Earthquake Commission

11 August 2021

Insurance Liability Valuation as at 30 June 2021

Final Report

Some parts of this document are not appropriate to release and, if requested, would be withheld under the Official Information Act 1982 (the OIA). Where this is the case, the relevant sections of the OIA that would apply have been identified.

MELVILLE JESSUP WEAVER

Willis Towers Watson Alliance Partner

Contents

Appendices

1 Executive Summary

1.1 Purpose

This report was commissioned to provide information with regards to:

- EQC's insurance liabilities and reinsurance recoveries for use in the financial statements as at 30 June 2021.
- The development of EQC's Canterbury earthquakes claims costs since 31 December 2020.
- The development of EQC's Kaikoura earthquakes claims costs since 31 December 2020.

Further details on the report's scope and description can be found in Section 2.

1.2 Valuation results – Canterbury earthquake claims

1.2.1 Canterbury earthquake claims – ultimate claims costs

The gross estimated ultimate claims costs from the Canterbury earthquake events are $11,948 million. This is a decrease of $17 million since 31 December 2020, primarily due to fewer claims being paid over the past 6 months and a reduction in CHE costs than the reduction in the future building provisions.

Canterbury earthquakes only
Estimated ultimate claims costs (undiscounted) - 30 June 2021 valuation

	EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	Total $m	31 Dec 2020 $m
Claims costs paid to date *							
Land	65	457	51	4	1	578	578
Building	3,019	5,110	357	109	204	8,800	8,696
Contents	126	303	29	12	7	478	478
CHE	543	912	128	41	54	1,678	1,662
Total	3,753	6,782	565	166	267	11,534	11,413
Estimated future							
Land	0	2	0	(0)	-	3	1
Building	123	164	19	6	13	326	441
Contents	0	0	0	0	-	0	0
CHE	31	40	7	3	4	86	109
Total	155	207	27	9	17	415	552
Gross ultimate incurred claims cost - central estimate							
Land	66	459	51	4	1	581	579
Building	3,142	5,274	377	115	218	9,126	9,137
Contents	126	303	29	12	7	478	478
CHE	574	952	135	44	58	1,763	1,771
Total	3,908	6,989	592	175	284	11,948	11,965
31 December 2020 comparative							
Gross ult inc claims cost - cent est	3,924	6,987	591	176	286	11,965	

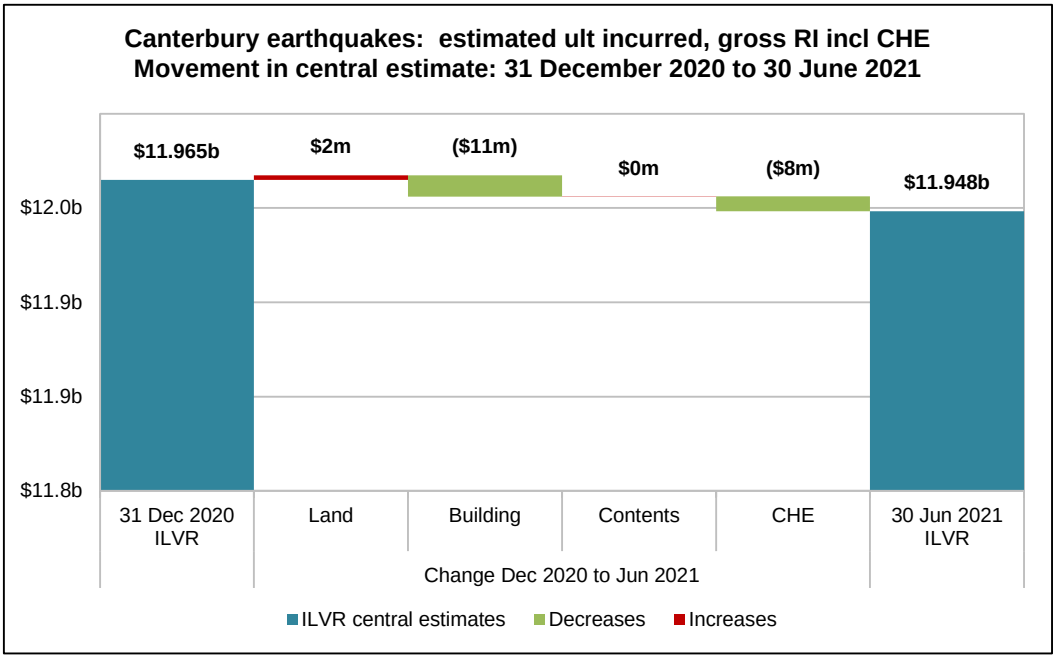
*Includes Fletcher PMO direct costs of repair (excludes margin and infrastructure costs)

For a description of the EQ1 – EQ4 and AS events, please refer to Section 2.9.

The majority of Canterbury earthquake claims have been resolved. There is, however, considerable uncertainty in regard to those which may reopen.

1.2.2 Estimated ultimate claims costs – movement since 31 December 2020 - Canterbury only

The estimated ultimate gross claims cost for Canterbury earthquake events has moved from $11.965 billion as at 31 December 2020 to $11.948 billion as at 30 June 2021. Shown below is a graphical representation of the change in estimated ultimate incurred liabilities.



The movement in the estimated ultimate claims costs has resulted primarily from a reduction in the building future reopen provision. The decrease in CHE is due to actual experience being lower than previously budgeted and a reduction in the 2021/22 forecast. A more detailed breakdown of this movement is shown in Section 3.8.4

1.3 Valuation results – Kaikoura earthquake claims

1.3.1 Kaikoura earthquake claims – ultimate claims costs

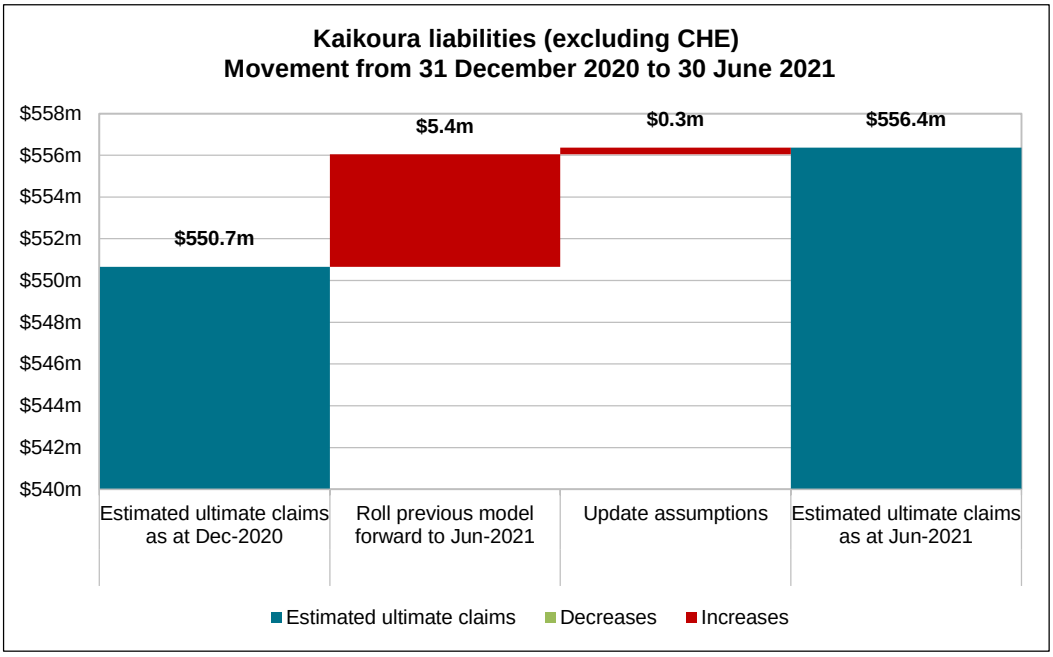
The gross estimated ultimate claims cost from the Kaikoura earthquake event are $664 million. This has increased slightly from our previous estimate ($658 million) due almost entirely to increases in paid amounts and estimates for a small number of Wellington apartment building claims.

Kaikoura earthquakes only
Estimated ultimate claims costs (undiscounted) - 30 Jun 2021

	30 Jun 2021 $m	31 Dec 2020 $m
Claims costs paid to date		
Land	10	10
Building	519	501
Contents	16	16
CHE	107	107
Total	652	634
Estimated future		
Land	0	0
Building	12	24
Contents	0	0
CHE	0	0
Total	12	24
Gross ultimate incurred claims cost - central estimate		
Land	10	10
Building	530	525
Contents	16	16
CHE	107	107
Total	664	658

1.3.2 Estimated ultimate claims costs – movement since 31 December 2020 - Kaikoura only

The estimated ultimate claims costs (excluding CHE) for Kaikoura have moved from $550.7 million to $556.4 million. Note the chart below is zoomed in and the y axis starts at $540 million.



A simple roll forward of the previous model would result in an increase in estimated claims costs of $5.4 million. This is largely a result of increases in paid amounts and case estimates in respect of two Wellington apartment claims. A number of assumptions were updated, and the combined net impact of these changes was a further $0.3 million increase. The estimated ultimate claim costs (excl. CHE) are now $556.4 million.

1.4 Valuation results – all EQC claims

1.4.1 All EQC claims – ultimate claims costs and outstanding claims liabilities

The table below shows the gross ultimate claims costs (Canterbury earthquakes and Kaikoura earthquake) and how the net outstanding claims liabilities (all EQC claims) are derived.

All EQC claims
Gross ultimate claims costs to net outstanding claims liabilities - 30 June 2021 valuation

	EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	BAU $m	KEQ $m	Total $m
Gross ultimate claims excl CHE, undisc - central es	3,334	6,037	457	131	226		556	10,741
Claims handling expenses (CHE)	574	952	135	44	58		107	1,871
Gross ult claims incl CHE, undisc - central est	3,908	6,989	592	175	284	n.a.	664	12,612
Reinsurance recoveries, undiscounted - central est	(2,344)	(2,478)	0	0	0	-	0	(4,822)
Net ult inc claims incl CHE, undisc - central est	1,564	4,511	592	175	284	n.a.	664	7,790
Net claims costs paid to date	(1,020)	(3,393)	(437)	(125)	(213)		(544)	(5,732)
CHE paid to date	(543)	(912)	(128)	(41)	(54)		(107)	(1,785)
Discounting	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(4)
Net OS including CHE, disc - central est	0	204	27	9	17	10	12	278
Net risk margin, diversified, 85% PoA	0	75	9	3	6	3	4	100
Net OS including CHE, disc - 85% PoA	0	279	36	12	23	13	16	379
31 December 2020 comparative	4	373	48	15	31	35	34	540

The diversified net risk margin (85% PoA) is $100 million, which is $42 million lower than the previous valuation, largely due to the reducing risk in the reopen claims provision.

Derivation of net claims

The derivation of the net claims (incurred and outstanding) is determined mechanically from the modelling of the gross claims process and the reinsurance programme in place at the time of the event.

There are some gross claims categories that are non-reinsurable. These are deducted from the gross claims amounts before the contractual reinsurance arrangements are applied to produce the net incurred claims costs.

1.5 Key challenges and developments since prior valuation

The discussion below highlights key challenges and changes since the previous valuation and areas of judgement or materiality associated with these.

1.5.1 Future reopen claims provision

The reopen claim rate has been heavily impacted by the closure of the government's On-Sold programme. It appears that there was some community confusion that the EQC remediation programme was closing and there was a large surge in reopening claims towards the end of 2020. The experience so far in 2021 has been lower than expected – possibly due to a temporary acceleration to claim notification ahead of the on-sold programme closing.

Putting this distortionary experience to one side, the number of open claims has been steadily reducing over time. The initiatives put in place by the Canterbury team in early 2020 should have contributed positively to this.

1.5.2 Other building and land claims

The most recent significant 'bulk claim' issue was in respect of Insurer Finalisation and land claims. This issue was resolved with the settlements that were completed as at the last valuation.

s9(2)(h)

1.6 Key recommendations

1.6.1 Progress against previous recommendations

Several recommendations were set out in the previous ILVR. The progress against these recommendations is as follows:

- **Canterbury reopened claims**. Review causes. Claims optimisation project underway. Closed.
- **Data**: Incorporate learnings from CMSv8 into new claim management platform insurer platform is now operational. Closed. New

The manner in which EQC will manage claims from now on will be dominated by the new Insurer Response Model with a small set of claims being managed in-house (via a Cloud version of GuideWire starting in early 2022).

Until we are able to observe the operational functionality of the new system, we have no further recommendations.

1.6.2 Current recommendations

The are no active recommendations.

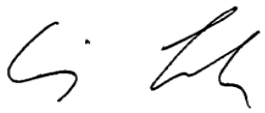
1.7 Limitations

In this report, we provide the results of our investigations together with an outline of the matters considered and the methods and assumptions applied to obtain these results. Opinions and estimates contained in this report constitute our judgement as at the date of the report.

There is considerable uncertainty surrounding the outstanding Canterbury earthquake claims liability, especially given the uniqueness of the event sequence. There is also some residual uncertainty regarding the estimate for the Kaikoura earthquake. Care should be taken in relying on this estimate at this stage. Refer to Section 9.3.2 for more detail.

This report must be read in its entirety. Individual sections of the report, including the Executive Summary, could be misleading if considered in isolation from each other.

1.8 Authors



Craig Lough
Fellow of the NZ Society of Actuaries

Jeremy Holmes
Fellow of the NZ Society of Actuaries

2 Report description

2.1 Addressee

This report is addressed to Sid Miller, Chief Executive of the Earthquake Commission ('EQC').

2.2 Report commissioned by

This report was commissioned by Fraser Gardiner, EQC's Chief Financial Officer.

2.3 Scope

2.3.1 Insurance liabilities components

The insurance liabilities include:

- Outstanding (OS) claims liabilities – which relate to the future direct and indirect claims costs and reinsurance recoveries for claims incurred up to 30 June 2021.
- Premium liabilities – which relate to the future net claims costs and administration and reinsurance expenses for future claims arising from unexpired risks as at 30 June 2021.

The liabilities calculated include a risk margin and are discounted for the time value of money.

The net of reinsurance liabilities has been calculated on the basis that reinsurance is fully recoverable in line with the gross amounts in this report. s9(2)(h) We are not aware of any reinsurer dispute to date.

Premium liabilities are not included directly on the balance sheet but are used for the Liability Adequacy Test of the unearned premium liability provision.

A more detailed description of the nature and components of the insurance liabilities is set out in Section 8.

2.3.2 EQC Act 1993

The scope of this report includes all claims costs and associated expenses required to be paid to settle legitimate insurance claims as defined in the EQC Act 1993 or as required through Ministerial Direction.

Some costs which have been operationalised but may fall outside of the Act (e.g. ex gratia temporary accommodation costs), are also included in the gross claims costs. These costs are not covered by reinsurance.

Liabilities and Costs which may arise from outside the Act, such as damages for tortious negligence, are excluded from this report.

2.4 Effective valuation date

The effective date of the valuation is 30 June 2021.

2.5 Materiality

The level of materiality has been set by EQC Financial Control as part of its reporting requirements.

2.6 This report

Although this report includes considerable detail on all aspects of the actuarial investigations, in order to keep it to a manageable size a lot of the information has been summarised. Further details regarding the data, methods, assumptions, calculations and results underlying this report are available from the authors on request.

Unless otherwise indicated, all amounts in this report are stated in New Zealand dollars and are net of GST (i.e. they exclude GST).

2.7 Previous valuations

Melville Jessup Weaver ('MJW') has prepared valuations for EQC at six monthly intervals since 2010, when the Canterbury Earthquake Sequence began.

The most recent valuation for EQC, which is referenced in this report, is the Insurance Liability Valuation Report ('ILVR') as at 31 December 2020 (dated 3 March 2021).

2.8 Definitions of technical terms

Whilst we have tried to avoid unnecessary insurance jargon where possible, to help understand the technical terms which were used in this report we have included a glossary in Appendix M.

2.9 Event groups

2.9.1 Canterbury earthquake claim events

A series of damaging earthquakes has affected the Canterbury region in general, and the city of Christchurch in particular, since the first event on 4 September 2010. These earthquakes have resulted in injury, loss of life, and billions of dollars of damage to infrastructure, commercial property and residential buildings.

For the purposes of valuing the outstanding claims, the Canterbury earthquake claims have been split into the following event groups:

- EQ1 – 4 September 2010 event – Darfield event
- EQ2 – 22 February 2011 event – Lyttelton event
- EQ3 – 13 June 2011 event (including 21 June 2011 event)* - Sumner event
- EQ4 – 23 December 2011 event
- Aftershocks ('AS') – 13 other events plus other claims advised by EQC as being part of the Canterbury Sequence. The logic used to identify these claims is based on the claim's Territorial Local Authority and loss cause. It does not include claims from the 14 February 2016 event.

*EQC's reinsurance programme covers all incurred losses arising within 720 hours from a declared event. Consequently, losses arising from the 21 June 2011 aftershock are included in the EQ3 event definition.

2.9.2 Kaikoura earthquake claim events

At 12:02am on 14 November 2016, an earthquake occurred near Culverden (approximately 100km north of Christchurch). This caused other faults to rupture in a domino effect, and other earthquakes occurred in a North-East direction towards Seddon. This earthquake event group has been named the Kaikoura earthquake. For the purposes of this report, it has the three-letter code KEQ.

2.9.3 Other claim events

Other outstanding EQC claims, including those arising from landslips, hydrothermal events, and from earthquakes outside Canterbury are categorised as 'BAU' (Business As Usual) claims. This includes the 14 February 2016 earthquake event (which was located in Canterbury but is not part of the CES).

2.9.4 Components of premium liabilities

For the purposes of valuing the premium liabilities, the following event categories were used:

- Business as Usual ('BAU') claims.
- Minerva claims - catastrophe event claims arising from earthquakes in New Zealand outside the Canterbury region.
- Enhanced seismicity in respect of Canterbury earthquake claims and Kaikoura earthquake claims.

2.10 Professional standards

This report has been written to comply with Professional Standard No. 30 (Valuations of General Insurance Claims) of the New Zealand Society of Actuaries.

Actual vs. expected experience

The current data does not support an exact analysis of actual claims experience against that expected from the 31 December 2020 premium liabilities calculations. This is because there is no way of identifying incurred claims costs arising from unexpired risks as at the previous valuation. However, it is still interesting to compare the estimated cost of claims incurred in the current period with the undiscounted central estimate future claims costs from 31 December 2020.

2.11 MJW staff involved in the investigation

The following MJW staff members were involved in some capacity during the course of the investigation:

- Craig Lough Principal
- Jeremy Holmes Principal
- Other MJW staff as required

3 Canterbury earthquake claim liabilities

EQC has continued to make progress in resolving its ultimate claims costs. There have been some developments suggesting that the estimate of the ultimate claims costs should change for this valuation and these are discussed below. The remaining components that will affect the ultimate cost are:

- Open building claims
- Reopened claims
- EQC costs in respect of On-Sold Over Cap (On-SOC) claims
- Other building and land claims
- Claims Handling Expenses (CHE).

3.1 EQC costs in respect of On-SOC claims

3.1.1 The On-SOC programme

The On-SOC (On-Sold OverCap) programme is a government-funded initiative designed to meet the liabilities of those homeowners who:

- had purchased an earthquake damaged property after the Canterbury earthquakes and prior to 14 August 2019, and
- discovered non-remediated damage after the purchase but the property had previously been assessed by EQC as being undercap.

These homeowners may have subsequently faced difficulties in seeking overcap compensation from the relevant private insurer as many policy wordings effectively provided no cover once a property was sold.

The On-SOC programme was created to meet this shortfall.

3.1.2 EQC liability

The On-SOC programme has been funded by the government and the overcap costs will not fall to EQC. There are some costs associated with these properties that will fall to EQC however so must be included in the financial provision that is held by EQC. These include:

- The undercap liability for any claim. These costs would always be borne by EQC.
- Disregarded costs. These may occur on both undercap and overcap claims.
- Temporary accommodation costs required whilst remediation is underway. These are paid under certain conditions by EQC on an ex-gratia basis and have been included in EQC's gross claims costs for Canterbury.

3.1.3 On-SOC lodging and claims management

On-SOC applications are lodged and managed by EQC. Settlements are managed on EQC's claims management system (CMS) with special tags identifying the claim as being On-SOC.

The period for lodging applications for the programme closed on 14 October 2020. EQC received approximately 6,000 applications in total with a surge in September and October 2020.

All eligible EOIs have been processed into CMS by 30 June 2021.

3.1.4 Summary of OnSOC numbers

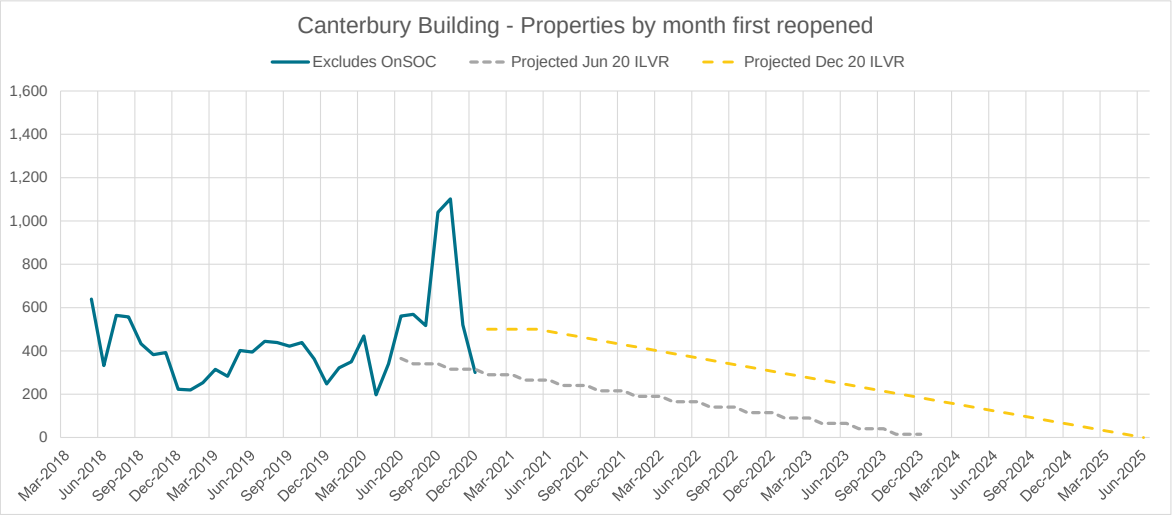
s9(2)(j)

We have removed On-SOC properties from our analysis of future reopened claims numbers.

