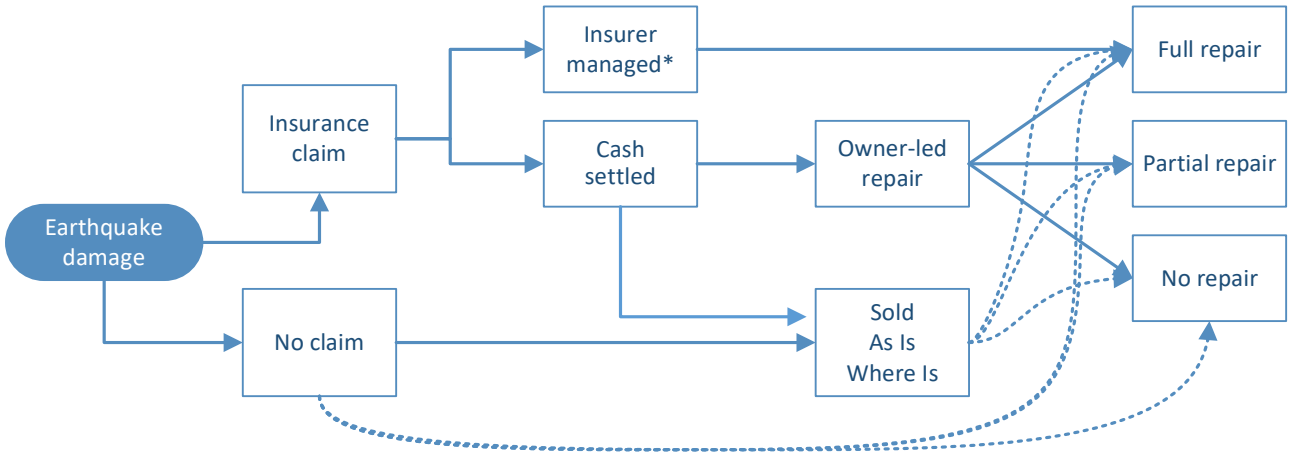
6.0 QUALITY BLIND SPOT ANALYSIS

6.1 OVERVIEW

Currently, the quality of new building work is not routinely monitored within the New Zealand construction sector. Quality can be checked and, to some extent, controlled for works covered by a building consent. Particularly for repairs, building quality is dependent on the professionals undertaking the work, the ability of claimants to manage works and identify any potential quality issues, and/or for claimants to undertake repairs to a satisfactory quality.

Consequently, a number of quality 'blind spots' exist that limit our ability to assess the impact of cash settlements on the long-term quality of housing stock. Figure 25 illustrates the pathway from an insurance claim to repairs, and indicates likely areas where repairs have either not been carried out or where there may be heightened potential for quality issues. Areas of particular concern include the skills and capability of persons undertaking repairs, the continuation of insurance cover for owners of damaged properties, and homes that were sold as-is-where-is.

The following section describes the quality risks associated with each of these areas.



** carried out on a case-by-case basis by some insurers*

Figure 25: Insurance settlement and repair flow. Dotted lines represent where data is unavailable in this analysis.

6.2 QUALITY OF WORKMANSHIP

Beyond whether repairs were completed, the standard of repairs is a significant uncertainty in the resulting quality of housing. As demonstrated earlier, 42% of cash settled survey respondents in Kaikōura, Hurunui, and Marlborough (n=168) opted to use resources familiar to them for repair work, such as friends, family, or themselves. Where building works were undertaken without a building consent, or by persons other than LBPs or qualified tradespeople, there is no way of knowing the construction skill and expertise of the people who completed the work. This will have variable impacts on overall housing quality depending on the nature of the work being done.

For work carried out by LBPs or qualified tradespeople, the level of remediation (i.e., re-work required to rectify deficient work) required on earthquake repairs can indicate the quality of workmanship. The

claimant survey asked respondents whether any earthquake repairs completed required subsequent remediation. As discussed in Section 5.4, 3% (+/-6%) of claimants indicated that some level of remediation of earthquake repairs was needed. The majority of those (67%) indicated this was because they assessed the initial repair work to be of an unacceptable standard. Fletcher Building estimates the level of remediation/defects typically expected in a business-as-usual construction environment as approximately 4% (Public Inquiry into the Earthquake Commission, 2020). The degree of remediation observed here seems to be in alignment with these figures and does not indicate a significant area of concern. That said, it is unlikely that most claimants would have sufficient expertise to correctly identify whether structural damage had been adequately repaired, so this figure may not provide the full picture.