3.2 Reopen building claims

The reopen claim rate over the past 18 months has been somewhat affected by Covid and the apparent public confusion over the closure of the On-SOC programme. The chart below summarises the actual reopen experience, and the assumptions used for the June 2020 and December 2020 valuations.

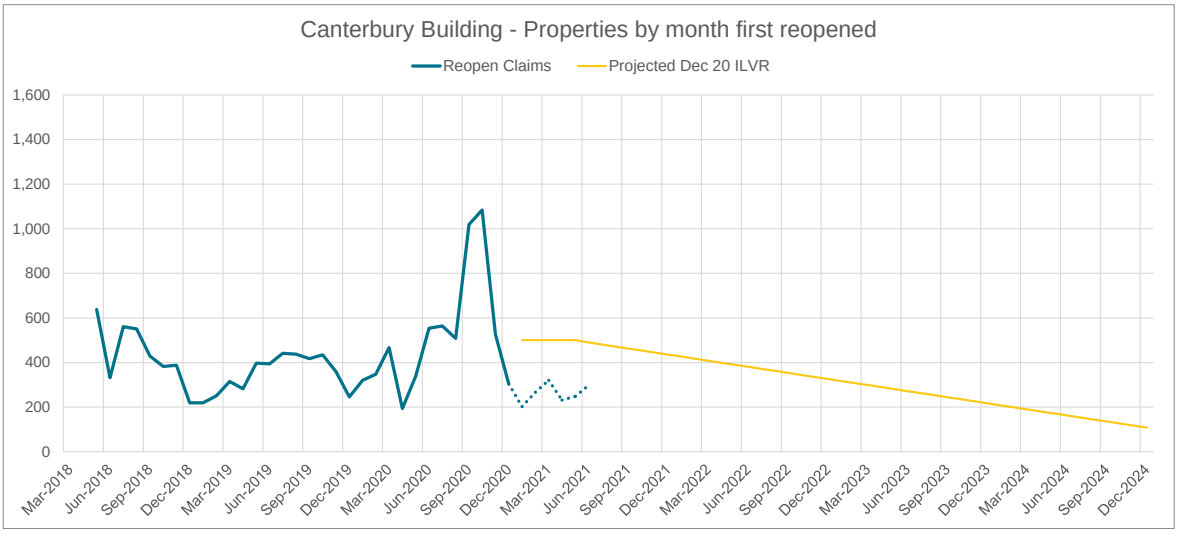
We have excluded from the experience the population of claims which have associated On-Sold activity (including simply an 'Expression of interest').



The change in the reopen projection at December 2020 was based largely on the continuing steady reopen rate that was evidenced through to June / July 2020 with the elevated reopen rates in the second half of 2020 not used to inform future projections .

3.2.1 Experience since December 2020

The chart below shows the actual reopen experience through to the valuation date against our assumption as at 31 December 2020.



Following the volatile experience towards the end of last year, there was the expected drop in reopen claims over the summer months. The experience has remained at relatively low levels since then.

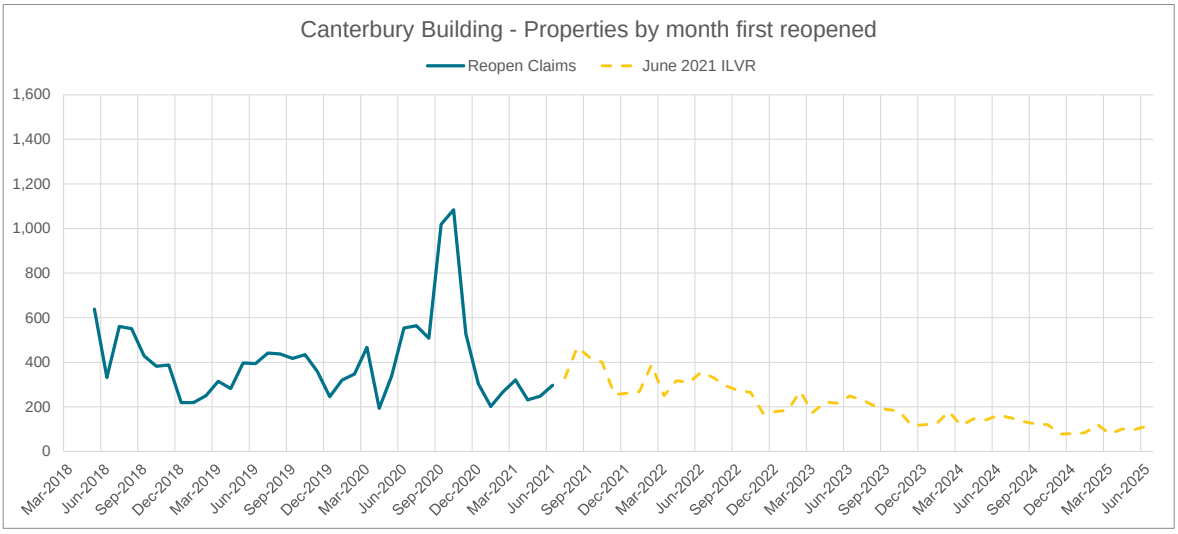
Overall, whilst it is promising that the reopen numbers are lower than our previous assumption path, we cannot ignore the possibility that the spike in October simply pulled forward a number of properties that would have reopened in 2021.

In addition to the above we have carried out a number of other analyses to assess the reasonableness of the reopen projection. These are shown in Appendix K.

It is therefore considered prudent that we retain the previous assumption on reopen claim numbers for this valuation. The nil rate assumption has also been retained – see Section 3.3.

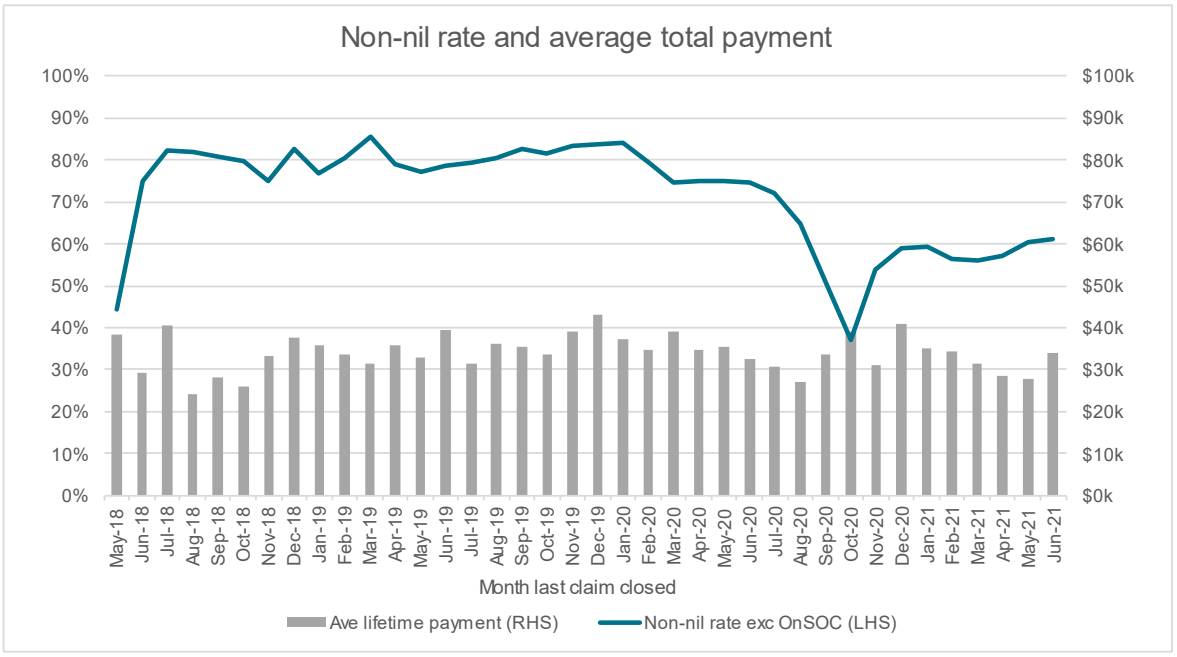
Future reopens	No. claims	Nil rate %	Ave claim $000	Total $m
Projection	11,510	40%	36	**249**

We have however adjusted the timing of future reopen claims to be consistent with forecasting by the EQC actuarial team, which includes a seasonality adjustment. The resulting reopen claim rate projection is shown in the chart below.



3.3 Nil claim rate & average non-nil claim payment

The analysis of nil claim rates on recent closures suggests that there is upwards pressure on the rate (that is, more claim closing with nil payment). The chart below illustrates this.



There is clearly an anomalous drop in the non-nil claim rate around October 2020 which coincided with the closure of the OnSOC programme. Since then, non-nil claim rates have stabilised around 60%. Given this experience, we have adopted a nil claim rate of 40%.

The average costs of $36k is the historical average of closed claims.

3.4 Other building and land claims

The most recent significant 'bulk claim' issue was in respect of Insurer Finalisation and land claims. This issue was resolved with the settlements that were completed as at the last valuation.

s9(2)(h)

3.5 Key building provisions

The tables below summarise the building claim provisions and key assumptions.

	30 June 2021		31 December 2020	
	#	$m	#	$m
Currently open claims				
Settlements team	1,040	38	1422	58
Disputes Resolution - Insurance payment	s9(2)(i), s9(2)(j)			
Disputes Resolution - Customer reimbursement*				
SRES MOU		-	4	0
GCCRS	219	11	301	17
EQC costs for OnSOC properties	237	14	133	6
Claims Assurance	156	6	253	5
	s9(2)(i), s9(2)(j)			
Future reopen claims	6,906	249	8,700	348
Financial close - insurer		-		-
Total		**401**		**534**

*Customer legal and technical advice reimbursement *ERRATUM: Totals (401 and 534) should read 325 and 441*

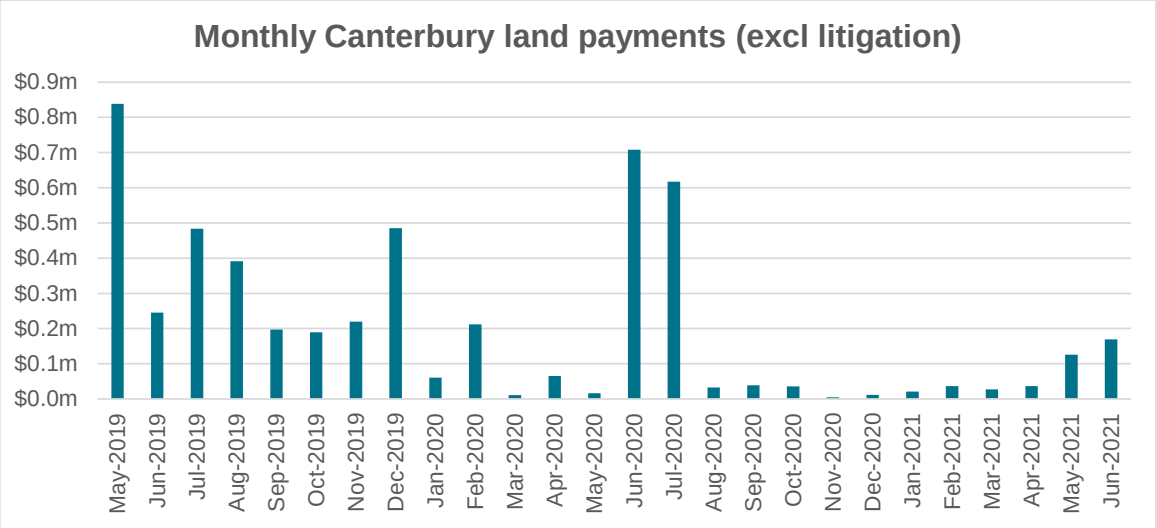
Assumptions	30 Jun 2021	31 Dec 2020
Average non-nil claims costs		
Settlement claims	$36,000	$41,000
Dispute Resolution claims	s9(2)(i), s9(2)(j)	
SRES MOU claims	$0	$71,000
GCCRS	$51,000	$55,000
EQC costs for OnSOC properties	$60,000	$43,000
Claims Assurance	$36,000	$21,000
Settlement claim - nil claim rates		
Future cash settled claims	40%	40%

The dispute resolution average cost of s9(2)(i), s9(2)(j) is made up of $67k for claims costs and s9(2)(i), s9(2)(j) costs and disbursements.

3.6 Canterbury earthquake land claims

3.6.1 Open land claims

The chart below shows the monthly payments which have been made in respect of land claims since May 2019. With the exception of June and July 2020, payments over the last 15 months have been minimal. Payments made to insurers in respect of land litigation / insurer finalisation are not included in this chart.



Given the low volumes of land claims being paid, we have taken a simplified approach to allowing for potential ongoing payments in respect of land claims. We considered the amounts paid in respect of land claims over the last 24 months (not including any amounts related to litigation with insurers) and how these related to the number of properties with open land exposures. We estimated the number of open claims going forward and the average cost per open claim. The resulted in an estimate of $3.0 million for the future cost of land claims, as summarised in the table below.

Canterbury land claims - provision for remaining claims

Number of currently open exposures	48
Esimated number to reopen in future	125
Total number of open or future reopened land exposures	173
Average cost per open land exposure over six month period	$8.7k
Average number of six month periods remaining per open claim	2.0
Central estimate future cost of land claims	$3.0m

Our data does not enable us to track monthly status movements for land exposures. However, we have snapshots of land exposure statuses at six-month periods for each historical valuation. Hence, we analysed land exposures according to whether a property stayed open from one valuation to the next.

The estimate has increased since that at December 2020 ($1.1 million) as the downward trend in reopened land exposures has not been as rapid as originally anticipated.

3.7 Canterbury CHE

The future Claims Handling Expenses ('CHE') are largely dependent on the level of reopened claims, their complexity, and for how long they continue to reopen.

In respect of the 2022 financial year, EQC has revised its budget down slightly from that previously assumed. This is consistent with the experience EQC achieved in FY21 (with a $5m saving relative to budget). We have used this budgeted cost for FY22 in the ILVR.

In respect of future years, we have retained our previous CHE assumption as the future reopen claim numbers are unchanged.

3.7.1 Actual and projected CHE costs

The table below illustrates the actual, budgeted and projected costs as at the current and previous valuations.

Category	Year ended	Jun 21 $m	Dec 20 $m	Change
Paid to date				
	30 Jun 11	225	225	
	30 Jun 12	302	302	
	30 Jun 13	262	262	
	30 Jun 14	244	244	
	30 Jun 15	203	203	
	30 Jun 16	148	148	
	30 Jun 17	90	90	
	30 Jun 18	61	61	
	30 Jun 19	63	63	
	30 Jun 20	49	49	
	30 Jun 21	32	37	(4.8)
Budget FY2022				
	30 Jun 22	30	33	(3.3)
CHE beyond June 2022				
		51	51	-
Ultimate CHE		1,759	1,767	(8.1)

After allowing for inflation, the expected ultimate CHE will be $1,763 million.

A key driver in the actual ultimate cost of CHE will be how the future rate and timespan of reopened claims trend and the complexity of these claims.

3.7.2 Claims handling expenses (CHE) assumptions

The table below illustrates the estimated ultimate CHE for the Canterbury earthquakes and also illustrates this as a percentage of the gross ultimate claims costs.

Canterbury earthquakes only
CHE - 30 June 2021 valuation

	EQ1	EQ2	EQ3	EQ4	AS	Total
Total CHE $m	574	952	135	44	58	1,763
CHE % of gross ultimate excl CHE	17.2%	15.8%	29.5%	33.8%	25.6%	17.3%
CHE % of gross ultimate incl CHE	14.7%	13.6%	22.8%	25.2%	20.4%	14.8%
31 December 2020 comparative						
Total CHE $m	578	954	136	45	59	1,771

The apportionment of CHE to events is based on expected ultimate costs and claim numbers for each event. This results in a 'flatter' spread of CHE costs than the overall claim costs, resulting in a wide range of CHE percentages.

3.8 Valuation results – Canterbury earthquakes

3.8.1 Estimated ultimate claims costs – Canterbury earthquakes

The table below summarises the main components involved in estimating the ultimate cost of claims to EQC arising from the Canterbury earthquakes only as at 30 June 2021.

The table below shows the components split by event.

Canterbury earthquakes only
Ultimate claims costs, central estimate, undiscounted, including CHE - 30 June 2021 valuation

	EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	Total $m	31 Dec 2020 $m
Claims paid to date (excl. CHE)*	3,210	5,871	437	125	213	9,856	9,752
Estimated future (excl. CHE)	124	166	20	6	13	329	442
Gross estimated ultimate incurred claims	3,334	6,037	457	131	226	10,185	10,194
Claims handling expenses (CHE)							
Paid to date	543	912	128	41	54	1,678	1,662
Estimated future	31	40	7	3	4	86	109
Total	574	952	135	44	58	1,763	1,771
Gross ultimate incurred claims including CHE	3,908	6,989	592	175	284	11,948	11,965
Reinsurance recoveries	(2,344)	(2,478)	0	0	-	(4,822)	(4,839)
Net ultimate incurred claims including CHE	1,564	4,511	592	175	284	7,126	7,126
31 December 2020 comparatives							
Gross ult incurred claims including CHE	3,924	6,987	591	176	286	11,965	

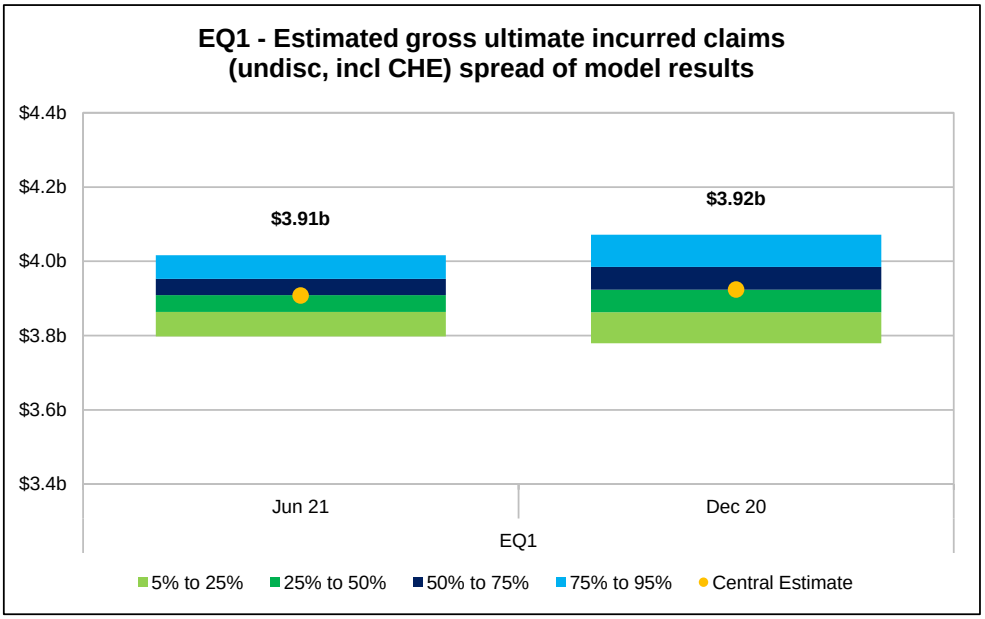
*Includes Fletcher PMO direct costs of repair (excludes margin and infrastructure costs - included in CHE)

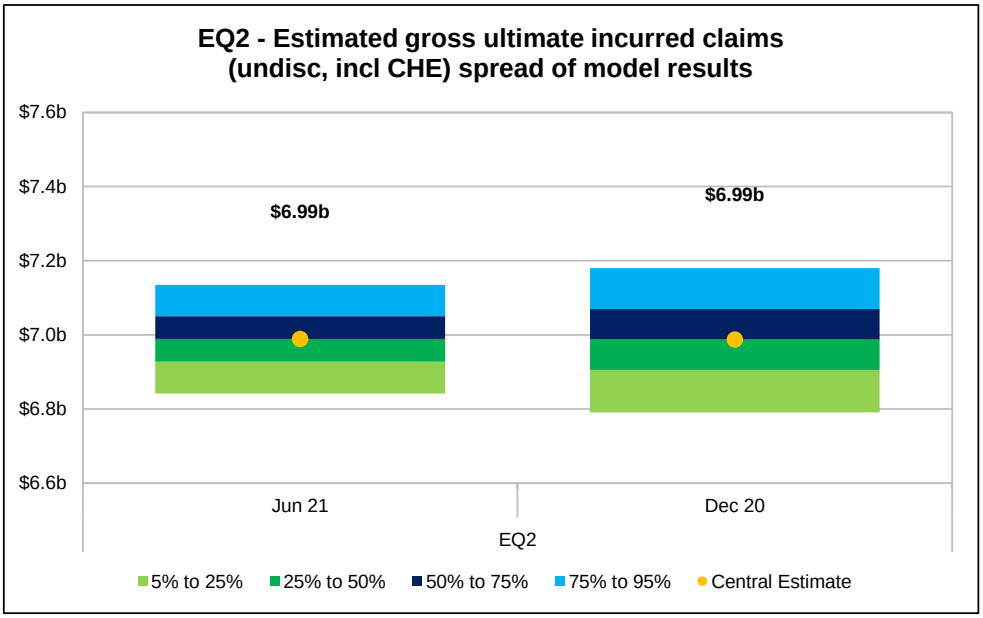
3.8.2 Estimated ultimate claims costs – variability in modelled results

The actual ultimate incurred claim costs arising from the Canterbury earthquake events will not be known until the last claim is settled. The figures shown in Section 3.8.1 are the central estimate (mean) of a distribution of modelled outcomes.

The charts below illustrate the variability in the ultimate claims liabilities for EQ1 and EQ2 according to our valuation model. The numbers shown correspond to the central estimates.

Canterbury Earthquakes only





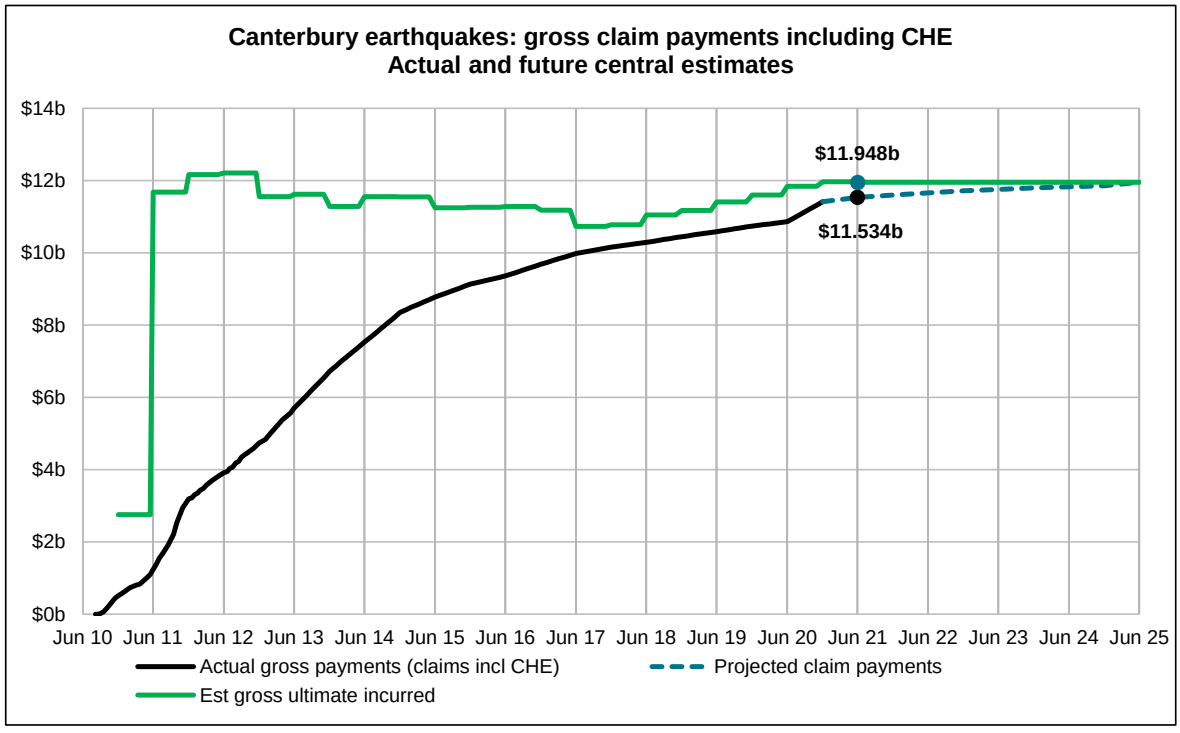
Estimated gross ultimate incurred cost incl CHE

	EQ1	EQ2	EQ3	EQ4	AS
30 June 2021 ILVR					
5%	$3.798b	$6.841b	$0.574b	$0.170b	$0.272b
25%	$3.863b	$6.928b	$0.585b	$0.173b	$0.279b
50%	$3.909b	$6.989b	$0.592b	$0.175b	$0.284b
75%	$3.952b	$7.051b	$0.599b	$0.178b	$0.289b
95%	$4.016b	$7.135b	$0.609b	$0.181b	$0.296b
Central Est	$3.908b	$6.989b	$0.592b	$0.175b	$0.284b
31 December 2020 ILVR					
5%	$3.779b	$6.791b	$0.568b	$0.169b	$0.270b
25%	$3.863b	$6.906b	$0.582b	$0.173b	$0.279b
50%	$3.924b	$6.988b	$0.591b	$0.176b	$0.286b
75%	$3.985b	$7.070b	$0.601b	$0.179b	$0.293b
95%	$4.071b	$7.180b	$0.615b	$0.183b	$0.302b
Central Est	$3.924b	$6.987b	$0.591b	$0.176b	$0.286b

Note that the distributions shown here do not allow for diversification across events. For example, adding the 75% figures for each event will produce a figure greater than the 75% figure for Canterbury as a whole.

3.8.3 Gross claim payments – comparison to previous estimates

The following chart shows actual gross claim payments for Canterbury earthquakes to 30 June 2021 (including EQR payments and CHE) as the solid black line. Projected payments are shown as the dotted line. The solid line shows the six-monthly updated estimate of ultimate claims costs.



The valuation reflects our expectation of future cashflows. CHE payments are assumed to continue until 30 June 2025.

3.8.4 Movement in Canterbury earthquake claims costs

Canterbury earthquakes only
Comparison to 31 December 2020 ILVR Results

	EQ1			EQ2			EQ3			EQ4			AS			Total		
	Jun 21 $m	Dec 20 $m	Change $m	Jun 21 $m	Dec 20 $m	Change $m	Jun 21 $m	Dec 20 $m	Change $m	Jun 21 $m	Dec 20 $m	Change $m	Jun 21 $m	Dec 20 $m	Change $m	Jun 21 $m	Dec 20 $m	Change $m
Gross ultimate claims excl CHE, undiscounted - central estimate																		
Land	66	65	**+1**	459	458	**+2**	51	51	**+0**	4	4	**+0**	1	1	**+0**	581	579	**+2**
Building	3,142	3,155	**-13**	5,274	5,272	**+2**	377	375	**+1**	115	115	**-1**	218	219	**-1**	9,126	9,137	**-11**
Contents	126	126	**+0**	303	303	**+0**	29	29	**+0**	12	12	**-0**	7	7	**-0**	478	478	**+0**
Total	3,334	3,346	**-12**	6,037	6,033	**+4**	457	456	**+1**	131	132	**-1**	226	227	**-1**	10,185	10,194	**-9**
Claims handling expenses (CHE)																		
Paid	543	538	**+5**	912	903	**+9**	128	126	**+1**	41	41	**+0**	54	53	**+0**	1,678	1,662	**+16**
Future	31	40	**-9**	40	51	**-11**	7	9	**-2**	3	4	**-1**	4	5	**-1**	86	109	**-24**
Total	574	578	**-4**	952	954	**-2**	135	136	**-1**	44	45	**-0**	58	59	**-1**	1,763	1,771	**-8**
Gross ult claims incl CHE, undisc - central est	3,908	3,924	**-16**	6,989	6,987	**+2**	592	591	**+1**	175	176	**-1**	284	286	**-2**	11,948	11,965	**-17**
Reconciliation to gross outstanding (OS)																		
Gross ult cost incl CHE, undisc - central est	3,908	3,924	**-16**	6,989	6,987	**+2**	592	591	**+1**	175	176	**-1**	284	286	**-2**	11,948	11,965	**-17**
Paid claims costs excl CHE	(3,210)	(3,179)	**-31**	(5,871)	(5,811)	**-60**	(437)	(429)	**-8**	(125)	(124)	**-2**	(213)	(209)	**-3**	(9,856)	(9,752)	**-104**
Paid CHE	(543)	(538)	**-5**	(912)	(903)	**-9**	(128)	(126)	**-1**	(41)	(41)	**-0**	(54)	(53)	**-0**	(1,678)	(1,662)	**-16**
Gross OS incl CHE, undisc - central est	155	207	**-52**	207	274	**-67**	27	36	**-9**	9	12	**-3**	17	23	**-6**	415	552	**-137**
Reinsurance recoveries, undiscounted - central estimate																		
Past payments recoveries	(2,190)	(2,159)	**-31**	(2,478)	(2,478)	**+0**	-	-	**-**	-	-	**-**	-	-	**-**	(4,668)	(4,637)	**-31**
Future payments recoveries	(154)	(202)	**+48**	(0)	(0)	**-0**	0	0	**+0**	0	0	**0**	-	-	**-**	(154)	(202)	**+48**
Total expected recoveries	(2,344)	(2,361)	**+17**	(2,478)	(2,478)	**-0**	0	0	**+0**	0	0	**0**	-	-	**-**	(4,822)	(4,839)	**+17**
Net ult inc claims incl CHE, undisc - central est	1,564	1,563	**+1**	4,511	4,510	**+2**	592	591	**+1**	175	176	**-1**	284	286	**-2**	7,126	7,126	**+0**
Reconciliation to net outstanding																		
Gross OS incl CHE, undisc - central est	155	207	**-52**	207	274	**-67**	27	36	**-9**	9	12	**-3**	17	23	**-6**	415	552	**-137**
Future payments recoveries	(154)	(202)	**+48**	(0)	(0)	**-0**	0	0	**+0**	0	0	**+0**	-	-	**+0**	(154)	(202)	**+48**
Net OS including CHE, undisc - central est	1	4	**-4**	207	274	**-67**	27	36	**-9**	9	12	**-3**	17	23	**-6**	261	349	**-89**
Discounting	(0)	(0)	**+0**	(3)	(1)	**-2**	(0)	(0)	**-0**	(0)	(0)	**-0**	(0)	(0)	**-0**	(4)	(2)	**-2**
Net OS including CHE, disc - central est	0	4	**-4**	204	273	**-69**	27	36	**-9**	9	12	**-3**	17	23	**-6**	257	348	**-91**
Net risk margin, diversified, 85% PoA	0	0	**+0**	75	101	**-25**	9	12	**-3**	3	4	**-1**	6	8	**-2**	93	124	**-31**
Net OS including CHE, disc - 85% PoA	0	4	**-4**	279	373	**-95**	36	48	**-12**	12	15	**-4**	23	31	**-8**	349	472	**-122**

Commenting on the table on the previous page it can be seen that in respect of EQ1:

- The gross ultimate claims including CHE are estimated to be $3,908 million, which is less than the reinsurance programme, which stops at $4bn.
- Gross ultimate claims including CHE have decreased by $16 million. This is made up of:
  - -$13 million from building provisions decreasing and lower than forecast paid claims.
  - +$1m from land provisions increasing slightly
  - -$4 million from lower CHE
- Expected reinsurance recoveries have decreased by $17 million.
- Net ultimate claims including CHE have increased by $1m to $1,564 million.

The net ultimate claims figure is comprised of the following components:

- $1,500 million retention
- $22.5 million from layer 2 which was not fully covered
- $40.6 million from claims costs that are not reinsurance recoverable
- $1 million expected claims exceeding the reinsurance programme.

The reason for this $1 million is that the valuation model is run stochastically, and there are many possible outcomes that may eventuate. For some of these scenarios, we have modelled the gross claims costs exceeding the reinsurance programme and there will be a consequential net claims cost.

That is, for many scenarios, the future expected net claims costs for EQ1 will be zero but for some it will be positive. Overall, this creates a relatively small expected net future claims costs.

More detail on the movement in claims costs is shown in Appendix H.

3.8.5 Key areas of judgement

In undertaking the valuation there is one remaining area of judgement required that materially affects the results. This area with the highest level of uncertainty is:

- **Future Reopen Canterbury building claims.** The number of claims reopening each month and the duration for which these claims will continue at this rate is a key judgement. It is extremely difficult to predict how these will evolve.

3.8.6 Sensitivity testing

We have carried out sensitivity testing on a number of key provisions within the Canterbury earthquake model. These are shown in Appendix I.

4 Canterbury Event Key Assumptions

	BUILDING CLAIMS as at 30 June 2021			
Assumption	**Explanation**	**30 Jun 2021 provision**	**31 Dec 2020 provision**	**Informed by**
Resolution	• Resolution of properties is now materially completed so key assumptions now relate to reopened claims			• EQC data on resolved claims
Open claims				
Current – Settlements	• 1,040 open properties in this stream (c.f. 1,422 as at Dec 2020). • Average payment recently experienced is $37k (c.f. $41k June 2020 assumption).	$38m	$58m	• Claim stage gate report. Provides information on average cost, numbers of open claim etc.
Current – SRES MoU	• All SRES MOU claims have been settled to EQC sum insured cap. • No open properties in this stream (c.f. 4 as at Dec 2020)	n.a.	$0.3m	• Claim stage gate report. Provides information on average cost, numbers of open claim etc.
Current – Dispute resolution (increased insurance payment)	• s9(2)(i), s9(2)(j) • Average claims cost of $67k (c.f. $67k Dec 2020 assumption).	s9(2)(i), s9(2)(j)		• Claim stage gate report. Provides information on average cost, numbers of open claim etc. • Average costs tracked by Canterbury unit and EQC Legal.
Current – Dispute resolution (additional CHE)	• s9(2)(i), s9(2)(j)	s9(2)(i), s9(2)(j)		• Claim stage gate report. Provides information on average cost, numbers of open claim etc. • SAP payment extract.
GCCRS	• 219 properties in this stream (c.f. 301 at Dec 2020)	$11m	$17m	• Claim stage gate report. Provides information on

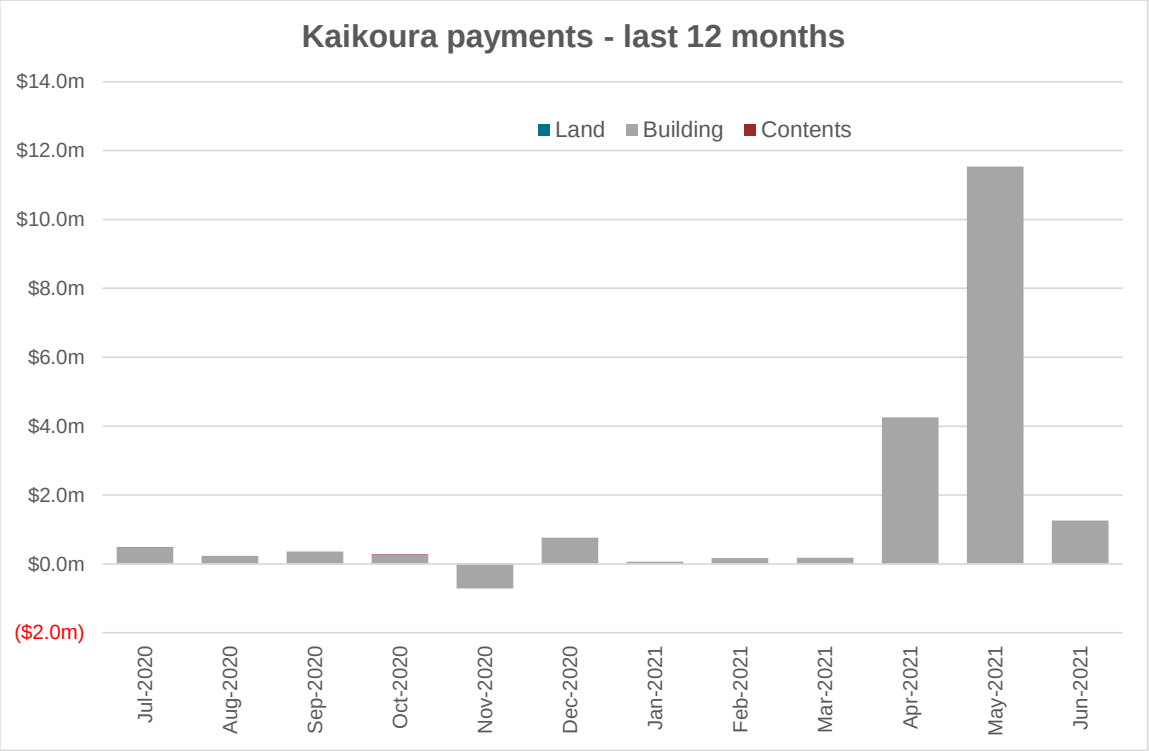
	• Average claim cost of $51k (c.f. $55k at Dec 2020).			average cost, numbers of open claim etc.
Undercap portion of OnSOC and disregarded costs for undercap and overcap OnSOC	• Matching with data on OnSOC applications to determine number of claims that might receive a top up payment. • 237 properties identified with potential undercap liability. • Previously a sub tag was used to identify potentially undercap claims resulting in 133 properties. • Average cost of $60k (c.f. $43k as at Dec 2020).	$14m	$6m	• Data from OnSOC Applications team
Claims Assurance	• 156 properties in Claims Assurance stream, after a nil rate of 25% applied to reflect portion of claims which will be successfully triaged into further settlement (c.f. 253 at Dec 2020, no nil rate) • Same average cost as Settlements stream of $37k (c.f. $21k at Dec 2020)	$6m	$5m	• Claim stage gate report. Provides information on average cost, numbers of open claim etc.
Future claims				
Future reopens	• Retained projection as at Dec 2020, bought forward to Jun 2021. • Assume 11,510 future reopen properties (vs 14,500 at Dec 2020) • Carried out alternative reopened analysis looking at reopen claim characteristics. • We have used the cost ($36k) and nil rate (40%) assumptions derived from claims closed in the last 12 months. ($40k and 40% at Dec 2020)	$249m	$348m	• Claim stage gate report. Provides information on average cost, non-nil %, numbers of open claim etc. • CMS data and transactional history.

	LAND CLAIMS as at 30 June 2021			
Assumption	**Explanation**	**30 June 2021 provision**	**31 Dec 2020 provision**	**Informed by**
Land model – open claims	• Number of currently open land exposures: 48 • Number of future reopened land exposures: 125 • Cost per currently open (or future reopen) land exposure, per six-month period: $8,700. • Average number of six-month periods remaining per land exposure: 2.0	$3.0m	$1.1m	• Experience of open land exposures as recorded in CMS over the last 24 months
Land model – litigation	• IAG, Suncorp, Tower and Southern Response settlements have been finalised – nil outstanding. • No provision is currently held for future claims.	nil	$nil	• Details of settlements with IAG, Suncorp, Tower and Southern Response provided by EQC management. • EQC Financial Control

5 Kaikoura earthquake claim liabilities

5.1 Recent experience

Looking at the last 12 months of payments in respect of the Kaikoura event we get the chart below. With the exception of April and May 2021, monthly payments in respect of Kaikoura claims have been low. The large amounts paid in April and May 2021 relate to two separate Wellington multi-unit claims.



5.1.1 Current open claims

The table below summarises the current open claims as at 30 June 2021. Case estimates are available for most currently open claims, although some of these are placeholder amounts (i.e. $13k including GST) based on past average claim sizes for more recently reopened claims where the scope of work is not yet known. The claim status information was derived from our extract from CMSv8 whilst the case estimate information was taken from the Kaikoura Tracker (also based on an extract from CMSv8).

Open claims as at 30 June 2021

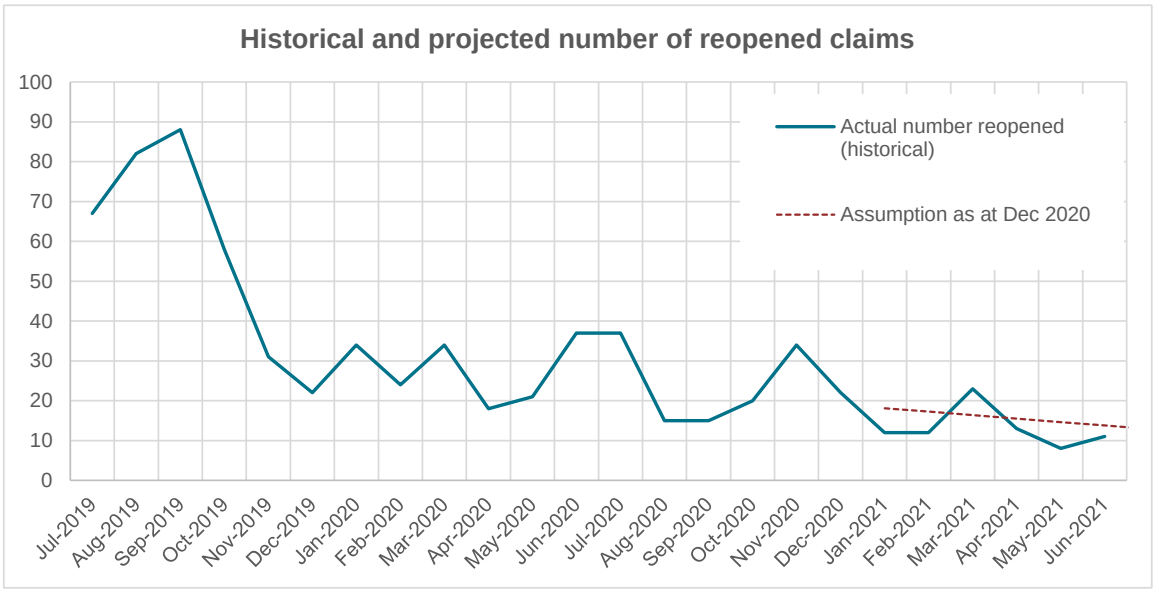
Number of open claims in CMS	32
Of which:	
No case estimate	4
$13k holding estimate	6
Other case estimate	22
Additional claim labelled closed but with significant case estimate	1
Total modelled open claims	33

The currently open claims include a number of multi-unit claims. s9(2)(i), s9(2)(j)

We have checked with EQC whether there is potential for any other open multi-unit claims to deteriorate. There are no open claims currently where it is considered likely that there might be deterioration akin to that experienced over the last five months. s9(2)(i), s9(2)(j) We have not made an explicit allowance for any multi-unit claims to deteriorate beyond the general allowance for some claims to settle at values higher than their current case estimate. However, we do consider the potential for another significant multi-unit deterioration as an alternative scenario – see Section 5.5.

5.1.2 Reopened claims

The chart below shows the number of reopened Kaikoura claims each month, and our assumption as at December 2020. The chart goes back to July 2019 as, prior to that date, most claims were managed by insurers and we have limited visibility of claim status movements during that period.



5.2 Claims handling expenses (CHE)

5.2.1 CHE rates

The table below illustrates the estimated ultimate CHE for the Kaikoura earthquake and also illustrates this as a percent of the gross ultimate claims costs.

Kaikoura earthquakes only
CHE - 30 June 2021 valuation

	KEQ
Total CHE $m	107.5
CHE % of gross ultimate excl CHE	19.3%
CHE % of gross ultimate incl CHE	16.2%

5.3 Valuation results – Kaikoura earthquake

5.3.1 Estimated ultimate claims costs – Kaikoura earthquake

The results from our Kaikoura model are shown below, along with comparatives from the previous two valuations. The 'claims costs paid to date' amounts include amounts accrued but not yet paid within EQC's accounts (e.g. amounts invoiced by insurers but not yet paid). Case estimates are included as part of the 'estimated future' amounts.

Kaikoura earthquake only
Estimated ultimate claims costs (undiscounted) as at 30 June 2021

	Jun-2021 $m	c.f. Dec-2020 $m	c.f. Jun-2020 $m
Claims costs paid to date			
Land	10	10	10
Building	519	501	496
Contents	16	16	16
CHE	107	107	107
Total	652	634	628
Estimated future			
Land	0	0	0
Building	12	24	26
Contents	0	0	0
CHE	0	0	0
Total	12	24	27
Gross ultimate incurred claims cost - central estimate			
Land	10	10	10
Building	530	525	522
Contents	16	16	16
CHE	108	107	107
Total	664	658	655

The estimated ultimate cost of claims as at 30 June 2021 is slightly higher than that estimated as at 31 December 2020.