6.3 CONTINUATION OF INSURANCE COVERAGE

The level of insurance coverage on earthquake-damaged properties can impact the long-term quality of housing stock. The insurance status of an earthquake-damaged home indicates the level of financial capital available to repair damage and restore housing quality following future hazard events. Ongoing insurability can depend on several factors, including whether damage was repaired or not, and whether a property owner chooses to continue to hold insurance. Our focus here is whether the process of cash settlement led to any significant changes in the levels of insurance held within the affected districts.

Survey respondents who had a successful cash settled claim were asked whether the damaged property they made a claim for remained insured at the time of completing the survey (Figure 26).[36] Of the 160 claimants who answered this question, 143 (89%) indicated their property does remain insured, 13 (8%) indicated their property was no longer insured, 3 (2%) indicated their property was partially insured (with exclusions for unrepaired work), and 1 (1%) did not know. The overall proportion of survey respondents who are no longer insured represents approximately 4% (+/-6%) of all successful claimants.

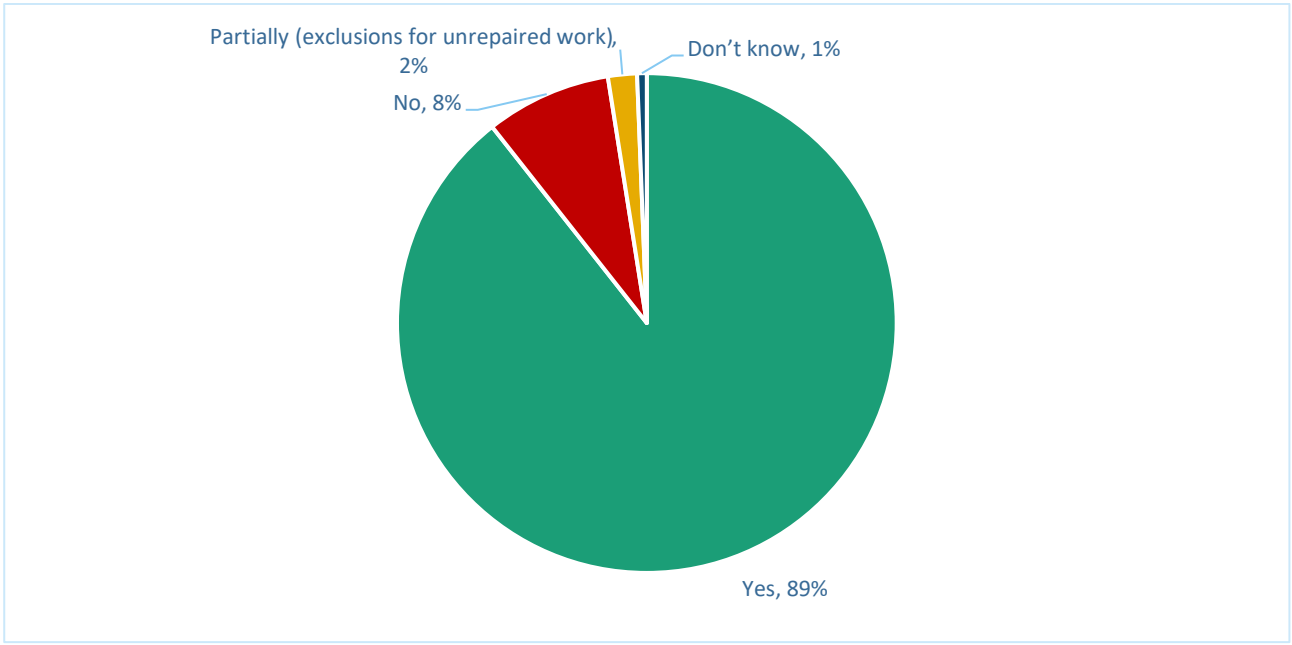


Figure 26: Cash settled claimants and continued insurance cover following settlement, from claimant survey (n=201) (excluding cash settled rebuilds).

[36] This analysis includes those undertaking repairs, intending to undertake repairs, not intending to undertake repairs and those that have reopened their claim. It excludes cash settled rebuilds and those who had insurer managed repairs.

Among the respondents who indicated their property is no longer insured (n=13), reasons provided for this include difficulty in obtaining insurance, properties being written off/demolished, or incomplete repair work (Figure 27). Although a small sample size, this nonetheless provides context for why survey respondents are no longer insured and demonstrates somewhat of a link to the repairs process.

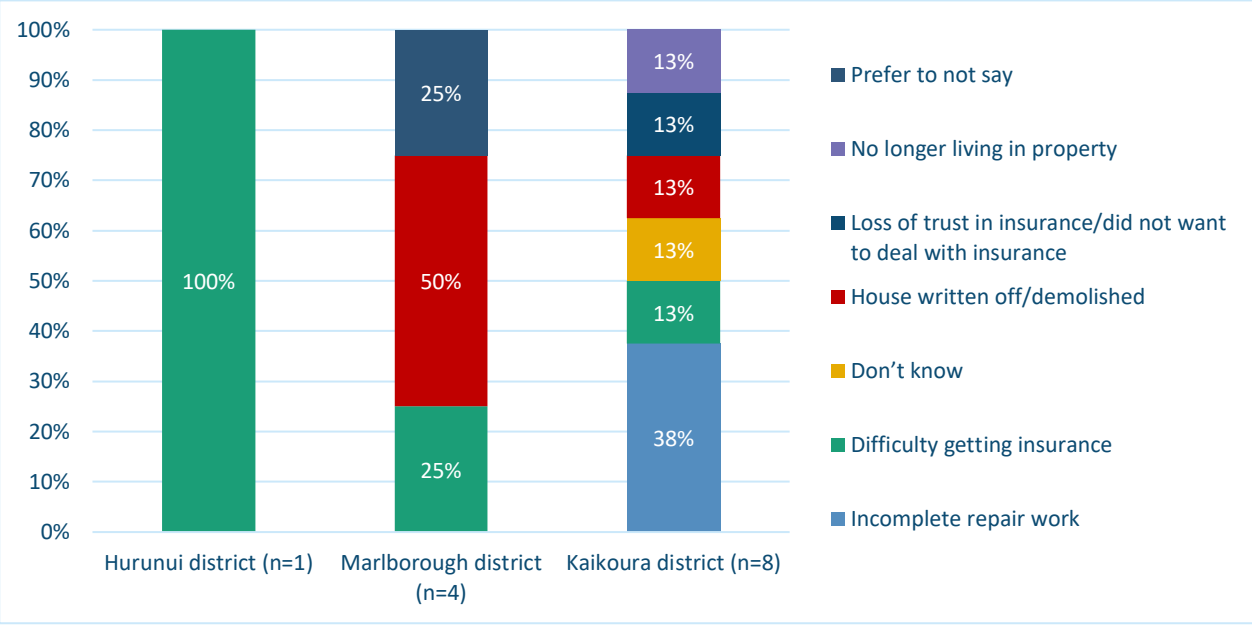


Figure 27: Cash settled claimants who no longer have insurance (n=13) from claimant survey (excluding cash settled rebuilds).

Continued insurance cover amongst survey respondents can be further analysed against their stated intentions for repairs or rebuilds. Figure 28 shows that most claimants who remain insured generally completed or intend to complete repairs. In contrast, most claimants who reported being uninsured do not intend to repair, are undecided, or plan to compete partial repairs only.