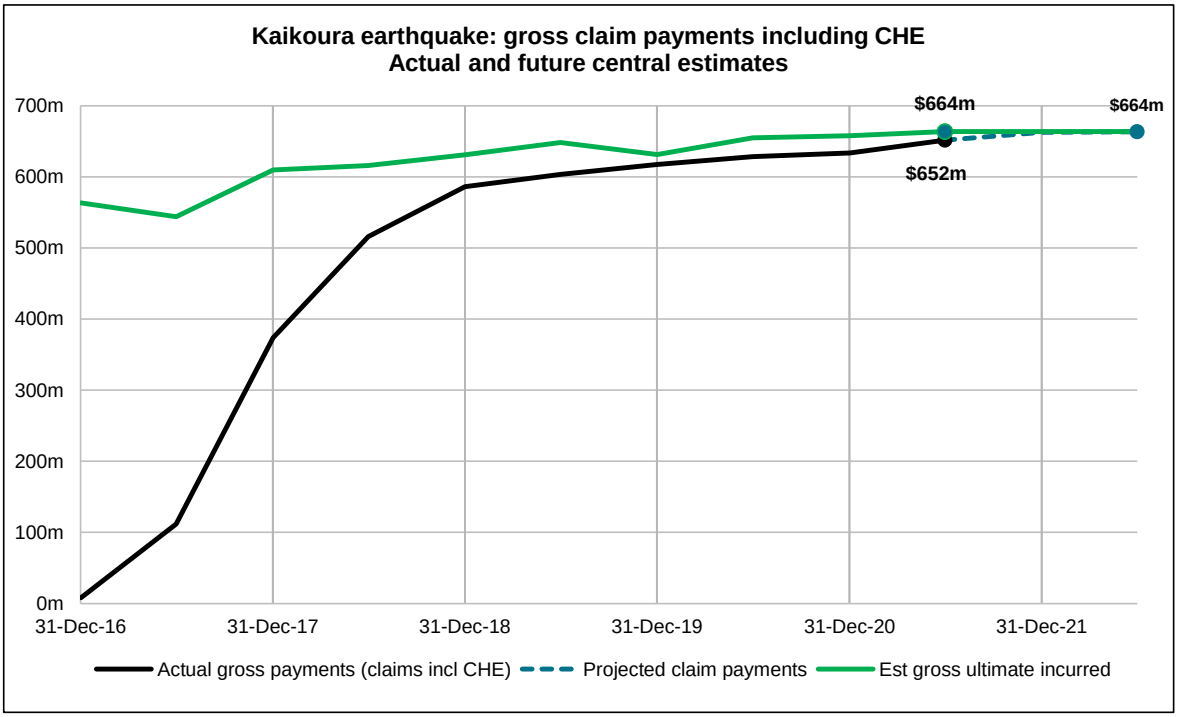
The table below shows a further breakdown of the estimated future claims costs. Most of the estimated costs relate to currently open claims.

Kaikoura earthquake
Summary of estimated future claims costs

	Land $m	Building $m	Contents $m	Total $m
Open claims with case estimates				
Case estimates				7.9
IBNER				1.9
Estimated future cost	0.1	9.7	0.0	9.8
Open claims with placeholder case estimates				
Case estimates				0.1
IBNER				0.0
Estimated future cost	0.0	0.1	0.0	0.1
Future reopened claims				
Estimated future cost	0.0	2.0	0.1	2.1
Central estimate outstanding, undiscounted (excl CHE)				
All claims	**0.1**	**11.7**	**0.1**	**11.9**

5.3.2 Gross claim payments – comparison to previous estimates

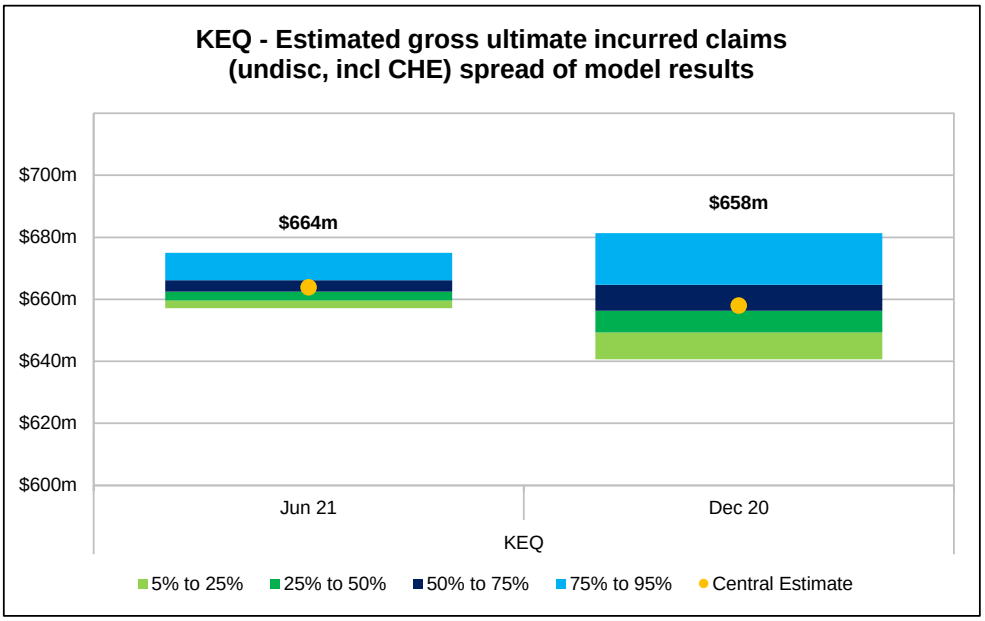
The following chart shows actual gross claim payments for the Kaikoura earthquake to 30 June 2021 (including CHE) as the solid black line. Projected payments are shown as the dotted line.



The dotted line is based on our estimated future cashflows as per the valuation model.

5.3.3 Variability in modelled results

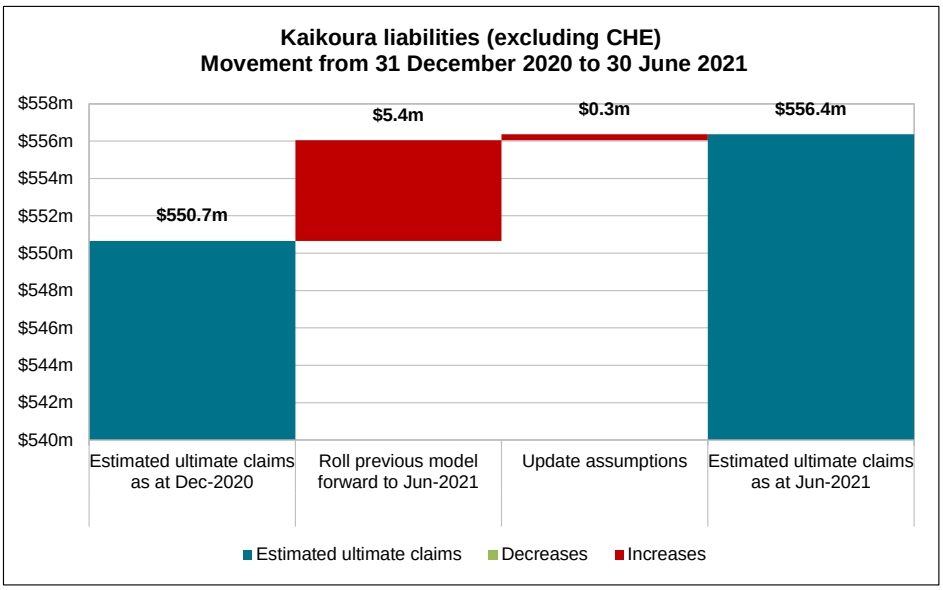
The chart below summarises the modelled variability in the ultimate cost of claims and CHE from the Kaikoura event. The variability has decreased since December due to greater certainty regarding some large open claims.



5.4 Movement in Kaikoura provisions since December 2020

5.4.1 Estimated ultimate claims costs – movement since 31 December 2020 - Kaikoura only

The estimated ultimate claims costs (excluding CHE) for Kaikoura have moved from $550.7 million to $556.4 million.



A simple roll forward of the previous model would result in an increase in estimated claims costs of $5.4 million. s9(2)(i), s9(2)(j), s9(2)(h) A number of assumptions were updated, and the combined net impact of these changes was an increase of $0.3 million. The estimated ultimate claims now sit at $556.4 million.

A more detailed movement analysis is provided in Appendix H.

5.5 Scenario analysis

We considered two alternative scenarios for liabilities relating to the Kaikoura earthquake:

- Rather than continuing its downward trend, the number of reopens remains at current levels for two years then recommences the downward trend.
- The largest open multi-unit claim increases to cap. s9(2)(b)(ii)

The table below shows the total outstanding claims estimate, and how this might vary under each of the scenarios noted above.

Kaikoura earthquake
Scenario analysis

	Central estimate outstanding claims (undiscounted, excl CHE) $m	Difference from baseline $m
Baseline result	11.9	
Extended reopen scenario (Continue at current level for two years, then downward trend)	18.6	6.7
Large multi-unit deteroriation (Largest open MUB claims increases to cap)	23.5	11.6

- If the number of reopened claims is extended for two years this will add $6.7 million to the estimated outstanding claims liabilities (at a central estimate level).
- If the s9(2)(b)(ii) block increases to cap then this will add $11.6 million to the estimated outstanding claims liabilities. s9(2)(b)(ii), s9(2)(j)

6 Kaikoura Event Key Assumptions

	KAIKOURA CLAIMS as at 30 June 2021			
Assumption	**Explanation**	**30 June 2021 provision**	**31 Dec 2020 provision**	**Informed by**
Currently open claims	• Provision in respect of the future cost to settle currently open claims • Most of the open claims (by number) are managed by EQC and many include a case estimate (33 open claims c.f. 82 as at December 2020). • Some large open claims have been paid or partially paid since December.	$9.8m	$21.3m	• Open claims case estimates • Historical accuracy of past case estimates • Historical average claim sizes where case estimates are unavailable
Future reopened claims	• Provision in respect of claims which are currently closed but will reopen in future (allowing for 101 future reopens c.f. 197 as at December 2020) • Trend in reopens is tracking as per expectations at December 2020. Therefore we have kept the assumed projection the same.	$2.1m	$2.6m	• Recent trends in numbers of reopened claims • Average claim sizes for recently reopened claims.

7 BAU claim liabilities

7.1 Large events

The table below summarises the paid and outstanding claims for recent events with the largest number of currently open claims.

BAU results by event as at 30 June 2021

	Period[1]	Land	Building	Contents	Total
Paid to date ($000s)					
Earthquake202106	BAU	0	3	0	3
Te Araroa (EQ, 105km E, 90km, 7.1)	BAU	0	378	0	378
Earthquake202105	BAU	0	3	0	3
Flood202105	BAU	15	0	0	15
Landslip202106	BAU	0	0	0	0
Storm202105	BAU	0	0	0	0
Storm202106	BAU	0	0	0	0
Landslip202105	BAU	0	0	0	0
Flood202106	BAU	0	0	0	0
Earthquake202011	BAU	0	138	0	138
Undiscounted central estimate excl CHE ($000s)					
Earthquake202106	BAU	2	580	0	582
Te Araroa (EQ, 105km E, 90km, 7.1)	BAU	10	451	0	462
Earthquake202105	BAU	2	231	0	234
Flood202105	BAU	1,010	101	0	1,111
Landslip202106	BAU	468	165	0	632
Storm202105	BAU	398	81	0	479
Storm202106	BAU	354	40	0	394
Landslip202105	BAU	270	63	0	333
Flood202106	BAU	220	51	0	271
Earthquake202011	BAU	0	65	0	66
Other		3,019	939	0	3,959
Total		5,754	2,767	0	8,522
Estimated ultimate ($000s)					
Earthquake202106	BAU	2	582	0	585
Te Araroa (EQ, 105km E, 90km, 7.1)	BAU	10	830	0	840
Earthquake202105	BAU	2	234	0	236
Flood202105	BAU	1,025	101	0	1,126
Landslip202106	BAU	468	165	0	632
Storm202105	BAU	398	81	0	479
Storm202106	BAU	354	40	0	394
Landslip202105	BAU	270	63	0	333
Flood202106	BAU	220	51	0	271
Earthquake202011	BAU	0	204	0	204

[1] Loss dates pre/post 30 June 2020

The table above shows that the outstanding claims liability for BAU is spread across a number of small events.

We have shown a total line for the amount outstanding, but we have not shown totals for paid to date and ultimate figures. This is because, unlike the Canterbury and Kaikoura events, the BAU liability does not relate to a defined event (or series of events) with a single start date from which one can summarise all amounts paid to date.

7.2 CHE rates

The provision for BAU Claims Handling Expenses is $1.4 million. This includes:

- The marginal costs of managing the BAU claims.
- A contribution to overhead costs that must be maintained to manage BAU claims.

The overhead component is relatively large, compared to the marginal costs and so the overall CHE amount will be relatively constant each year. This will mean that where the BAU outstanding claims amount is low, the CHE as a percentage of the outstanding claims will appear unduly large.

The table below illustrates the estimated outstanding CHE for BAU claims and also illustrates this as a percentage of the net central outstanding claims costs. Note that while the measurement for this is outstanding costs (rather than ultimate costs for Canterbury and Kaikoura), the marginal CHE % is comparable to the percentages shown for the Canterbury and Kaikoura events.

BAU claims only
CHE - 30 June 2021 valuation

	BAU
CHE provision $m	
Marginal	$0.2m
Fixed	$1.2m
CHE % of net OS claims	
Marginal	1.9%
Fixed	14.0%

7.3 Estimated outstanding claims liabilities – BAU events

The central estimate outstanding claims (excluding CHE) for BAU events is $8.5 million as at 30 June 2021. The tables below summarise the quantum as at the valuation date, split by current year and prior period (PP) events i.e. losses incurred prior to 30 June 2020.

BAU outstanding claims as at 30 June 2021
Undiscounted central estimate excluding CHE

	Land $000s	Building $000s	Contents $000s	Total $000s
BAU				
Open claims	3,659	1,200	0	4,859
IBNR	1,423	1,388	0	2,811
Total	5,082	2,588	0	7,670
BAU PP				
Open claims	672	179	(0)	851
IBNR	0	0	0	0
Total	672	179	(0)	851
All loss periods				
Open claims	4,331	1,379	(0)	5,711
IBNR	1,423	1,388	0	2,811
Total	5,754	2,767	(0)	8,522

7.4 Movement since December 2020

The table below shows how the estimates for BAU claims have changed since December 2020. A more detailed movement analysis is provided in Appendix H.

BAU outstanding claims liabilities
Movement from 31 December 2020 to 30 June 2021

	Claims incurred up to Dec-2020 $000s	Claims incurred after Dec-2020 $000s	All claims $000s
Central estimate outstanding claims as at 31 December 2020	21,488		
Less: expected payments between Dec-2020 and Jun-2021	10,418		
Expected central estimate as at Jun-2021	11,070		
Less: actual minus expected payments between Dec-2020 and Jun-2021	1,064		
Central est as at Jun-2021 rolled forward using actual payments	10,006		
Adjust for actual experience being different to expected	(8,300)		
Plus: outstanding for claims incurred after Dec-2020		7,895	
Central est OSC as at Jun-2021 using previous assumptions	1,706	7,895	9,602
Adjust for changes to assumptions	113	(1,193)	(1,080)
Central estimate outstanding claims as at 30 June 2021	1,819	6,702	8,522

Note: All figures are undiscounted and exclude CHE

The movement analysis shows that:

- The central estimate of outstanding BAU claims (excluding CHE) as at 31 December 2020 was $21.5 million.
- The projected payments over the following six-month period were $10.4 million. Therefore, the expected outstanding claims at 30 June 2021 (for losses prior to December 2020) was $11.1 million.
- Over the six-month period to June 2021 the actual payments were $1.1 million higher than expected. Adjusting for the difference in actual vs. expected payments brings the outstanding claims for prior periods to $10.0 million.
- If we were to apply the same methodology and assumptions at 30 June 2021 as the previous valuation, then the outstanding claims (in respect of prior period events) would be $8.3 million lower at $1.7 million. This figure is lower because the number of claims remaining open is less than one might expect given the amount paid since the previous valuation.
- If we add to this a further $7.9 million for claims incurred after 31 December 2020 then we would have an outstanding claims liability of $9.6 million at 30 June 2021 (using the same assumptions as at December 2020).
- We have made a few changes to the assumptions for the BAU model which reduce the outstanding claims by $1.1 million to $8.5 million.

7.5 Sense checks on the BAU outstanding claims liabilities

For this valuation we considered a number of other (more traditional) methodologies for estimating the BAU outstanding claims liabilities. A summary of this exercise is provided in Appendix J.

8 Overall results

8.1 All claims liabilities

8.1.1 Claims incurred

The gross incurred claims costs for all Canterbury and Kaikoura earthquake events, incurred to 30 June 2021, include:

- Claims costs paid to date
- Claims costs expected to be paid in future (the OS claims liability).

Claims costs paid to date are known, but those to be paid in the future are unknown and so must be estimated. The approach that we have taken is to estimate the ultimate incurred claims costs and then deduct payments made to 30 June 2021 in order to determine the estimated OS claims liability.

The ultimate incurred claims costs are calculated in respect of Canterbury and Kaikoura earthquake events only.

It is not useful (or practical) to include ultimate incurred claims costs from BAU events as this would include a vast number of smaller events which may have been materially settled. This makes comparisons of BAU claims costs between valuations meaningless.

No risk margins have been calculated and no discounting has been applied to the estimated ultimate incurred claims costs.

The outstanding claims liabilities are in respect of all outstanding EQC claims (Canterbury and Kaikoura earthquakes plus BAU) and are discounted for the time value of money at risk free rates and include risk margins at the 85th percentile.

8.1.2 Ultimate and outstanding claims liabilities – all claims

The table below summarises the key components of the gross ultimate claims costs and the derivation of the outstanding claims liabilities ('OSCL') as at 30 June 2021. The net discounted OSCL at a probability of adequacy of 85% is $379 million.

All EQC claims
Gross ultimate claims costs to net outstanding claims liabilities - 30 June 2021 valuation

	EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	BAU $m	KEQ $m	Total $m
Gross ultimate claims excl CHE, undisc - central es	3,334	6,037	457	131	226		556	10,741
Claims handling expenses (CHE)	574	952	135	44	58		107	1,871
Gross ult claims incl CHE, undisc - central est	3,908	6,989	592	175	284	n.a.	664	12,612
Reinsurance recoveries, undiscounted - central est	(2,344)	(2,478)	0	0	0	-	0	(4,822)
Net ult inc claims incl CHE, undisc - central est	1,564	4,511	592	175	284	n.a.	664	7,790
Net claims costs paid to date	(1,020)	(3,393)	(437)	(125)	(213)		(544)	(5,732)
CHE paid to date	(543)	(912)	(128)	(41)	(54)		(107)	(1,785)
Discounting	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(4)
Net OS including CHE, disc - central est	0	204	27	9	17	10	12	278
Net risk margin, diversified, 85% PoA	0	75	9	3	6	3	4	100
Net OS including CHE, disc - 85% PoA	0	279	36	12	23	13	16	379
31 December 2020 comparative	4	373	48	15	31	35	34	540

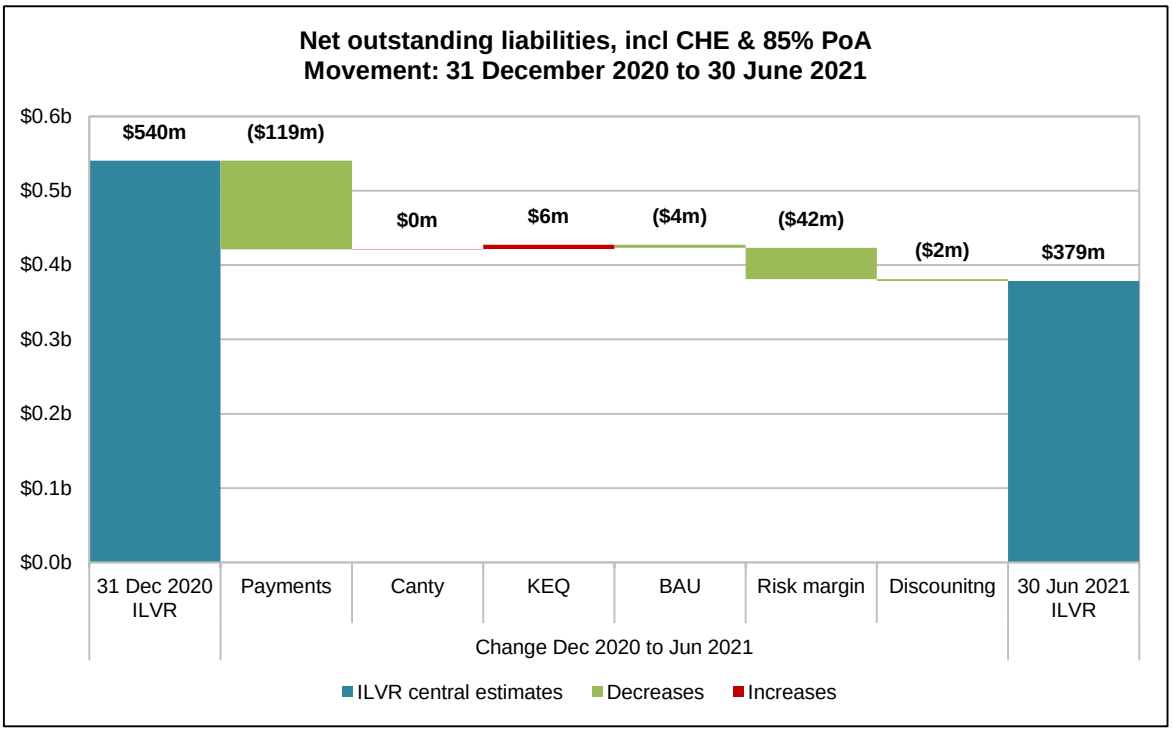
8.1.3 Movement in net outstanding claims liabilities – all claims

The chart and table below show the movement in the net outstanding claims liabilities since 31 December 2020.

The net OSCL (85% probability of adequacy, discounted) has decreased from $0.540b as at 31 December 2020 to $0.379b as at 30 June 2021.

The principal drivers of the change in total claims liabilities in decreasing order of impact are:

- Claim payments; $119m of net payments since 31 December 2020.
- Risk margin (net of reinsurance) has decreased by $42m.
- Actuarial determination; this has decreased by $4m on a net of reinsurance basis.
  - $0m as a result of the Canterbury earthquakes.
  - +$6m as a result of the Kaikoura earthquake.
  - -$4m as a result of BAU events.
- Discounting has had a negligible impact.



The risk margin has decreased for this valuation, due to the reduction in the reopen claim provision. The overall risk margin of $100 million is equivalent to around 4,000 reopen Canterbury claims – which is around 8 - 10 months' worth of claims at the current rate.