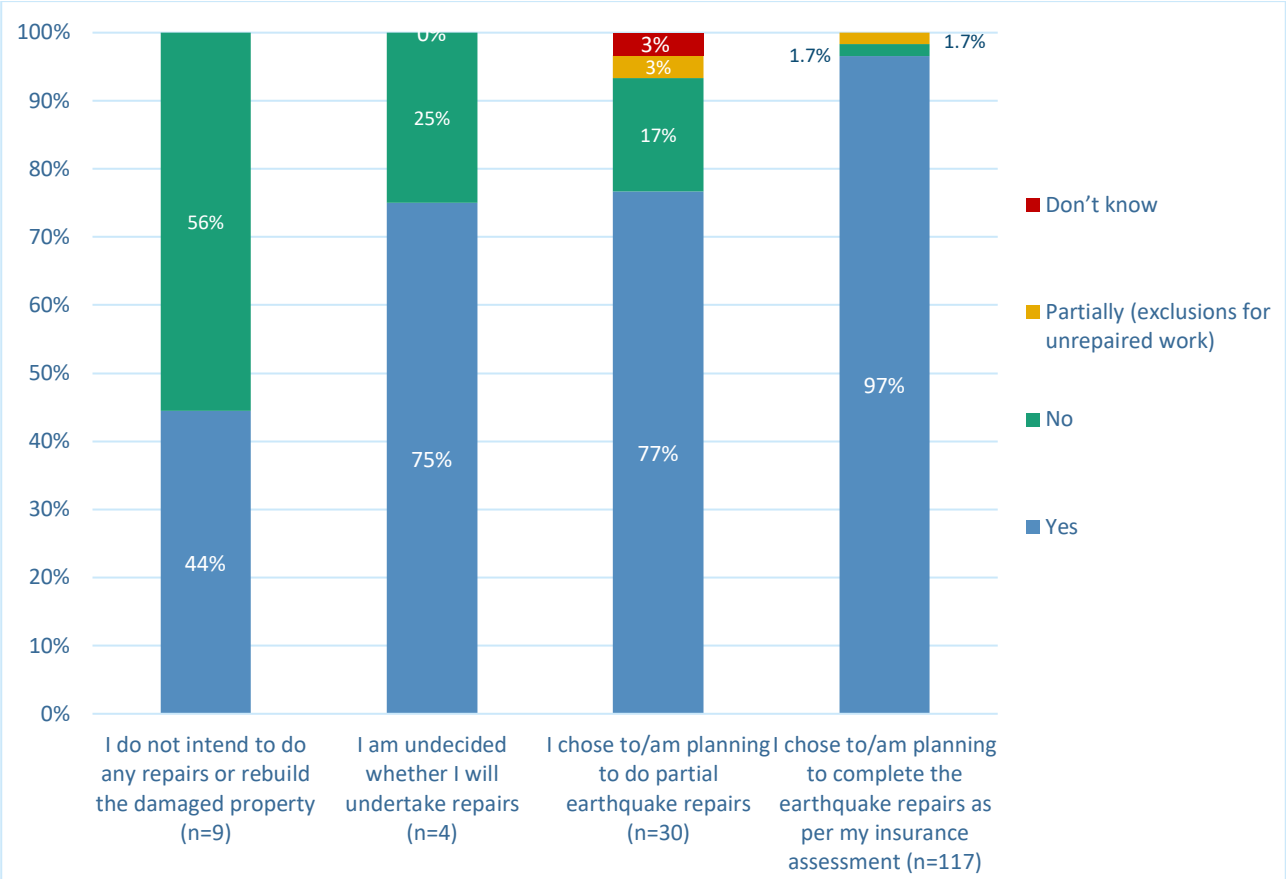


Figure 28: Insurance status for cash settled claims relative to repair intentions, from claimant survey (n=160) (excludes cash settled rebuilds).

It is important to note that the onus for completing repairs under the cash settlement model lies with the claimant. Insurance settlements generally require the claimant to carry out the work and may require notification to the insurer once the work is completed. However, we understand insurers involved in the 2016 residential claims process did not generally follow up with claimants regarding completion of work, instead relying on disclosure conditions within insurance policies to protect their interests. As a result, there may well be claimants with unrepaired (or inadequately repaired) damage, where they believe they still have valid insurance. Among survey respondents who had a successful claim (n=293), 2% (n=7) indicated they remained insured but have not or have no intention to complete repairs or were undecided, while 8% (n=23) indicated they remained insured but completed or planned to complete partial repairs only. In these cases, the insurer may legitimately decline future claims as the repair work was not completed and was not disclosed by the claimant.

Overall, the survey responses indicate there is some attrition of insurance coverage relative to pre-earthquake insurance levels. This is a result of property owner choice (e.g., choosing not to repair damage), as well as challenges with the repair process. On top of this, it is likely that a portion of property owners may believe they are insured but may not be able to claim if repairs have not been adequately repaired. While it is difficult to draw conclusions from this without comparisons to other events, it demonstrates that there has been approximately a 4% (+/- 6%) reduction of insured properties as a result of the 2016 Kaikōura/Hurunui earthquake and subsequent repair process, and between 2% and 8% (+/- 6%) that may unknowingly no longer be covered due to incomplete repairs. Given the over-representation in survey responses for repairs being completed, the level of insurance cover reduction is likely higher than what is indicated here.

6.4 AS-IS-WHERE-IS HOUSE SALES

Some property owners may choose to sell their house unrepaired and uninsured; this is typically referred to as an as-is-where-is (AIWI) sale. Once an earthquake-damaged home has been sold AIWI, there is no method for tracking the extent to which the subsequent owner has fixed the damage, or whether they are aware of the extent and nature of the damage. AIWI sales (and un-insured dwellings) are not subject to an official register, so there is no conclusive way to monitor this stock of houses.

Property listing data from CoreLogic was used to identify AIWI sales across Kaikōura, Hurunui, and Marlborough districts. While this approach is likely to capture the majority of AIWI sales, it does not capture private sales. Figure 29 shows AIWI sales as a proportion of total house sales since 2016 across Kaikōura, Hurunui, and Marlborough, as well as Christchurch City between 2011-2018 (for comparison). AIWI listings in Kaikoura rose rapidly from 2016, peaking at approximately 19% of total house sales in 2019. AIWI listings in Hurunui peaked at approximately 5% of all house sales in 2017 and have since remained stable near this level. AIWI listings in Marlborough have held under approximately 1% of all house sales. The spike of AIWI sales in Kaikōura broadly correlates with most significant damage and large claim values being centered in this district, as noted in Section 4.

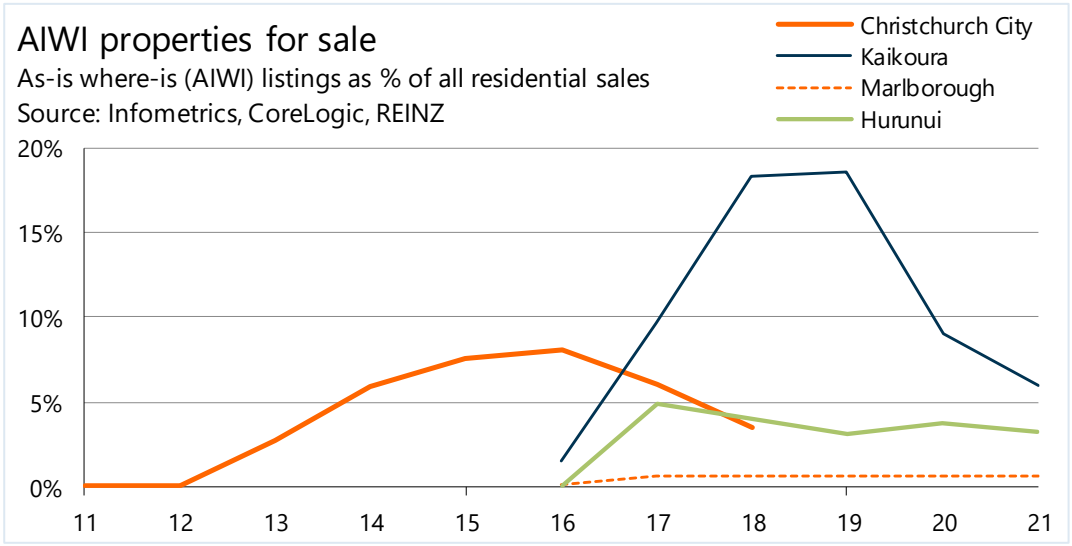


Figure 29: Proportion of as-is-where-is sales by district, by year (y-axis is proportion of sales, x-axis is year)

As of March 2022, approximately 110 AIWI listings had been identified across Hurunui, Kaikōura, and Marlborough, spread evenly across the three districts (Table 3). Of these listings, 89 (81%) have not received a building consent since 2016, while 21 (19%) have. 14 (13%) of the 21 AIWI properties that have received a building consent since 2016 are earthquake-related (i.e., indicating an earthquake repair or rebuild is planned or have been undertaken).[37]

[37] AIWI sales data was unable to be matched to building consent exemption data in Kaikōura District. Therefore, it is likely the proportion of AIWI properties that subsequently obtained consent is higher.