All EQC claims

Reconciliation of change in outstanding claims liability from 31 December 2020 ILVR

	Prior Periods (to 31 Dec 2020)								Current	All Periods			
	EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	BAU $m	KEQ $m	Subtotal $m	BAU $m	CEQ $m	KEQ	BAU $m	Total $m
Net OSCL (85% PoA, discounted) as at 31 December 2020	4	373	48	15	31	5	34	n.a	30	472	34	35	540
Remove net risk margin (85% PoA)	-	(101)	(12)	(4)	(8)	(1)	(10)	n.a	(7)	(124)	(10)	(8)	(142)
Net OSCL (central estimate, discounted) as at 31 December 2020	4	273	36	12	23	4	24	375	23	348	24	27	398
Remove discounting	0	1	0	0	0	0	0	2	0	2	0	0	2
Net OSCL (central estimate, undiscounted) as at 31 December 202(	4	274	36	12	23	4	24	377	23	349	24	27	400
Estimated net paid over period	(5)	(69)	(10)	(2)	(4)	(2)	(18)	(109)	(11)	(89)	(18)	(12)	(119)
Change in net actuarial determination	1	2	1	(1)	(2)	(1)	6	5	(3)	0	6	(4)	2
Net OSCL (central estimate, undiscounted) as at 30 Jun 2021	1	207	27	9	17	1	12	274	9	261	12	10	282
Add discounting	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(4)	(0)	(4)	(0)	(0)	(4)
Net OSCL (central estimate, discounted) as at 30 June 2021	0	204	27	9	17	1	12	270	9	257	12	10	278
Net diversified risk margin (85% PoA, discounted)	-	75	9	3	6	0	4	n.a	3	93	4	3	100
Net OSCL (85% PoA, discounted) as at 30 June 2021	0	279	36	12	23	1	16	n.a	12	349	16	13	379

8.2 Premium liabilities

The table below summarises the key results of the estimation of EQC's premium liabilities as at 30 June 2021. The premium liabilities will be used in the liability adequacy test.

The total value at 75% probability of adequacy is $240 million. This is less than the $273 million unearned premium reserve. This means that no additional unexpired risk reserve will be required in the accounts as at 30 June 2021.

The largest component ($127 million) relates to projected costs of future claims arising from major events (other than those related to Canterbury earthquakes) during the period of the runoff of risks on the books as at 30 June 2021. These earthquake claims are modelled by Minerva. See section 8.2.2 for discussion on other perils.

The next largest components relate to the enhanced seismicity following the Canterbury earthquakes ($61 million) and Kaikoura earthquake ($37 million).

The other claims costs relate to future BAU (small) claims and the associated reinsurance and administration expenses.

The cost to EQC of reinsurance has increased considerably for cover negotiated since the Canterbury events. The future reinsurance costs for unexpired risks are $95 million.

Estimated Premium Liabilities - 30 June 2021

	BAU $m	Minerva $m	Cant EQ $m	KEQ $m	Total $m
Unearned premium reserve					273
Cost of future claims from unexpired risks					
Gross claims, undiscounted - central estimate	8	55	47	33	142
Administration and reinsurance costs for unexpired risks					
Claims administration expenses	2	6	5	3	16
Policy (non-claims) admin expenses for unexpired	5	0	0	0	5
Future reinsurance costs for unexpired risks	0	81	12	1	95
Reinsurance recoveries					
Reinsurance recoveries, undiscounted	0	(15)	(2)	(0)	(17)
Net premium liabilities, undiscounted - central estimate	15	127	61	37	241
Discounting	(0)	(0)	(0)	(0)	(1)
Net premium liabilities, discounted - central estimate	15	127	61	37	240
Diversified risk margin, discounted - 75% PoA					0
Net premium liabilities, discounted - 75% PoA					240

Note that the reason that the risk margin is zero is because the distribution of potential claims is very skewed. The central estimate is the average of all possible outcomes; this includes some very low probability but high severity events. As a consequence, the central estimate (mean) outcome is larger (slightly) than the 75th percentile.

The outcome of the liability adequacy test is often taken as a proxy for the adequacy of the levies (premium rates) that are charged. Consequently, the outcome above suggests that the current levy rates are more than sufficient to cover the expected costs of claims. It should be remembered though that:

- The expected claims costs are currently inflated due to the heightened seismic conditions in Canterbury and Kaikoura.
- The central estimate claims costs included in the premium liabilities do not consider other important considerations such as the skewness of the loss distribution and the desired speed to rebuild the National Disaster Fund.
- EQC's considerations differ from insurers and will include such factors as the Crown's appetite for managing earthquake risk including sources of funding.

8.2.1 Minerva 2.0

EQC are in the process of developing a new catastrophe model for internal use (called PRUE). When this reaches the point where its results might be shared more widely, we will incorporate these results into the premium liabilities calculation.

8.2.2 Other perils

The premium liabilities calculated above relate to large earthquake events (through the Minerva, Canterbury and Kaikoura components) and smaller BAU events. There is no explicit net of reinsurance allowance for other perils that EQC cover, such as Tsunami and Volcanic risk.

There has been some assessment made of these other perils by EQC's science advisors and this detail has been shared with MJW. Unfortunately at this stage, this analysis is not fully suitable for informing the actuarial modelling of the premium liabilities.

We will continue to liaise with the EQC actuarial team to stay abreast of evidence to incorporate 'Other Peril's into the premium liabilities at the next valuation.

We would note that results of the premium liabilities calculation suggest that there could be a further $34 million of expected claims costs before the Unearned Premium Reserve would be impaired.

8.2.3 Material implications of the results

As the net discounted premium liability at 75% probability of adequacy ($240 million) is less than the unearned premium reserve ($273 million) it will not be necessary to hold an additional unexpired risk reserve.

8.2.4 Quality assurance

The premium liabilities methodology has remained unchanged for some time. For a period after the Canterbury earthquake sequence, the premium liability adequacy test resulted in a deficiency, that is, the Unearned Premium reserve (UPR) was less than the premium liabilities, until the most recent levy rate increase was fully implemented. This required the EQC to hold an additional unexpired risk reserve (AURR) amount in the accounts.

Since the valuation as at 30 June 2020 the premium liabilities are now less than the UPR and the AURR is no longer required. Given the significance of this change, we carried out considerable sense checks on the premium liabilities result at that date to ensure that it is reasonable. These can be found in the ILVR as at 30 June 2020 or can be provided upon request.

The primary reason for the change is the increase in EQC levy, improving EQC's premium adequacy.

9 Uncertainty, Limitations and Reliances

9.1 General comment

There is inherent uncertainty in any estimation of insurance liabilities – estimates of liabilities are based on assumptions and deviations from estimates are normal and to be expected. The estimates are therefore a probability statement rather than an absolute judgement.

The actual ultimate incurred claim costs arising from the Canterbury earthquake events and the Kaikoura earthquake will not be known until the last claim is settled.

9.2 General sources of valuation uncertainty

The general sources of error in the estimation of liabilities include:

- Normal variation that is inherent in any random process.
- The difficulties in representing all aspects of a real world process in a valuation model.
- Incorrect valuation assumptions arising from:
  - Assumptions being derived from an unrepresentative sample.
  - Underlying experience drifting over time and chosen assumptions failing to accurately follow the 'drift' – this could be due to internal factors such as changes in the claims process or external factors such as changes in the legal environment, cost inflation etc.
- Incomplete or poor-quality data.
- Errors in calculations.

All of these sources of error are potentially present in this investigation.

9.3 Key uncertainties

9.3.1 Exceptional uncertainties arising from the Canterbury earthquakes

The Canterbury earthquakes have resulted in a high level of uncertainty. Some of the key sources of uncertainty are:

- The impact of multiple events on the allocation of damage, EQC coverage and EQC's reinsurance coverage.
- Claims development. There has been considerable progress within EQC in regard to the operational aspects of assessing and settling claims, especially in processing land claims. However, for a number of reasons, outcomes of that progress cannot be fully reflected in the information available for the valuation, and so there remains residual uncertainty in the valuation results.
- Legal uncertainties outside the EQC Act. These are outside the scope of this report.
- Whether a particular property has been satisfactorily resolved without reopening.

Consequently, even at this relatively late stage of claims development, there is still a degree of unavoidable uncertainty regarding the future claims costs.

As noted in our previous reports, as the claims are settled and as the reasonableness of the model and its assumptions are refined and tested against the emerging claims experience, the level of uncertainty will reduce.

9.3.2 Uncertainties arising from the Kaikoura earthquake

The magnitude of and settlement approach to the Kaikoura earthquake resulted in a high level of uncertainty. Although it is being settled considerably quicker than the Canterbury earthquake sequence, there is still some uncertainty remaining to identify, quantify and cash settle all earthquake damage. It is acknowledged that much of this may simply be in respect of reporting. Specific sources of uncertainty include:

- The Memorandum of Understanding ('MoU') placed claims handling in the hands of insurers although almost all of these have been transferred to EQC. The MoU has created some challenges and has reduced the usefulness of historical analysis on EQC's data as this has largely been held by insurers since the event.
- There are some outstanding claims for multi-unit buildings in Wellington that are being managed by insurers.

9.3.3 Data sources

EQC has a number of data systems that enable it to settle claims. There are a number of issues with these systems from a management reporting perspective and this includes the data that is used for the actuarial valuation.

It has not inhibited our ability to produce an estimate of the ultimate claims costs, but it does add uncertainty to that estimate.

9.4 Limitations

In this report, we provide the results of our investigations together with an outline of the matters considered and the methods and assumptions applied to obtain these results. Opinions and estimates contained in this report constitute our judgement as at the date of the report.

This report must be read in its entirety. Individual sections of the report, including the Executive Summary, could be misleading if considered in isolation from each other.

This report is addressed to the management and Board of EQC and should not be provided to or used by any other party (except as specified below) without the express written permission of MJW. This limitation has been provided with the intention of preventing the use of the report for purposes for which the analysis was not intended. MJW will not be liable for the consequences of any third party acting upon or relying upon any information or conclusions contained within this report.

MJW has agreed to a request from EQC that this report may be provided to EQC's Minister, auditor, reinsurance broker (Aon), reinsurers, legal counsel and the New Zealand Treasury. In agreeing to this request, we point out in particular that this report is addressed to EQC, and therefore we do not warrant or represent that any information, analysis or results set out in it are sufficient or appropriate for any other party's purposes. This report cannot substitute for any investigations that any other party may wish to carry out for its own purposes, and the authors of this report and MJW will not accept any liability to any other party arising from the use of this report.

9.4.1 Official Information Act (OIA)

It is recognised that EQC will publish the ILVR on its website.

This report will be covered by the OIA and therefore will be released subject to any redactions allowable under the OIA.

The limitations above also apply to any other reader of this report.

9.5 Key reliances

In completing this report, considerable reliance has been placed on data and information supplied to MJW by EQC and its external advisors. The most important reliances were placed on the data sources listed in Section D.1.

More details regarding data, information and reliances are set out throughout Section D.

9.6 Quality control and risk management processes

The estimation of EQC's liabilities, particularly the building component, involves constructing multiple complex statistical models.

The data, methodology and results that drive, and are output from, these models undergo a variety of quality control and audit processes.

We undertake to ensure the robustness of these by:

- Internal peer review, including:
  - Detailed review of data, assumptions, methodology and results.
  - Periodic rotation of staff which allows, over time, a 'fresh set of eyes' over aspects of the valuation process.
- Data validation where possible to independent sources (e.g. management accounts, daily reports)
- Analysis of change in assumptions for reasonableness.
- Comparison of results to previous models and valuations.
- Comparing results to alternative models.
- External review, including
  - Discussions with EQC staff
  - Discussions with external auditors at year ends.

Earthquake Commission

11 August 2021

Insurance Liability Valuation as at 30 June 2021

Appendices

MELVILLE JESSUP WEAVER

Willis Towers Watson Alliance Partner

A EQC – Background

A.1 EQC structure and role

EQC is a NZ Government-owned Crown entity whose origins stretch back to 1945 and is currently established under the Earthquake Commission Act 1993 ('the Act') and associated schedules and regulations.

EQC's role may be summarised as follows:

- To provide insurance against insured perils.
- To administer the Natural Disaster Fund (NDF), including investments, and obtain reinsurance.
- To facilitate research and education about matters relevant to natural disaster damage and its mitigation.
- To undertake other functions as required by the Minister of Finance or the Minister Responsible for the Earthquake Commission.

A Government Guarantee supports EQC's financial obligations.

Details on EQC's operations including what is covered under EQC insurance, can be found on its website www.eqc.govt.nz or in previous ILVRs.

A.1.1 Reinstatement of cover limits

Following the High Court's declaratory judgment on 2 September 2011 (EQC v the Insurance Council / Vero / IAG; and Tower Insurance v EQC) the issue of the reinstatement of EQC's cover after an event has now been clarified.

In summary, EQC is generally liable for up to the cap for each building claim; i.e. there is immediate reinstatement of cover after each natural disaster event as long as the contract of fire insurance is in force.

A.1.2 Change in EQC cover from 1 July 2019

For policies incepting from 1 July 2019 EQC no longer provides cover for contents claims. Also, the cap for building claims has been increased from $100+GST to $150k+GST.

As at this valuation it is assumed that all policies now have this new level of cover.

A.2 Direct EQCover

Section 22 of the Earthquake Commission Act 1993 (EQC Act) - Voluntary insurance against natural disaster damage - provides that "On application made by any person having an insurable interest in any residential building or residential land, the Commission may enter into a contract to insure that building or land under this Act against natural disaster damage for such period and to such amount (not exceeding the amount which would apply if the property were insured under any of sections 18 to 20) and upon or subject to such conditions as the Commission thinks fit."

B Canterbury land settlement

B.1.1 Ministerial Direction - Unclaimed damage

Given the need to apportion the costs of the claims between the various earthquake events, there is the issue that damage may be deemed to have occurred on events for which no claim has been lodged.

In these cases, there is therefore a possibility that the insured may not be covered for all of the damage that has occurred due to a lack of claim lodgement for a particular event. As a consequence, there have been a number of Ministerial Directions to clarify the issue.

For the purposes of this ILVR, the relevant directions were given on:

- 19 December 2012. Relates to residential building and states that all apportioned residential building damage will be covered by EQC, so long as at least one valid claim has been made for that residential building.
- 19 December 2013. An amendment to the previous residential building direction stating that no excess shall apply to apportioned damage where no valid claim was made.
- 29 October 2015. Relates to residential land and states that all apportioned residential land damage will be covered by EQC (subject to the land cap), so long as at least one valid claim has been made. Excesses will be deducted from all apportioned damage claim payments

These directions have consequences for the gross and net exposure of EQC in that all damage is covered by EQC (subject to there being at least one claim) but not necessarily the reinsurers.

B.1.2 Remediation of land claim damage

Canterbury land suffered visible and other forms of land damage. Other land damage includes ILV and IFV. Visible flat land damage is broken into 7 categories, descriptions of which can be found on the EQC website www.eqc.govt.nz.

Shown below is the manner in which EQC is settling the various land claim categories. The land damage may be broken down into 4 broad groups as discussed below.

- Repair of damage categories 1 – 7 on the flat.
- Repair of, or compensation for, ILV damage on the flat (formerly known as category 8 damage).
- Repair of, or compensation for, IFV damage on the flat (formerly known as category 9 damage).
- Repair of damage on the Port Hills.

Damage categories 1 – 7 on the flat

The land damage reinstatement costs have been calculated for each property on an individual property basis.

Diminution of value

Diminution of Value (‘DoV’) measures the reduction in a property’s market value which has been caused by IFV or ILV land damage.

This is consistent with the indemnity principle of insurance and has been used by EQC (amongst other options) to settle land claims.

ILV damage on the flat

EQC's policy in respect of ILV damaged land considers

- Whether the property qualifies for settlement
- The costs and ability to repair the land and the DoV that has been incurred.

IFV damage on the flat

Flooding encompasses both flooding from rivers which exceed their capacity during prolonged rainfall and also overflowed flow path stormwater run-off during shorter, more intense rainfall events.

EQC's policy in respect of IFV damaged land considers

- Whether the property qualifies for settlement
- The costs and ability to repair the land and the DoV that has been incurred.

Repair of damage on the Port Hills

Port Hills land damage is more conventional as there is no liquefaction. Compared to damage on the flat, it is more straightforward to assess on a case-by-case basis. However, it is more difficult to assess, estimate and/or reinstate on a grouped basis.

Further details can be found on EQC's website www.eqc.govt.nz.

C Kaikoura Earthquake – Methodology and Assumptions

This appendix summarises the methodology used to estimate the cost of the Kaikoura earthquake of 14th November 2016. The Kaikoura model only deals with damage from the earthquakes, not damage from the storms in Wellington shortly afterward (which are addressed using the standard BAU model).

C.1 Model components

There are two main components to the estimated future cost of Kaikoura claims:

- The cost to settle current open claims
- The cost of claims which will reopen in future.

The open claims component is further subdivided into those claims which have a current case estimate (not a placeholder reserve based on average costs) and those which don't.

C.2 Methodology

C.2.1 Open claims

For each currently open claim we simulate:

- When the claim will close
- For claims with a current case estimate:
  - The future cost as a percentage of the case estimate
- For claims without a current case estimate:
  - Whether the claim will result in some future non-zero cost
  - The amount of that non-zero cost (expressed per dwelling)
  - The total future (over all dwellings)

The case estimate information that we have does not specify whether the estimate relates to land building or contents. As at 30 June 2021 no claims had multiple exposures open.

C.2.2 Reopened claims

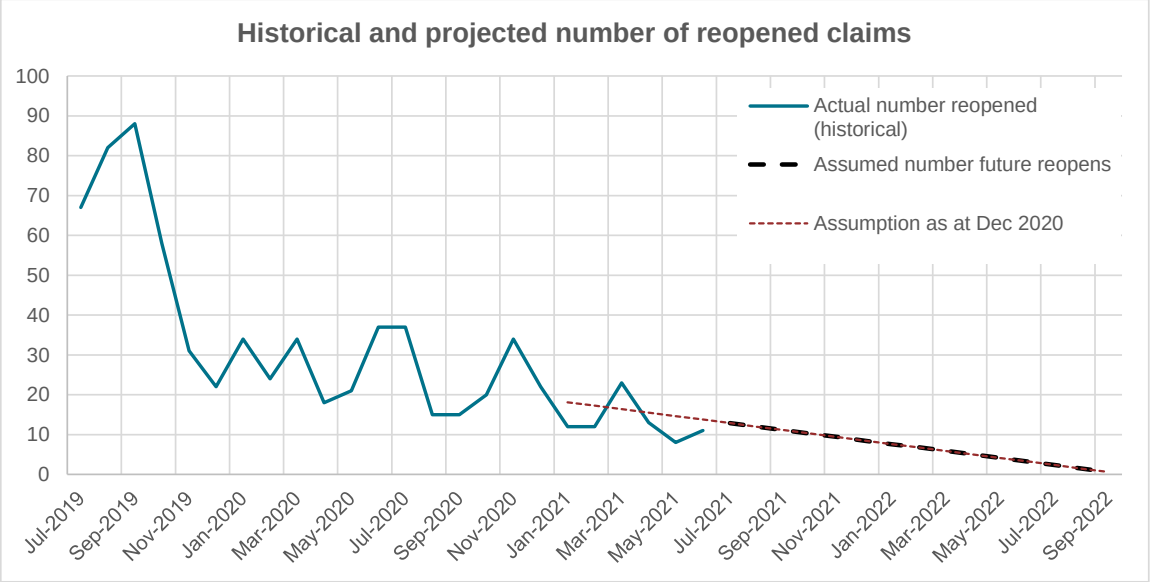
For reopened claims we simulate:

- The number of claims which will reopen in each future month
- Whether the reopened claim will be a land, building or contents claim
- The date upon which each reopened claim will close
- Whether each claim will incur some non-zero future cost
- The number of dwellings associated with each reopened claim
- The future cost per dwelling for each reopened claim
- The future cost (over all dwellings) for each reopened claim

C.3 Assumptions

C.3.1 Number of reopened claims

The chart below shows the historical number of reopened claims, the current assumption going forward, and a comparison to the assumption as at 31 December 2020.

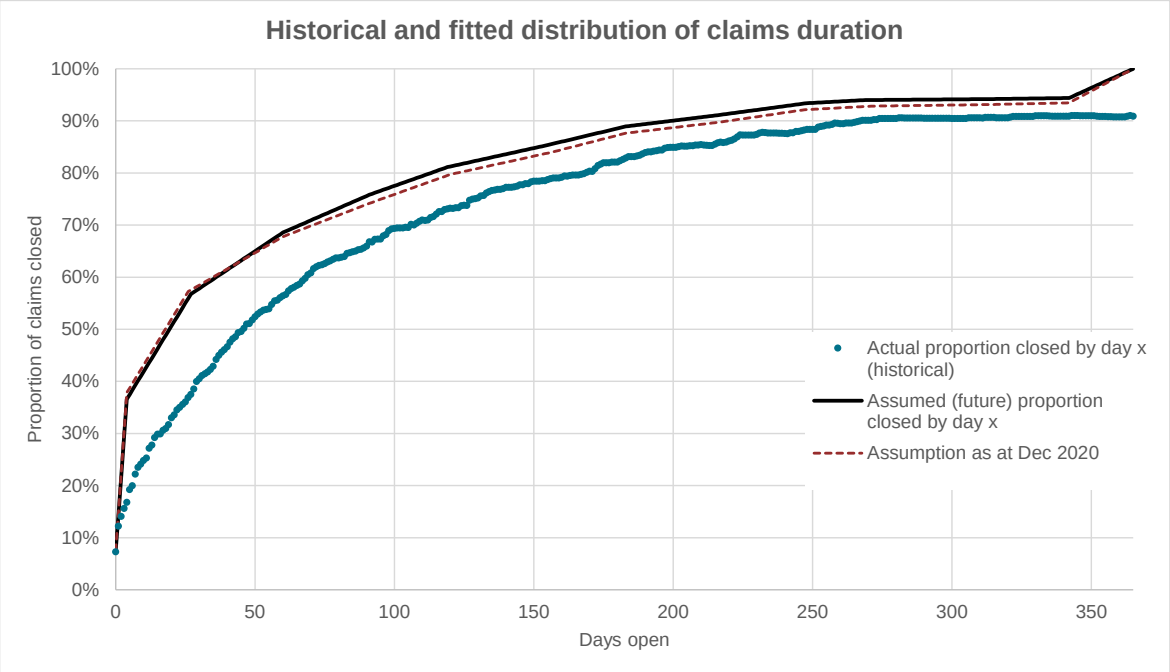


Reopened claims since November 2019 have exhibited a general downward trend, with some volatility. The previous assumption from December 2020 still appears to be a reasonably good fit to the developing trend, so we have retained that assumption. This results in a projected downward trend in reopened claims reaching zero in the latter half of 2022 (although being materially zero sometime before that).