Table 3: As-is-where-is properties listed for sale, 2011-2022.

Residential properties listed for sale on as-is where-is basis

Source: Infometrics, CoreLogic

Territorial authority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Marlborough District[1]						2	6	7	6	6	6	1	**33**
Kaikoura District						1	6	9	11	6	6	2	**39**
Hurunui District						-	8	7	6	9	8	4	**38**
Christchurch City[2]	2	-	176	377	524	576	382	231					**2,268**
Selwyn District[2]	-	-	1	2	5	6	9	2					**25**
Waimakariri District[2]	-	-	-	5	5	9	3	5					**27**

Data covers listings in Marlborough, Kaikoura and Hurunui between October 2016 and March 2022. Listings in Christchurch, Selwyn and Waimakariri between 2011 and 2018.

These AIWI sales represent approximately 2% of the successful insurance claims across Kaikōura, Hurunui, and Marlborough. The claimant survey indicated a similar level of AIWI sales for these three districts, with approximately 2.7 - 3.4% (n=8-10) of claimant properties sold unrepaired and without an assignment of insurance claim to the new owner(s).[38] Properties with structural damage that were sold unrepaired without an assigned insurance claim account for approximately 2.4 - 3.1% (n=7-9) of all claimant properties.[39]

Without an official register of AIWI properties, nor reconciliation with building consent data, it is not possible to know how many of these properties have or will be repaired, and to what standard. There is also no way to know whether the new property owners are aware of the full scope of the damage and whether any subsequent owners risk purchasing inadequately repaired properties.

[38] 8 claimants indicated their properties were sold unrepaired and unassigned. A further 2 claimants indicated the sold their properties unrepaired and were unsure/didn't want to disclose if they had/had not assigned the insurance claim to the new owner.
[39] 7 claimants indicated their properties with structural damage were sold unrepaired and unassigned. A further 2 claimants indicated their properties with structural damage were sold unrepaired and were unsure/didn't want to disclose if they had/had not assigned the insurance claim to the new owner.

7.0 SUMMARY OF HOUSING QUALITY IMPACTS

Quality is a perennial challenge in the construction sector. It is difficult to define, measure and consistently achieve during business as usual, let alone during the recovery from a major earthquake. For the aim of this analysis, we have focussed our quality assessment on three tests:

1. Were earthquake repair works completed?
2. Were:
    - Repairs for structural damage carried out?
    - Structural repairs undertaken with appropriate review and approval?
3. Were claimants satisfied with their perceived quality of repairs?

Overall, the results show that the majority of claimants chose to repair or partly repair their property. The survey results indicate at least 85% of all claimants in Kaikōura, Hurunui and Marlborough chose to repair their property. When focussing only on cash settled claimants, up to 17% of claimants may have chosen not to undertake repairs. For those that did undertake the repairs, approximately 42% opted to undertake work themselves, or use friends and family (likely to reduce overall costs). The potential range of skills and knowledge employed by those undertaking the repair works introduces potential concerns around quality, which we currently cannot measure.

Focussing on structural damage, the results show that a number of claimants either chose to leave structural damage unrepaired, or they repaired structural damage without a necessary building consent. For large claims (generally assumed to include structural repairs), the claims and consent data shows that the majority (between 72% and 81%) did not obtain a consent, while survey results show that 43% of large cash settled claims did not obtain a consent. Both datasets indicate that approximately 10% of all insured and damaged properties in the study are either unrepaired or have non-consented structural repairs. Due to the limitations in the data, there is uncertainty around the exact extent of this issue, however, it is evident that a notable portion of properties likely had structural damage repaired without a consent. It is possible that some of the unconsented structural work was still done to a satisfactory quality by qualified professionals, however, there is no data available to validate this.

While the use of homeowner perception is often cited as a poor indicator of quality by itself (in particular due to the inability of most homeowners to be able to identify issues that might affect the structural integrity of a building), self-defined satisfaction of homeowners is an important factor in the evaluation of housing quality. Based on reported claimant satisfaction from the survey, 82% indicated they were satisfied and 7% indicated they were dissatisfied with the outcomes of the repairs. More analysis is needed to understand how this dissatisfaction relates to objective quality measures.

The analysis also highlights how many unknowns there are when trying to assess the quality of the repairs completed for earthquake damage.

Long-term housing quality following an earthquake relies upon:

1. individuals choosing to undertake repairs,
2. the skill of the building professionals undertaking the work,
3. an understanding by claimants, or their builders, that in some cases they can request a claim top-up,
4. the ability of claimants to verify the quality of repairs and challenge building work carried out by others,

5. (where applicable) the ability for individuals to undertake repairs themselves to an appropriate quality without input from building professionals,
6. (where sought) the ability for Councils, through the Building Consent process, to verify that completed work overall meets the requirements of the Building Act, and new building work complies with the Building Code,
7. the awareness of individuals of unrepaired earthquake damage (for on-sold properties), and
8. the ongoing insurability of the property.

While we have not directly compared these results to the outcomes following the Canterbury or any other earthquake event, there is an interesting parallel between the results here and the findings in the 2020 Public Inquiry into Toka Tū Ake EQC that drew on the Canterbury earthquakes. The Public Inquiry noted, "EQC has been unable to reassure [Canterbury] homeowners that the repairs [carried out through a managed repair process], over which those homeowners had little control, were done to a satisfactory standard (and in some cases, whether they were done at all), which has caused considerable distress to homeowners" (2020, p. 14).

Following the Kaikōura/Hurunui earthquake cash settlement of claims, we see that quality is also not guaranteed. It is likely that there will always be a portion of claimants who do not wish to repair their properties. But how can quality outcomes be ensured for those that do choose to repair their properties? Our current construction system offers few checks and balances to ensure that quality outcomes are achieved for repairs. Repairs themselves are not specifically addressed under the Building Act but are handled as additions or alterations. Outside the building consent process there is a high reliance on professionals and property owners to manage and ensure quality. Further investigation is required to understand how housing quality, in particular the structural integrity of buildings, can best be restored (or where necessary, improved) following future major events.

8.0 NEXT STEPS

This report addressed recommendation 5.1.3 of the Public Inquiry, to "conduct a detailed assessment of the impacts of cash settlement of claims in the example of the Kaikōura/Hurunui earthquake, including the longer-term impact on quality of the housing stock" (Public Inquiry into the Earthquake Commission, 2020, p. 32). The next stage in this research will be to apply these findings to better understand *why* cash settlement had such outcomes for housing quality. It will contribute toward addressing recommendation 5.1.4 of the Public Inquiry, to:

> *Incorporate the findings of [recommendation 5.1.3] into a larger and ongoing study that tests the advantages and disadvantages of cash settlement, the results of which could be drawn on when deciding the best response to future natural disaster events.*

This next stage of research will also investigate other potential impacts of the cash settlement process, such as timeliness of repair works, cost, claimant experience (including impacts on claimant wellbeing) and property transactions. It will also look at the intention and rationale behind claimants' decisions to repair or not to repair. The analysis will also look at the contextual factors that contributed to, and resulted from, the repair/rebuild process and experience, from a claimant, tenant, and community perspective.

This next stage will be based on further analysis of the claimant survey as well as a range of interviews carried out with key stakeholders in the Kaikōura/Hurunui earthquake cash settlement process, including building contractors, insurers, building consent authorities, real estate agents, and claimant representatives. Together, this analysis will help to develop an understanding of the benefits and shortcomings of cash settlement of insurance of claims, based on the observed experiences from the Kaikōura/Hurunui event, to inform decision-making for repairing and rebuilding housing in future large-scale events.

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