We also considered an alternative scenario in which the number of reopened claims continues at current levels (average over the past six months) for two years and then recommences the downward trend. The results of this are summarised in Section 5.5.

C.3.2 Duration for which claims remain open

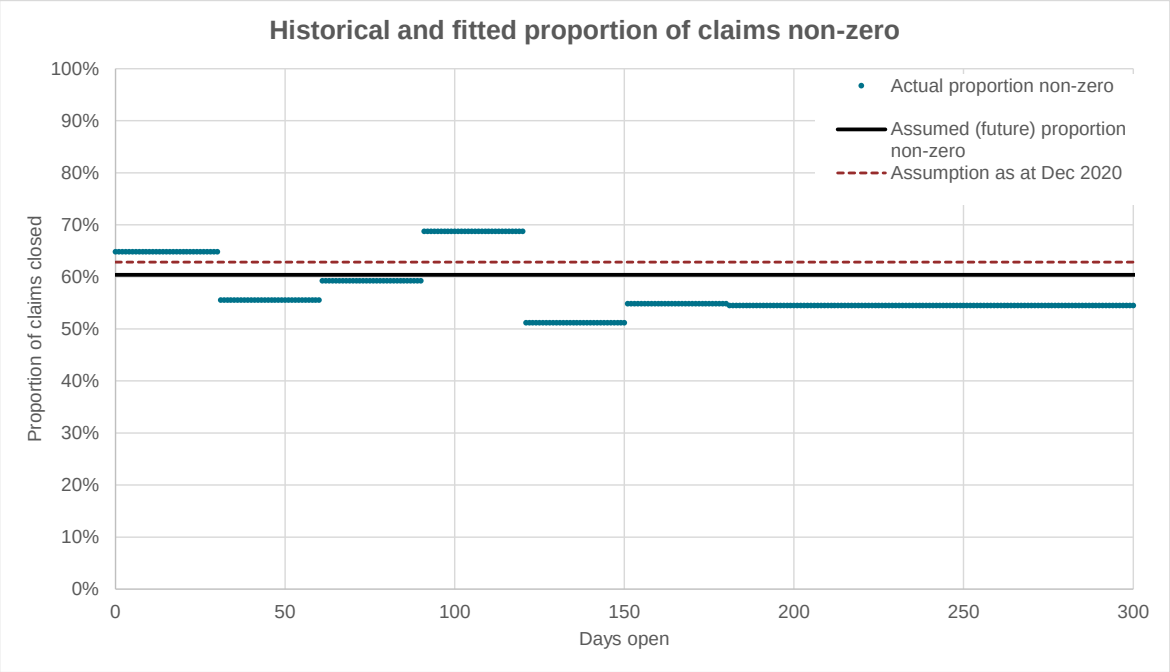
The chart below shows our assumptions regarding the duration from when a claim is (re)opened until it is closed. A comparison to the assumption at 31 December 2020 is also shown.



Our assumptions regarding how long claims remain open for are similar to those at December 2020. This was determined by incorporating another six months data to the analysis. The blue 'actual' dots show the actual proportions closed looking at all claims closed since June 2019. However, an analysis of monthly trends suggests a slightly faster closure distribution than would be implied by averaging over all closed claims.

C.3.3 *Proportion of claims resulting in non-zero future cost*

The chart below shows the proportion of claims which are non-zero. We have categorised the claims according to how many days they remained open (in groups of 30 days), and we assessed proportion in each category which closed at non-zero cost.



The assumed proportion of claims closing at non-zero cost is similar to that at 31 December 2020. There is no clear evidence that the likelihood of a claim closing at non-zero cost varies according to how long it has remained open.

C.3.4 *Split between land, building and contents exposures*

The table below shows the assumed proportion reopened claims which will include each type of exposure. For example, we have assumed that, if there is a reopened claim then there is a 92.5% probability that it will be in respect of a building exposure. This is the same assumption that was used at December 2020.

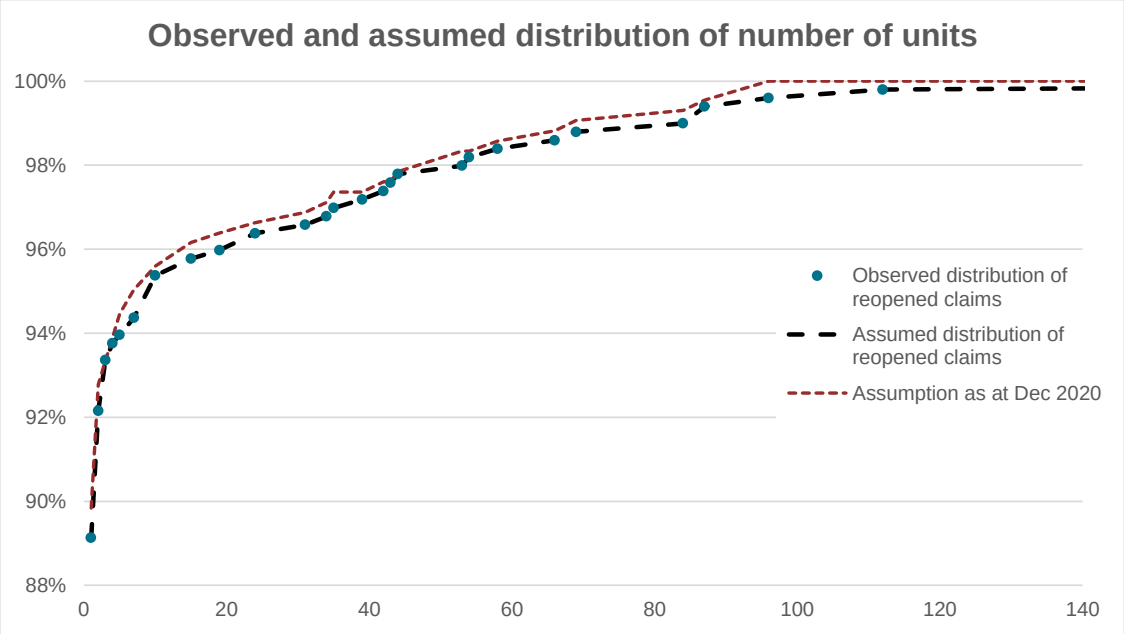
Proportion of (re)open claims by exposure type

	Analysis of historical experience	Assumption going forward
Land	0.8%	0.0%
Building	93.2%	92.5%
Contents	7.4%	7.5%

The historical observed proportions add up to more than 100% because there have been a small number of reopened claims for which more than one exposure has been reopened. We have assumed that any future reopened claims will be for only one exposure.

C.3.5 Number of units for reopened claims

The chart below summarises our assumptions in regard to whether future reopened claims will relate to single or multiple unit buildings and, if multi-units, then the number of units in the building. A comparison to the assumption at 31 December 2020 is also shown.



For example, approximately 89% of recently reopened claims were for single dwelling buildings. The remainder were multi-unit buildings, the largest of which had 326 units. We have used an empirical distribution to model the number of dwellings in future reopened claims. That is, we have assumed that future reopens will follow a similar proportion to that observed to date. We used the same approach at 31 December 2020 which (at that time) produced a slightly different empirical distribution as shown above.

C.3.6 Claim size distribution (where no case estimate)

The table below summarises the assumed claim sizes for future reopened claims and currently open claims (where we don't have a case estimate).

Claim size distribution - assumed

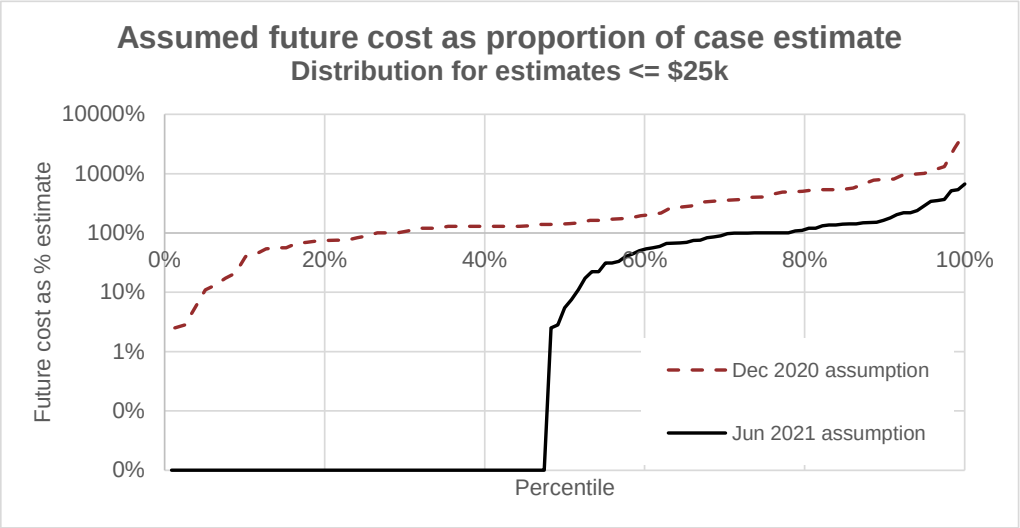
Number of dwellings	Assumption as at Jun-2021 Land	Building	Contents	Assumption as at Dec-2020 Land	Building	Contents
Mean claim per unit						
1	7,500	14,500	7,500	7,000	14,000	8,500
2-10	6,000	7,000	7,000	7,000	7,000	7,000
11+	6,000	7,000	7,000	7,000	4,000	7,000
CoV						
1	130%	130%	130%	130%	130%	130%
2-10	130%	130%	130%	130%	130%	130%
11+	130%	130%	130%	130%	130%	130%

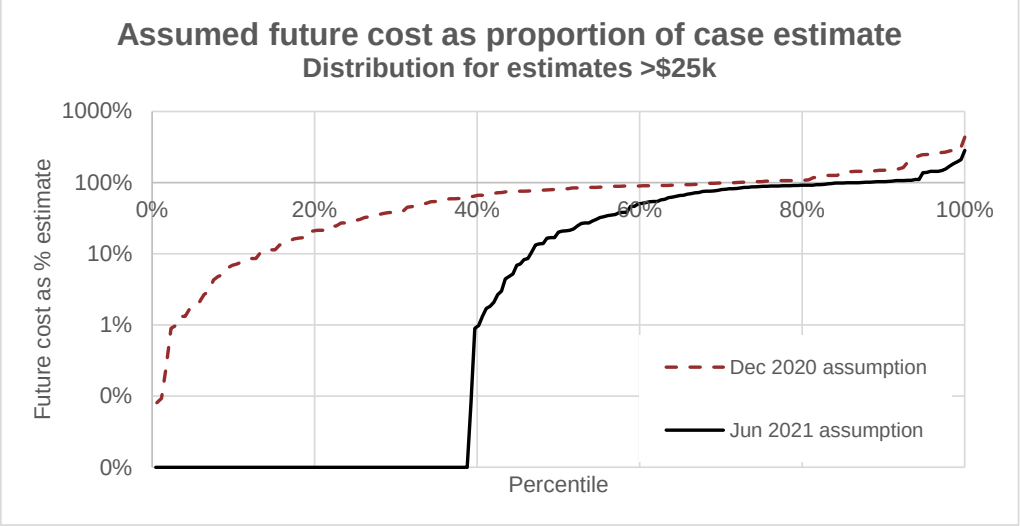
We have assumed that claims will follow a gamma distribution with the mean and coefficient of variation ('CoV') shown above. The assumptions are similar to those used at December 2020.

C.3.7 Claim size distribution as percentage of case estimate

The charts below summarise our assumptions in regard to the future cost for currently open claims as a proportion of the case estimate (where available). Note that the vertical axis scale is logarithmic.

For this valuation we updated our analysis to also consider claims that settle at nil cost, despite there being a case estimate. The proportions of claims for which this is the case is around 40-50% depending on whether the case estimate (prior to closing at nil cost) was above or below $25k. The results in quite a different pattern compared to the assumptions for the December 2020 valuation.





For the two largest open claims (both relating to multi-units) we have taken the case estimates at face value rather than model according to the distribution above. This is because, in one case, the case estimate is based on the maximum EQC cap for the building so that there is no scope for deterioration. In the other case the case estimate is based on an agreed cost to complete the remedial works and is not expected to exhibit as much (relative) volatility as other open claims.

D Data and Information

D.1 Sources of data – Canterbury earthquake claims

The most important sources of data for the Canterbury earthquake investigations were:

- Actuarial Data Extracts from the Claim Centre Claims Information Management System ('ADE').
  - Archived CMSv4 extract from 30 June 2018
  - Data as at 30 June 2021.
- ACE apportionment data from the Business Intelligence Unit ('BIU') – see below.
- Small PAT results - see below.
- EQR paid data.
- Claim & Exposure Gate data as at 30 June 2021
- Transactional listing of all claim payments
- Listing of Kaikoura claim payments from Finance
- Claim-to-address mapping data from the BIU.
- Land cost calculations from EQC & T+T.
- Fletcher Construction completion cost data.
- Trial Balance as at 30 June 2021.
- A Minerva model run generated in January 2011.
- Discussions with EQC employees and contractors.
- Assorted other EQC data sets to assist with estimating reopened claims.

D.1.1 ACE & Small PAT

Properties with building damage are managed either by EQC or by the relevant insurer. Generally, all properties with building damage less than the EQC cap ($100,000 +GST at the time of the Canterbury earthquakes) per claim will be managed by EQC with the remainder ('overcap properties') managed by the insurer.

To assess whether a property is overcap, a manual Apportioned Cost Estimates ('ACE') process is carried out. This will indicate whether any claim has expected damage of more than the cap and therefore whether it should be handed over to the insurer. All overcap properties, and some undercap properties, have ACE data.

Undercap properties were not, as a rule, manually apportioned. For the purposes of the valuation and for reinsurance, undercap properties have been apportioned using a statistical model, developed by the statistician, Dr David Baird. The statistical apportionment method is referred to as Small PAT (Proxy Apportionment Tool).

D.1.2 Actuarial Data Extract from ClaimCenter

Actuarial Data Extracts (ADE) have been taken from ClaimCenter v8. This was combined with the last extract from CMSv4 which is now in a read only state.

We have used extracts from both versions of ClaimCenter along with other complementary data sources as not all claims payments (such as legal payments) have been recorded in the new Claims management system.

V4 and V8 are structured as single database tables. Each record relates to a single claim (itself relating to up to three sub-claims) with many fields describing the claim's details.

D.1.3 ACE damage data

The ACE damage data (as at 30 June 2021) consisted of a table, provided by EQC's Data Engineering team, showing apportioned damage estimates for a number of Christchurch properties. There were approximately 130,000 properties in the table although many of these have not been populated with apportionment information. There were 52,634 approved properties from this data set that were used in the building model. The table below details how the usable properties were derived from the total data set. It is in respect of all review statuses.

ACE data cleaning process

	Number of Properties	Sum of Raw ACE Estimates EQ1 $m	EQ2 $m	EQ3 $m	EQ4 $m	AS $m	Total $m
Raw ACE Data	129,529	s9(2)(j)					7,857
Remove:							
NAs	(73,060)						-
Duplicates	(41)						-
Property ID errors & non-approved	(3,794)						(426)
Extremely large estimates (>$100m)	0						-
Data used in model	52,634						7,431

D.1.4 EQR paid data

The EQR paid data (as at 30 June 2018) consisted of a table, provided by the BIU, showing the amounts paid to substantively completed properties. There were approximately 68,000 properties from this data set used in the model. This dataset is now static.

D.1.5 Tonkin + Taylor land data and assumptions

The land valuation model has been constructed using information primarily from CMS and supplemented with information from EQC and their advisors.

D.1.6 Output from the Minerva loss model

Output from the Minerva model was the same as that used for the 30 June 2012 valuation. This output was provided by EQC in July 2011.

The premium liabilities that were derived using this information were sense checked against a variety of other models for this valuation.

D.2 Sources of data – Kaikoura earthquake claims

D.2.1 Actuarial Data Extract from ClaimCenter

The ADE was also used to assist in the Kaikoura earthquake claims costs. Case estimate information was taken from the Kaikoura Tracker. The Kaikoura Tracker is an extract from CMSv8 and includes a number of fields not in the ADE (such as case estimates).

D.2.2 Kaikoura Data Management System (KDMS)

After the migration to CMSv8, insurer-managed Kaikoura claims were recorded in KDMS rather than CMSv8. With claims now being handed back to EQC, KDMS is no longer being used and claims are now managed in CMSv8.

D.3 Sources of information

The additional sources of information used for the investigation were:

- Trial balance for the period ending 30 June 2021.
- Small PAT results.
- Reports supplied by the Fletcher Construction EQR.
- T+T land claims cost model.
- Information from the Treasury website.
- Discussions and correspondence with various relevant EQC staff, contractors and advisors.

D.4 Validation of data

The data validation process carried out for this valuation compares the ADE CMSv4 / CMSv8 extract used for the loss run.

D.4.1 ADE vs Loss Run data from finance

This table shows the comparison between the actuarial data extract against the (CMSv4 and CMSv8 combined) payments file provided by EQC Financial Control.

Claims validation
30 June 2021

	Event					
	EQ1 $000s	EQ2 $000s	EQ3 $000s	EQ4 $000s	AS $000s	Total $000s
ADE	s9(2)(j)					
Building						5,728,978
Land						376,353
Contents						478,593
Total						6,583,924
CMS Payment file						
Building						5,728,289
Land						376,226
Contents						478,593
Total						6,583,108
Difference						
Building	378	934	244	5,164	(6,032)	689
Land	(118)	320	0	5	(80)	127
Contents	(15)	29	9	51	(73)	0
Total	245	1,283	253	5,220	(6,184)	816

D.4.2 ADE vs Trial Balance

This table shows the comparison between the actuarial data extract against the Trial Balance provided by EQC Financial Control.

Claims payments
Reconciliation of ADE (30 June 2021) to trial balance

	Payment Type		
	ClaimCentre $m	EQR $m	Total $m
Actuarial Data Extract			
EQ1	s9(2)(j)		
EQ2			
EQ3			
AS/EQ4			
Total	7,136	2,563	9,698
Trial Balance			
EQ1	s9(2)(j)		
EQ2			
EQ3			
AS/EQ4			
Total	7,140	2,560	9,699
Difference			
EQ1	3	4	8
EQ2	(6)	(40)	(46)
EQ3	(3)	61	58
AS/EQ4	2	(23)	(21)
Total	(4)	3	(1)

NB that the Actuarial data Extract payments have been augmented by the LINZ payment and the IF settlement payments.

D.4.3 Internal consistency of CMSv8 data

We performed some validation checks on the CMSv8 data to ensure that:

- CMSv8 claimheader and CMSv4 / CMSv8 transactions datasets were consistent.
- CMSv8 datasets were consistent between valuations.

A summary of these checks is available upon request.

D.4.4 Summary

In summary, the reconciliations showed that the data used for the valuation was appropriate and correct.

Overall the level of agreement is satisfactory for our purposes.

D.4.5 Other data

The other data sources were not able to be reconciled against the accounts but were reconciled against other sources where relevant and possible.

D.5 Reliances

The key data and information upon which we have placed reliance are described in Sections D.1 to D.3 above.

D.6 Concerns and qualifications

D.6.1 General comments regarding the data held by EQC

The two main areas of concern with respect to the use of the data for actuarial purposes are that:

- The claim payment information is held in many different systems which makes it challenging to capture all payments. This is being slowly rectified with more claim payments being recorded in CMSv8, with appropriate categorisation tags to indicate which are EQC covered, outside the Act etc.
- The data fields that are useful for actuarial modelling are not always captured in these systems, or in a suitable format. An example of this includes the inability to identify the reason for each payment that has been made.

This makes it more difficult to analyse trends and justify the assumptions that are chosen. This has been mitigated to some extent through the management of the Claim Stage Gate report maintained by the Canterbury Team, which is now implemented within CMSv8.

D.7 Recommendations

D.7.1 Progress against previous recommendations

The data-related recommendation from the previous report was:

- In respect of Data. Undertake a review of the data capture process to ensure that as much data as possible may be effectively utilised.

The progress against this recommendation is as follows:

- Review data capture process *Closed*

D.7.2 Current Recommendations

The manner in which EQC will manage claims from now on will be dominated by the new Insurer Response Model with a small set of claims being managed in-house (via a Cloud version of GuideWire.

Until we are able to observe the operational functionality of the new system, we have no further recommendations.

D.8 Adequacy and Appropriateness

The quality of the results in this report relies on the accuracy and completeness of the data and information supplied. Overall, and subject to the significant but unavoidable issues identified in Section D.6, we consider that the information provided to us was adequate and appropriate for the purposes of this valuation.

E Key Economic Assumptions

Shown below are a list of the key economic assumptions used in the valuation.

E.1 Base inflation

The base inflation rate is 2.5% per annum.

E.2 Discount rates

To discount the projected claims costs to present values we have used risk free discount rates provided by the Treasury. The rates used as at 30 June are shown below.

Valuation Year (for Annual Cash Flows to 30 June)	Forward Rate as at 30 June 2021	Forward Rate as at 31 December 2020
2022	0.38%	0.24%
2023	0.81%	0.28%
2024	1.18%	0.39%
2025	1.53%	0.60%
2026	1.84%	0.84%
2027	2.12%	1.08%
2028	2.38%	1.32%
2029	2.60%	1.55%
2030	2.79%	1.77%
2031	2.98%	1.99%
2032	3.14%	2.20%
2033	3.29%	2.39%

E.3 Payment patterns

The payment pattern assumptions for the Canterbury components are below.

Beginning Period	End Period	Average Payment	Time to payment	Total % Cumulative Inflated Paid Land	Total % Cumulative Inflated Paid Building	Total % Cumulative Inflated Paid Contents	Total % Cumulative Inflated Paid CHE
1/07/2021	31/12/2021	30/09/2021	0.25	50%	19%	100%	0%
1/01/2022	30/06/2022	31/03/2022	0.75	100%	33%	100%	17%
1/07/2022	31/12/2022	30/09/2022	1.25	100%	45%	100%	34%
1/01/2023	30/06/2023	31/03/2023	1.75	100%	55%	100%	46%
1/07/2023	31/12/2023	30/09/2023	2.25	100%	63%	100%	58%
1/01/2024	30/06/2024	31/03/2024	2.75	100%	70%	100%	69%
1/07/2024	31/12/2024	30/09/2024	3.25	100%	76%	100%	79%
1/01/2025	30/06/2025	31/03/2025	3.75	100%	100%	100%	100%
1/07/2025	31/12/2025	30/09/2025	4.25	100%	100%	100%	100%
1/01/2026	30/06/2026	31/03/2026	4.75	100%	100%	100%	100%

F Outstanding Claims Liabilities – Valuation Methodologies

F.1 Liability components

EQC's outstanding (OS) claims liabilities to be included in its accounts for 30 June 2021 are, in summary, an estimate of the total value of liabilities arising from all claims incurred up to the valuation date of 30 June 2021.

Claims incurred will include both reported and unreported claims as at the valuation date. Liabilities are calculated both net and gross of reinsurance.

The OS claims liabilities include both claim payments that will be made after the valuation date and the associated claims handling expenses.

The direct claims payments have been calculated to include the valid claims costs payable to insureds, as defined by the Earthquake Commission Act 1993 ('the Act'). The claims handling costs include the administration costs and allocated overheads associated with the management of those claims.

Insurance accounting standards also require the OS claims liabilities to be discounted for the time value of money and to include the addition of a risk margin to increase the probability of adequacy of the provision.

Based on the comments above the key liability components are:

- Direct claims costs of reported, open claims; this part of the liability includes an allowance for IBNER (incurred but not enough reported) claims costs where the case estimates are considered to be insufficient.
- Direct claims costs of reported, closed claims that may reopen (Reopened).
- Non-reinsurance recoveries.
- Claims handling expenses.
- Reinsurance recoveries.
- Risk margins.
- Discounting for the time value of money.

F.2 Valuation groupings

The OS claims liabilities are subdivided by:

- Event (EQ1 – EQ4, BAU, KEQ).
- Sub-claim (land, building and contents).

This subdivision is necessary because different cover and reinsurance rules apply to the different valuation groupings and the underlying data for the creation of assumptions also varies.

F.3 Valuation methodology

In summary, the valuation model selected may be described as an aggregate stochastic frequency / severity model. The model itself runs in an MS-Excel spreadsheet and the R statistical package, although the data is stored and manipulated in SQL Server.

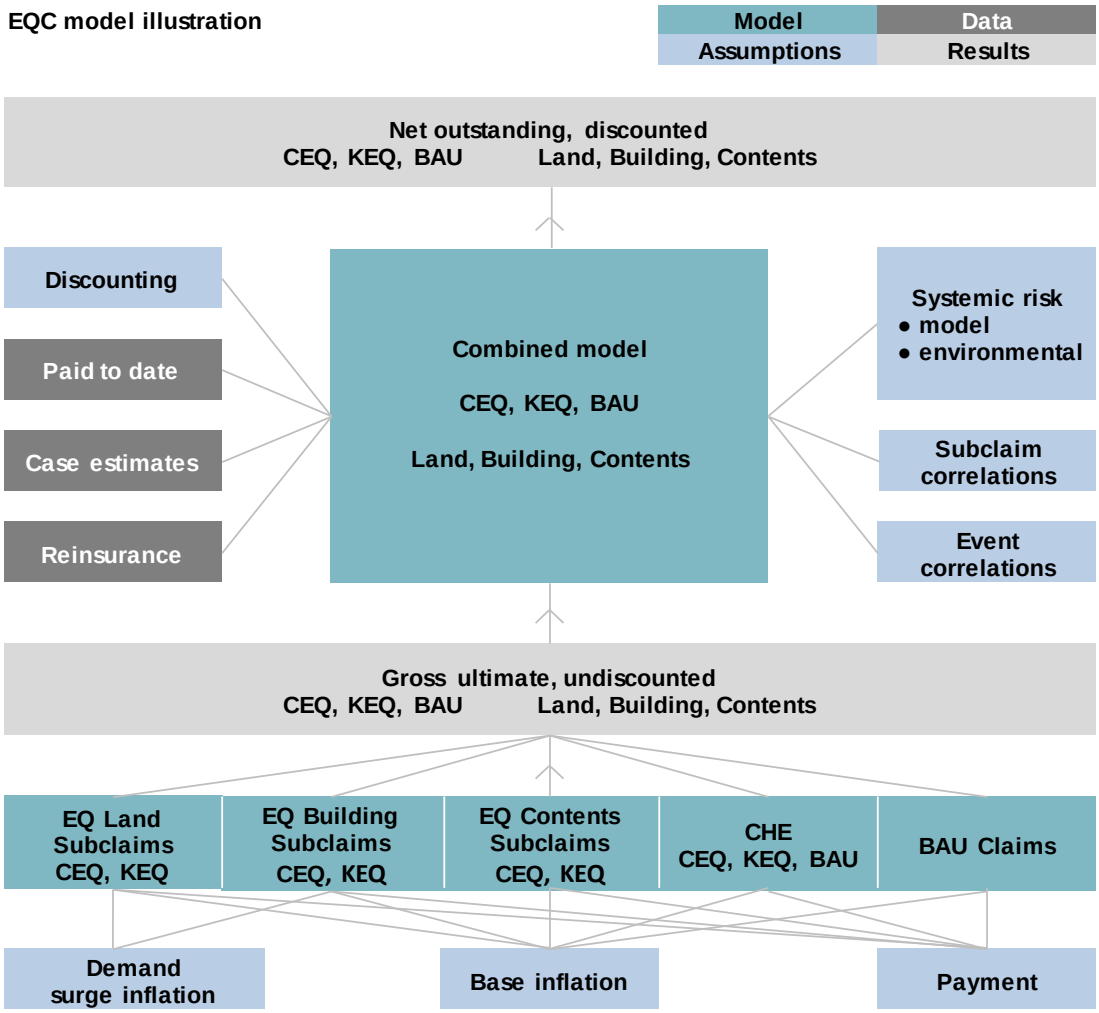
F.4 Gross incurred claims costs

The costs paid to date are known with certainty, but those to be paid in the future are unknown and so must be estimated. The approach that we have taken is to first estimate the projected ultimate claims costs and then to deduct payments made to 30 June 2021 in order to determine the estimated OS claims liability.

F.4.1 Diagrammatic illustration of the valuation model

The diagram below illustrates the components and overall structure of the valuation model.

The structure represents the process for a single run of the model. Each event will have its own unique set of assumptions but needs to be run in parallel in the model as it is the aggregate claims position across the whole entity that must be captured.



The model is run 10,000 times and the output (which is subdivided by the valuation groups described earlier) from each run is collected to form an aggregate gross claims distribution. The central estimate claims cost is found by taking the mean value of the distribution and the 85% probability of adequacy estimate is found by taking the 85th percentile of the distribution.

F.5 Assumptions required

The assumptions required are driven by the structure of the valuation model. For a full set of assumptions, please contact the authors.

G Premium Liabilities – Methodology and Assumptions

G.1 Liability components

In summary, EQC's premium liabilities are an estimate of the total value of net liabilities associated with the run-off of EQC's unexpired risks as at 30 June 2021. The focus is therefore on claims incurred as a result of events after the 30 June 2021 valuation date, i.e. future claims. This is in contrast to the OS claims liabilities, which relate to claims incurred up to 30 June 2021, i.e. past claims.

The premium liabilities comprise several components:

- The cost of future claims (net of reinsurance) arising from the unexpired risks.
- The claims handling expenses for the future claims arising from the unexpired risks.
- The cost of policy administration for the run-off of the unexpired risks.
- The cost of the reinsurance cover for the unexpired risks.

The estimate is set at a 75% probability of adequacy and discounted for the time value of money.

The premium liabilities are not included in EQC's balance sheet but will be used for the Liability Adequacy Test (LAT) of the unearned premium reserves (UPR). If the premium liabilities exceed the unearned premium reserves, then an additional unexpired risk reserve is required to make up the extent of shortfall. If the premium liabilities are less than the UPR then the UPR remains unchanged.

G.2 Valuation groupings

Because the focus of the premium liabilities is on future claims – for which, by definition, there can be no claims data held by EQC - the valuation groupings used for the premium liabilities are very different from those used for the OS claims liabilities.

G.2.1 Event valuation groupings

As we are now dealing with future claims it is not possible to categorise claims by event dates, however we must consider the sources from which future claims may arise. At the time of writing this report these are:

- 'BAU' (Business As Usual) claims
- Minerva claims - catastrophe event claims arising from earthquakes in New Zealand outside Canterbury
- Enhanced seismicity claims – claims arising from future earthquakes in the Canterbury or Kaikoura earthquake sequence.

The first two event groups above are traditional ones for the estimation of EQC's premium liabilities. The last item reflects the fact that the first two items were based on a 'stable' environment whereas the seismic conditions are more uncertain now. It is expected that this component will reduce over time as seismic conditions stabilise.

G.3 Valuation methodologies

We have decided to use a stochastic approach as it facilitated the determination of the risk margin and allowed us to directly model the effects of the catastrophe reinsurance.

This is consistent with the approach used for components of the OS claims liabilities so some of the assumptions developed for that work have been used.

G.4 Changes in methodology

The methodology has not materially changed from the previous valuation.

G.5 Assumptions required

The assumptions are driven by the valuation methodology. In the following sections, we set out the assumptions for each event group and provide some background to the assumption and how it was derived.

G.5.1 Minerva

The Minerva component is based on output from the Minerva model in 2011. The only assumption used here is the inflation rate, which is 2.5% p.a.

G.5.2 BAU

The assumptions used for the BAU component are frequency and severity based. Please see the authors for details on these assumptions.

G.5.3 Enhanced seismicity claims

The Enhanced seismicity claims component is based on the probabilities of aftershocks in the Canterbury and Kaikoura region. The tables are available from the authors upon request.

G.5.4 Non-acquisition expenses

The premium liabilities require assumptions on the policy administration costs and the costs to manage and settle claims. It is assumed that:

- The average annual policy administration costs for unexpired risk are $5m
- The average claims handling cost per claim is $4,440.

G.6 Changes in assumptions

The principal assumption changes relate to the probabilities relating to enhanced seismicity in Canterbury and Kaikoura. The latest GeoNet Canterbury forecasts were released on 1 September 2020. The latest GeoNet Kaikoura forecasts were released on 9 November 2020.

H Detailed movement analyses

H.1 Canterbury earthquake claim liabilities

The tables below detail the movement in estimated claims between 31 December 2020 and 30 June 2021. Event specific breakdowns (EQ1/2/3/4) can be provided to interested parties.

H.1.1 Land claims

The table below details the movement in estimates for the Canterbury land claims.

Canterbury land liabilities
Movement from 31 December 2020 to 30 June 2021

	Paid to date $000s	Estimated future $000s	Estimated ultimate $000s
Position as at 31 December 2020			
Open claims	577,618	1,076	578,694
Litigation	0	0	0
Total	577,618	1,076	578,694
Expected payments between Dec-2020 and Jun-2021			
Open claims	538	(670)	
Litigation	0	0	
Total	670	(670)	
Expected position as at Jun-2021			
Open claims	578,288	406	578,694
Litigation	0	0	0
Total	578,288	406	578,694
Actual minus expected payments between Dec-2020 and Jun-2021			
Open claims	(282)	282	
Litigation	0	0	
Total	(282)	282	
Position as at Jun-2021 using rolled forward actual payments			
Open claims	578,006	687	578,694
Litigation	0	0	0
Total	578,006	687	578,694

(Continued below)

(Continued from above)

Canterbury land liabilities

Movement from 31 December 2020 to 30 June 2021

	Paid to date $000s	Estimated future $000s	Estimated ultimate $000s
Impact of adjusting for actual experience over the period			
Open claims		389	389
Litigation		0	0
Total		389	389
Position as at 30 June 2021 using previous methodology and assumptions			
Open claims	578,006	1,076	579,082
Litigation	0	0	0
Total	578,006	1,076	579,082
Impact of updating assumptions			
Open claims		1,962	
Litigation		0	
Total		1,962	
Position as at 30 June 2021			
Open claims	578,006	3,038	581,045
Litigation	0	0	0
Total	578,006	3,038	581,045

Note: All figures are gross of reinsurance, undiscounted and exclude CHE

In summary, the movements in the estimated future cost of Canterbury land claims are:

- A smaller than expected reduction due to paying down claims over the period. We expected $0.538 million to be paid. The actual was $0.282 million less at $0.256 million.
- An increase of $0.389 million due to experience over the period. This is because the number of open claims at 30 June 2021 is higher than was expected.
- An increase of $1.962 million due to updating the assumptions for the simplified land model. This is because, despite lower than expected payments over the period, the number of reopened land exposures has not tracked down quite as fast as anticipated.

Like the model at December 2020, the current land model does not include any allowance for litigation as settlements have been paid to the major insurers.

H.1.2 Building claims

The table below details the movement in Canterbury building claims estimates between 31 December 2020 and 30 June 2021.

Canterbury building liabilities
Movement from 31 December 2020 to 30 June 2021

	Paid to date $000s	Estimated future $000s	Estimated ultimate $000s
Position as at 31 December 2020			
CBU Settlements		58,293	
Disputes Resolution		6,673	
GCCRS		16,552	
Onsold Overcaps - undercap component		5,718	
SRES		284	
Claims Assurance		5,312	
Future Reopens		347,947	
Total	8,696,166	440,780	9,136,946
Expected payments between Dec-2020 and Jun-2021			
CBU Settlements		(21,563)	
Disputes Resolution		(2,468)	
GCCRS		(6,123)	
Onsold Overcaps - undercap component		(2,115)	
SRES		(105)	
Claims Assurance		(1,965)	
Future Reopens		(128,708)	
Total	163,047	(163,047)	
Expected position as at Jun-2021			
CBU Settlements		36,730	
Disputes Resolution		4,205	
GCCRS		10,430	
Onsold Overcaps - undercap component		3,603	
SRES		179	
Claims Assurance		3,347	
Future Reopens		219,239	
Total	8,859,213	277,733	9,136,946
Actual minus expected payments between Dec-2020 and Jun-2021			
CBU Settlements			
Disputes Resolution			
GCCRS			
Onsold Overcaps - undercap component			
SRES			
Claims Assurance			
Future Reopens			
Total	(59,244)	59,244	
Position as at Jun-2021 using rolled forward actual payments			
CBU Settlements			
Disputes Resolution			
GCCRS			
Onsold Overcaps - undercap component			
SRES			
Claims Assurance			
Future Reopens			
Total	8,799,968	336,977	9,136,946

(Continued below)

(Continued from above)

Canterbury building liabilities

Movement from 31 December 2020 to 30 June 2021

	Paid to date $000s	Estimated future $000s	Estimated ultimate $000s
Impact of adjusting for actual experience over the period			
CBU Settlements			
Disputes Resolution			
GCCRS			
Onsold Overcaps - undercap component			
SRES			
Claims Assurance			
Future Reopens			
Total		25,418	25,418
Position as at 30 June 2021 using previous methodology and assumptions			
CBU Settlements		42,635	
Disputes Resolution		6,297	
GCCRS		12,044	
Onsold Overcaps - undercap component		10,174	
SRES		0	
Claims Assurance		3,276	
Future Reopens		287,969	
Total	8,799,968	362,395	9,162,364
Impact of adjusting assumptions in line with experience			
CBU Settlements		(4,150)	
Disputes Resolution		1,164	
GCCRS		(873)	
Onsold Overcaps - undercap component		4,026	
SRES		0	
Claims Assurance		2,497	
Future Reopens		(39,315)	
Total		(36,651)	(36,651)
Position as at 30 June 2021			
CBU Settlements		38,485	
Disputes Resolution		7,461	
GCCRS		11,171	
Onsold Overcaps - undercap component		14,200	
SRES		0	
Claims Assurance		5,773	
Future Reopens		248,654	
Total	8,799,968	325,744	9,125,712

Note: All figures are gross of reinsurance, undiscounted and exclude CHE

H.1.3 Kaikoura earthquake claim liabilities

The table below details the movement in estimated claims from the Kaikoura events between 31 December 2020 and 30 June 2021.

Kaikoura liabilities
Movement from 31 December 2020 to 30 June 2021

	Paid to date* $000s	Estimated future $000s	Estimated ultimate $000s
Position as at 31 December 2020			
Land claims	9,629	44	9,673
Building claims	500,985	23,574	524,559
Contents claims	16,149	276	16,426
Total	526,764	23,894	550,658
Expected payments between Dec-2020 and Jun-2021			
Land claims	15	(15)	
Building claims	2,001	(2,001)	
Contents claims	79	(79)	
Total	2,095	(2,095)	
Expected position as at Jun-2021			
Land claims	9,644	29	9,673
Building claims	502,986	21,574	524,559
Contents claims	16,229	197	16,426
Total	528,858	21,799	550,658
Actual minus expected payments between: Dec-2020 and Jun-2021			
Land claims	(4)	4	
Building claims	15,653	(15,653)	
Contents claims	(73)	73	
Total	15,576	(15,576)	
Position as at Jun-2021 rolled forward using actual payments			
Land claims	9,640	33	9,673
Building claims	518,638	5,921	524,559
Contents claims	16,155	270	16,426
Total	544,434	6,224	550,658

(Continued below)

(Continued from above)

Kaikoura liabilities

Movement from 31 December 2020 to 30 June 2021

	Paid to date* $000s	Estimated future $000s	Estimated ultimate $000s
Impact of adjusting for actual experience over the period			
Land claims		144	144
Building claims		5,410	5,410
Contents claims		(170)	(170)
Total		5,384	5,384
Position as at 30 June 2021 using previous methodology			
Land claims	9,640	177	9,817
Building claims	518,638	11,331	529,970
Contents claims	16,155	100	16,256
Total	544,434	11,608	556,042
Impact of updating assumptions in line with emerging experience			
Land claims		(101)	(101)
Building claims		394	394
Contents claims		31	31
Total		324	324
Position as at 30 June 2021			
Land claims	9,640	76	9,716
Building claims	518,638	11,725	530,363
Contents claims	16,155	131	16,287
Total	544,434	11,932	556,366

Note: All figures are gross of reinsurance, undiscounted and exclude CHE
*Includes amounts paid by insurers and accrued but not yet paid by EQC

In summary, the movements in the estimated future cost of Kaikoura claims are:

- Higher payments than expected over the period. The expected payments were based on a smooth projection over a number of years, whereas the actual payments are dominated by a lump sum payment in respect of apartments.
- An increase due to applying the methodology and assumptions at a new date. This recognises that there have been some notable increases in case estimates for two apartment claims, and the large payment on the apartment claim is not fully reflected in the case estimate (i.e. the estimated ultimate cost of that claim has increased).
- Very little net impact due to updating the assumptions in line with experience since the December 2020 valuation.

H.1.4 BAU claim liabilities

BAU outstanding claims liabilities

Movement from 31 December 2020 to 30 June 2021

	Claims incurred up to 31 December 2020				Claims incurred after 31 December 2020				All claims			
	Land $000s	Building $000s	Contents $000s	Total $000s	Land $000s	Building $000s	Contents $000s	Total $000s	Land $000s	Building $000s	Contents $000s	Total $000s
Central estimate outstanding claims as at 31 December 2020	**12,395**	**9,084**	**10**	**21,488**								
Less: expected payments between Dec-2020 and Jun-2021	6,009	4,404	5	10,418								
Expected central estimate as at Jun-2021	6,386	4,680	5	11,070								
Less: actual minus expected payments between Dec-2020 and Jun-2021	1,184	(116)	(5)	1,064								
Central est as at Jun-2021 rolled forward using actual payments	5,201	4,795	10	10,006								
Adjust for actual experience being different to expected	(3,946)	(4,344)	(10)	(8,300)								
Plus: outstanding for claims incurred after Dec-2020					4,775	3,120	0	7,895				
Central est OSC as at Jun-2021 using previous assumptions	1,255	451	(0)	1,706	4,775	3,120	0	7,895	6,031	3,571	(0)	9,602
Adjust for changes to assumptions	186	(73)	0	113	(462)	(731)	0	(1,193)	(276)	(804)	0	(1,080)
Central estimate outstanding claims as at 30 June 2021	1,441	378	(0)	1,819	4,313	2,389	0	6,702	**5,754**	**2,767**	**(0)**	**8,522**

Note: All figures are undiscounted and exclude CHE

I Sensitivity of key assumptions

There are a number of key provisions in this valuation. These will be updated for the final valuation report.

Shown below are sensitivity analyses for these items.

I.1 Future reopened claims

In respect of the future reopened claims, sensitivity analysis has been carried out in respect of:

- The number of claims that reopen. (Base = 4.5 years)
- The nil claim rate attributable to these claims (Base = 40%)
- The average cost incurred by the reopened claims (Base = $40k)

		Number claims	Nil claim rate	Avg Cost $	Future Cost $m	Change $m
Base		11,510	40%	36,000	248.6	0.0
Projection						
	-10%	10,359	40%	36,000	223.8	(24.9)
	+10%	12,661	40%	36,000	273.5	24.9
Nil claim rate						
	-10%	11,510	30%	36,000	290.1	41.4
	+10%	11,510	50%	36,000	207.2	(41.4)
Avg Cost						
	-$10k	11,510	40%	26,000	179.6	(69.1)
	+$10k	11,510	40%	46,000	317.7	69.1

I.2 Economic assumptions

In earlier versions of the ILVR, sensitivity analyses were carried out on economic assumptions, including inflation, discount rates and demand surge. The result of these analyses produced results that were relatively immaterial compared to the key parameters detailed above.

Consequently, this analysis has not been reproduced for this valuation.

I.3 Kaikoura assumptions

The table below summarises the sensitivity of the estimated outstanding claims liabilities for the Kaikoura event to the main assumptions used in the model. The assumption changes are shown as absolute movements e.g. the +10% increase to 'claim cost as % of case estimate' shows the impact of shifting the empirical distribution upward by a flat 10%.

Kaikoura sensitivity testing summary as at 30 June 2021
Central estimate outstanding claims (undiscounted, excl CHE)

		Result $m	Difference from baseline $m
Baseline result		11.9	
Sensitivity results			
Claim cost as % of case estimate	+10%	12.2	+0.3
Claim cost as % of case estimate	-10%	11.8	(0.1)
Average claim size	+$1,000	12.2	+0.3
Average claim size	-$1,000	11.7	(0.2)
Probability claim is non-zero	+10%	12.3	+0.4
Probability claim is non-zero	-10%	11.6	(0.3)
Number of future reopened claims	+10 claims	12.2	+0.2
Number of future reopened claims	-10 claims	11.7	(0.2)

J BAU sense checks

For this valuation we considered a number of other (more traditional) methodologies for estimating the BAU outstanding claims liabilities. This exercise had two purposes:

- To consider whether a simpler BAU methodology might be appropriate.
- To validate the reduction in outstanding claims liabilities resulting from the change in assumptions noted in Section 7.4 above.

We considered two triangulation type methodologies with various parameters:

- Chain ladder on paid claims:
  - Applied either monthly or quarterly
  - Applied separately for earthquake vs. flood/storm/landslip, or in aggregate across all events
  - Applied separately for land and building payments, or in aggregate
  - Basing assumptions on the last 12/24 months, 8/16 quarters, or the full history available to June 2018
- Payments per claim finalised ('PPCF')
  - Same parameter variations as the chain ladder method, except for separate land and building exposures

We could not readily apply the PPCF method separately for land and building payments as we don't have status history for exposures (only for the claim status as a whole). For the PPFC method we first used a chain ladder to determine the number of future open/reopen claims and then used the PPCF method to project the cost of claims.

The tables below summarises the results, along with some comments on the merit of each approach.

Estimated oustanding* BAU claims using sense check methodology - monthly methodologies

	Assumptions based on: Full history**	Last 24 months	Last 12 months	Comments
Monthly chain ladder on paid claims				
Separate models for different loss causes and exposures	$4.8m	$7.4m	$5.0m	Produces reasonably sensible results. Slightly sensitive to the analysis period for assumptions, but not particularly sensitive to whether loss causes and/or exposures are modelled separately.
Separate models for loss causes, single model for each exposure type	$4.3m	$6.0m	$4.7m	
Separate models for exposure types, single model for all loss causes	$4.4m	$6.6m	$5.0m	
Single model for all loss causes and exposure types	$4.3m	$5.6m	$4.6m	
Monthly payments per claim finalised				
Separate models for loss causes, single model for each exposure type	$6.3m	$6.2m	$6.2m	Quite stable and sensible results, regardless of analysis period selected. Only slightly higher results when analysing exposure types separately.
Single model for all loss causes and exposure types	$6.3m	$5.7m	$6.2m	

*Central estimate undiscounted claims (excl CHE)
**Incorporates all losses since July 2018

Estimated oustanding* BAU claims using sense check methodology - quarterly methodologies

	Assumptions based on: Full history**	Last 8 quarters	Last 16 quarters	Comments
Quarterly chain ladder on paid claims				
Separate models for different loss causes and exposures	$67.1m	$48.3m	$65.2m	Very different results depending on the analysis period selected and whether exposures are modelled together or separately. Some very large outstandings modelled for loss quarters with little development to date. Probably affected by whether an event is toward the beginning or the end of a quarter.
Separate models for loss causes, single model for each exposure type	$67.3m	$49.0m	$64.6m	
Separate models for exposure types, single model for all loss causes	$15.2m	$10.6m	$12.9m	
Single model for all loss causes and exposure types	$17.0m	$11.3m	$14.4m	
Quarterly payments per claim finalised				
Separate models for loss causes, single model for each exposure type	$6.5m	$5.2m	$6.5m	Similar results to the monthly PPCF method, though marginally less stable. Possibly misses some of the detail by grouping at a quarterly level.
Single model for all loss causes and exposure types	$8.1m	$4.8m	$8.1m	

*Central estimate undiscounted claims (excl CHE)
**Incorporates all losses since July 2018

The chain ladder on paid claims does not appear to be an appropriate methodology and is unduly sensitive to early payments on recent events. This issue is exacerbated when applying the methodology quarterly as the development from an event may be quite different depending on whether the loss is early or late in the quarter.

The PPCF method generally produces more stable and reasonable looking results, particularly when applied monthly. This method utilises the data in respect of the number of claims lodged in respect of an event, which develops much faster than the payments resulting from those claims.

The monthly PPCF results are all lower than the estimated outstanding claims liabilities using our current methodology (i.e. $8.5 million). This doesn't necessarily imply that the current methodology overstates the result, but it does give some support to reducing the estimate from $9.6 million by updating the assumptions (see Section 7.4).

For future valuations we may choose to use the monthly PPCF method as it provides a good balance between accuracy and complexity. However, before doing this we would need to consider how to integrate the BAU PPCF method with the other models (Canterbury, KEQ). Currently, the process of combining the separate models utilises the stochastic results produced by each model. PPCF is not a stochastic method.

K Canterbury building reopen sense checks

Given the uncertainty and challenges involved in estimating the number of future reopened Canterbury building claims, we considered whether there were any alternative methods of producing an estimate which might be used as a sense check against the recommended provision. This appendix summarises the results of that sense check.

K.1 Methodology used to determine recommended provision

The methodology used to determine the reopen provision noted in Section 3.2 might be broadly summarised as:

- Treat all properties opened in CMSv8 (after the initial transfer from CMSv4 in April 2018) as reopened properties
- Try to identify which properties were only opened in CMSv8 because of the OnSOC programme and are unlikely to result in any cost to EQC.
- Count the number of properties which have reopened in CMSv8 each month. Where a property has reopened multiple times, only count it once – and attribute the reopen event to the first month in which it reopened.
- Consider the pattern in monthly reopened properties and estimate how long this pattern might continue before trending downward. That is, estimate how many properties might reopen in future which have not yet reopened in CMSv8.
- Consider the amounts paid in CMSv8 attributable to each property and determine a total reopened cost for each property.
- Consider the average cost per reopened property and the proportion closing at nil cost. Apply an average and nil cost assumption to the estimated number of future reopened properties.

This is our chosen method for the provision that we have recommended. Note that this method:

- Relies upon OnSOC properties being identifiable in the data
- Considers the full reopen cost for each property, rather than the individual cost each time it reopens (where it reopens multiple times).
- Requires considerable judgement in estimating the time for which reopened claims will continue at their current rates.

There is also the cost of currently open properties to consider. For these we:

- Categorised them according to the team handling each property (including identifying OnSOC properties and treating them separately).
- Considered the historical average cost per closed property in each of these teams.
- Applied an average cost per property to each currently open property.

Using these methodologies we estimated:

- 1,534 currently open properties
- 11,510 future reopened properties
- $63 million cost to settle currently open properties
- $249 million cost to settle future reopened properties
- $326 million total provision in respect of Canterbury building claims (central estimate gross of reinsurance).

K.2 Methodology used for sense check

In order to sense check the recommended provision in this report, we wanted to apply a slightly different methodology which comes at the issue from a slightly different angle. We used CMSv4 and CMSv8 data available to us to analyse every open and close incident for each claim right back to 2010, although transactional open/close information is only available in CMSv8 (in CMSv4 we only know the first date a claim opened and the most recent date that it closed). We then determined the following definition of a reopened property:

- if any claim on a property is open at the end of the month then that property is open
- conversely, if all claims on a property are closed at the end of the month then that property is closed
- if a property was closed at the start of the month, but at least one claim was reopened during the month then that property reopened
- if a property reopens, closes, then reopens again later - that will be counted as multiple reopens (unless it happens within the same month)

This definition is different to that described in Section K.1 as it allows for a property to be counted multiple times if it reopens more than once.

We then attempted to apply a more traditional actuarial approach to the estimating the future cost in respect of currently open and future reopened claims. We used a variation of the Payments Per Claim Finalised ('PPCF') method. We:

- Analysed the proportion of closed properties reopening each month as a function of the duration since the property was last closed.
- Analysed the proportion of open properties each month which closed.
- Summed the amount paid each month and expressed it as an average based on the number of properties closed that month.
- Made assumptions about the proportions and averages going forward to estimate the total future cost.

We did not attempt to analyse the reasons for reopened claims, nor did we attempt to remove OnSOC claims which may result in no future cost to EQC. However, in Section K.3 below we describe how different time periods were considered to address the recent spike in reopened properties due to the OnSOC programme.

Importantly, the sense check approach does not require us to make highly judgemental assumptions regarding the duration for which reopened claims will continue at their current rate, or the rate at which they might slow down in future. Rather, these are outputs driven by the trend toward fewer reopened properties as the remain closed for longer periods of time. Nevertheless, there is still a considerable degree of judgement involved in selecting the period over which to analyse the data.

K.3 Selection of assumptions for sense check

Our analysis mostly covered the period from May 2018 to June 2021, although that included all properties right back to September 2010 (e.g. if a property was last closed in 2010 but reopened in May 2018 then it still featured in our analysis). We observed a few things:

- The longer a property stays closed, the less likely it is to reopen.
- If a property reopens then closes, there is an increased probability that it will reopen again shortly after closing.
- There are a small number of properties which reopened many years after last closing.

- There is a noticeable spike in the number of properties reopened in CMSv8 around the closure of the OnSOC programme (from September 2020 onwards). Some of these may be due to community confusion around the closure of the programme, whilst others may be OnSOC properties opened in CMSv8 for administrative reasons even though there is not expected to be any cost to EQC.

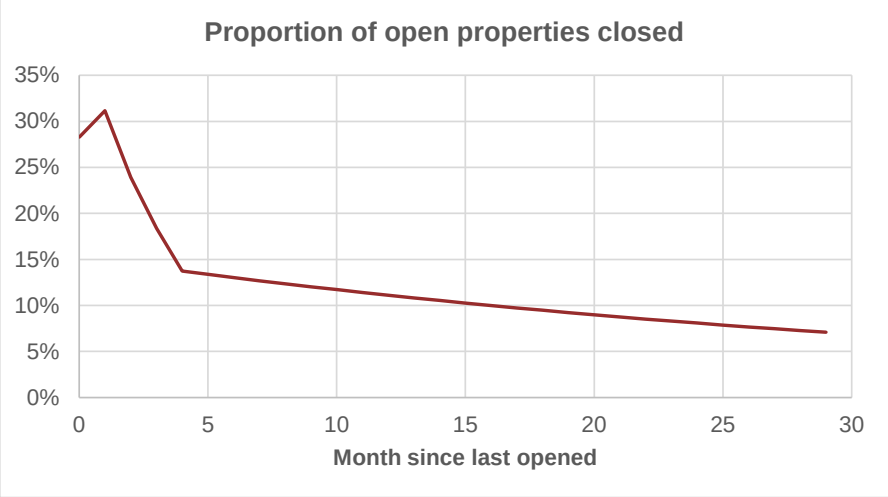
In order to project amounts going forward, one generally tries to use the most recent data as it is considered the most relevant. However, in this case the most recent data has been polluted by the OnSOC programme. To estimate the proportion of closed properties reopening we analysed the experience over two different periods:

- The last 24 months, but excluding the period containing the closure of the OnSOC programme (i.e. analyse from July 2019 to August 2020). [High estimate]
- The period from the start of CMSv8 until the start of the OnSOC programme (May 2018 to September 2019). [Low estimate]

The former is more recent but still includes some pollution in the data due to the OnSOC programme. The latter is older but is completely unpolluted by the OnSOC programme. The former results in a higher assumption and is referred to as the high estimate, whilst the latter is referred to as the low estimate.

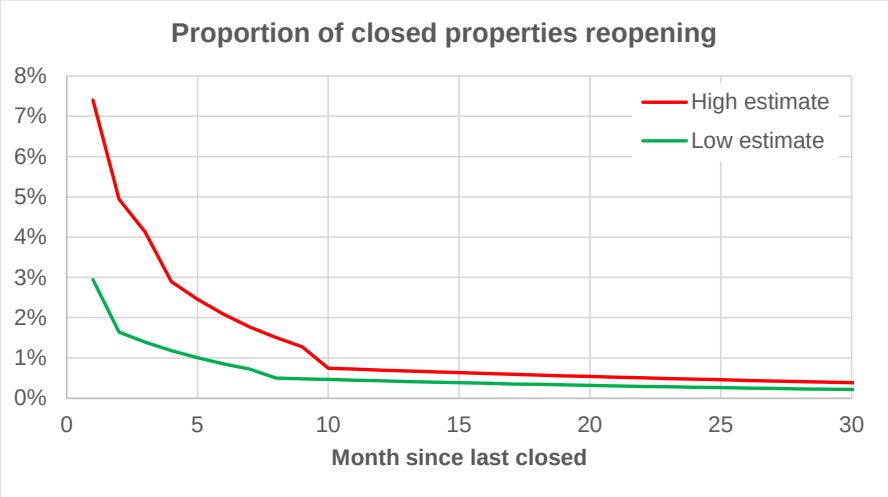
K.3.1 Proportion of open properties closed

The chart below summarises our assumptions regarding the proportion of open properties closed each month. For example, if a property has not yet closed nine months after opening, then we assume that there is approximately a 12% probability that the property will close during the 10th month. The assumption continues beyond 30 months but has not been shown in this chart.



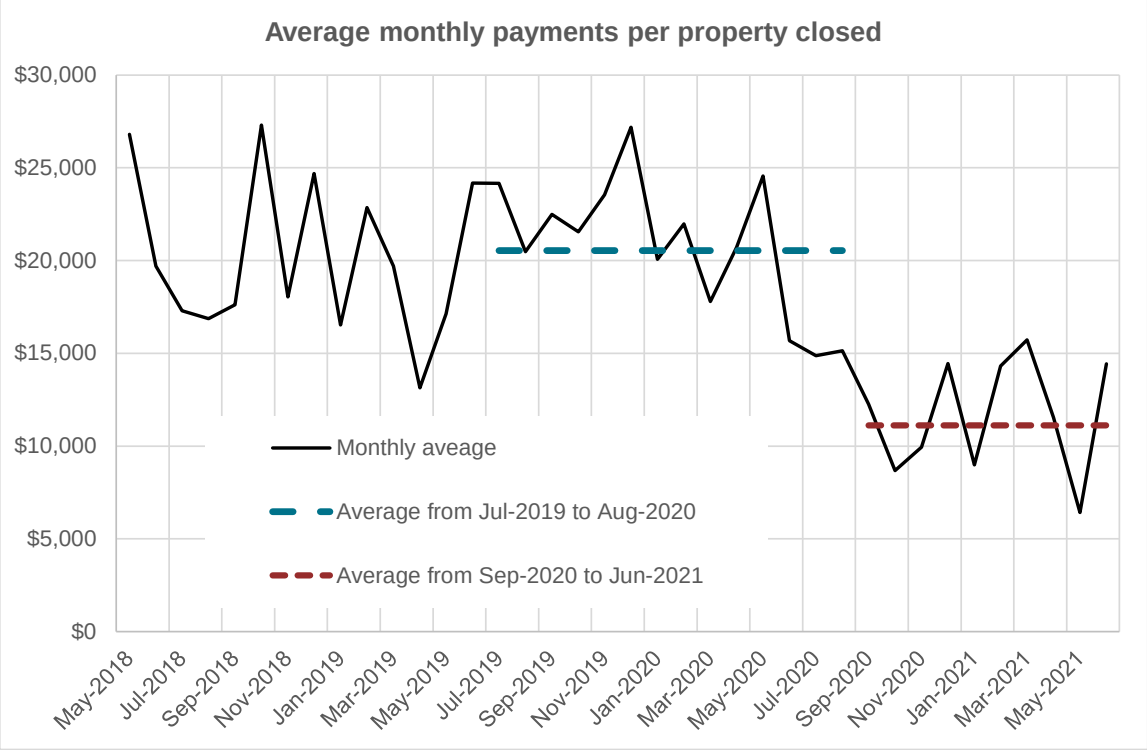
K.3.2 Proportion of closed properties reopening

The chart below summarises our assumptions regarding the proportion of closed properties reopening as a function of the duration since the property was last closed. For example, we have assumed that, if a property has remained closed for nine months then there is approximately a 0.5% probability that it will reopen during the 10th month (under the low estimate). The assumption continues beyond 30 months but has not been shown in this chart.



K.3.3 Average cost per property closed

The chart below shows the amount paid each month, expressed as an average based on the number of properties closed that month. This is effectively the average cost per closed property, although we recognise that not all amounts paid in respect of a reopened property are paid in the month that it closes.



The appears to be a step change in the average cost per closed property around September 2020. This may be due to large numbers of OnSOC properties being closed in CMSv8 with zero cost to EQC. The current pool of open properties is likely to contain a number of OnSOC properties which will close at zero cost to EQC. However, for claims which reopen in future this is unlikely to be the case.

We have made the following assumptions in regard to average costs per property finalised:

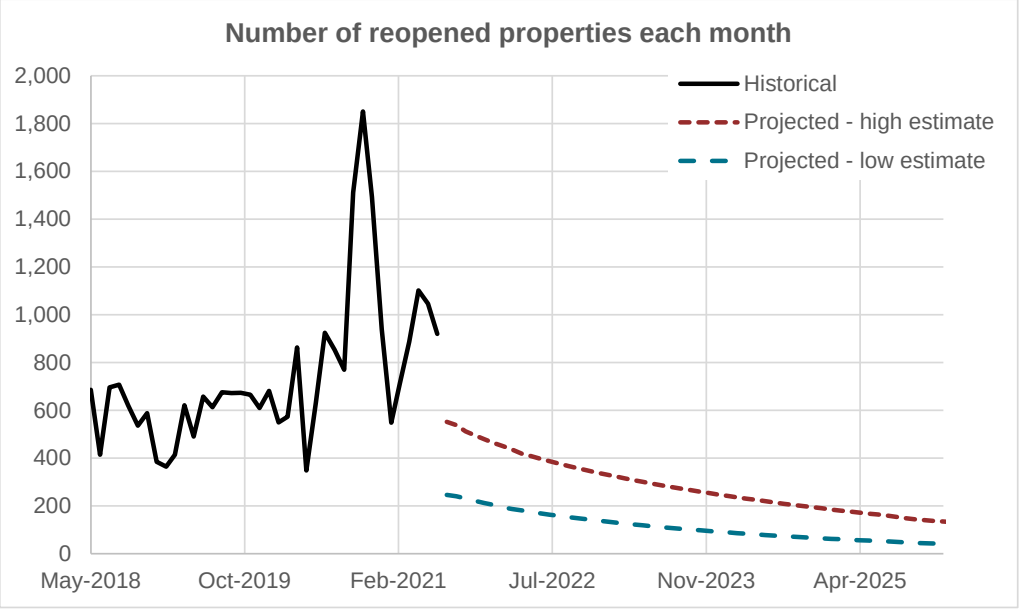
- Currently open properties will close with an average cost similar to that observed between September 2020 and June 2021.
- Properties reopening in future will close with an average cost similar to that observed from July 2019 to August 2020 (i.e. before the OnSOC programme inflated the number of properties).

Note that these assumptions are lower than those used to estimate the recommended provision (as summarised in Section 3.3) due to the sense check approach of treating each time a property reopens as a separate incident, as well as including zero within the average (i.e. the sense check does not consider a separate rate of nil claims).

K.4 Sense check results

K.4.1 Number of reopened properties

The chart below shows the historical and projected number of reopened properties under the low and high estimates.



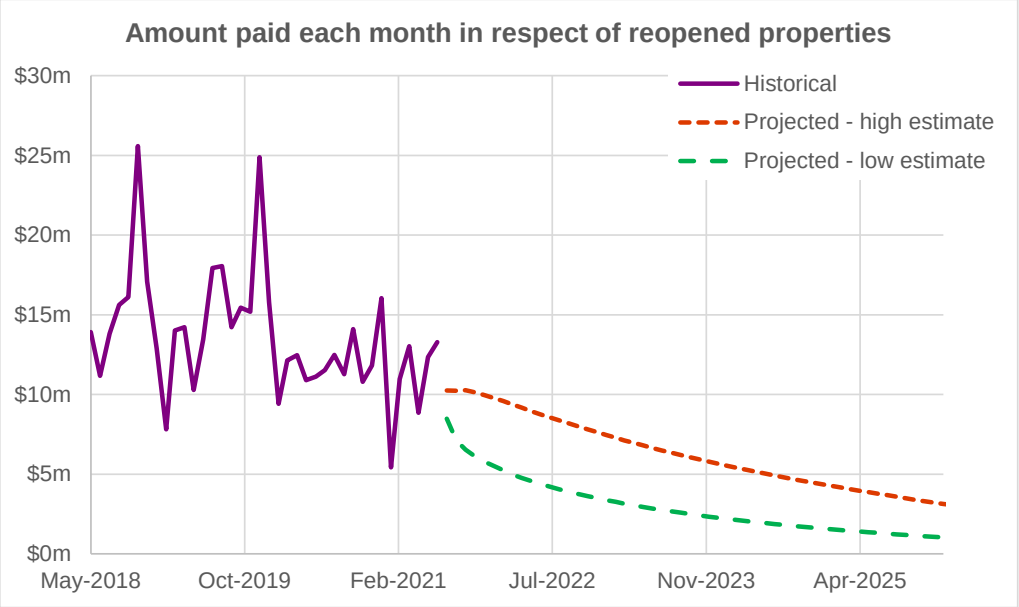
The high estimate effectively assumes that numbers will revert to the trend prior to the recent spike in reopened properties prior to the community confusion regard the closure of the OnSOC programme. The low estimate assumes that numbers will revert to the trend prior to the OnSOC programme even starting.

The projection model continues beyond the chart, but for brevity we have not shown the entire projection. Our focus with this sense check is on the total projected number of future reopened claims, rather than the duration over which they will emerge.

K.4.2 Cost of currently open and future reopened properties

The chart below shows the historical and projected amount paid each month in respect of Canterbury building claims (excluding insurer finalisation). In order to show a consistent picture between historical and projected amounts, the future months include costs attributed to future reopened claims as well as the future cost of settling currently open claims.

Analysing the amount paid each month is useful because it is not polluted by the OnSOC programme. Only the costs paid by EQC are recorded in CMSv8.



Both the high and low estimates start at a monthly average similar to recent experience, although the low estimate trends down much faster.

K.4.3 Overall comparison

The table below summarises the results of the sense check.

Summary of Canterbury building claims sense checks

	Low estimate: Fitting assumptions to experience from May-2018 to Sep-	High estimate: Fitting assumptions to experience from Jul-2019 to Aug-2020
Number of currently open properties	3,590	3,590
Number of future reopened properties	7,241	19,991
Cost to settle currently open properties	$40m	$40m
Cost to settle future reopened properties	$148m	$408m
Total outstanding in respect of Canterbury building claims	$188m	$448m

K.5 Conclusion

The low and high estimates result in around $148 million and $408 million respectively in costs attributable to future reopened properties. This compares to our recommended provision of $249 million as noted in Section 3.5. Whilst the range of low and high estimates is vast, one can take some comfort in knowing that the recommended provision is at least within this range.

Another observation from this sense check is that the estimated number and cost of future reopened claims is highly uncertain, and particularly sensitive to the period over which we analyse the proportion of properties reopening.

L EQC Reinsurance

L.1 EQC reinsurance

L.1.1 Historical Cover

EQC utilises catastrophe reinsurance to reduce net claims volatility.

As from 1 June 2010, and effective for EQ1, EQC reinsurance programme was made up of three layers, providing a total of NZD 2.4775b* cover excess of NZD 1.5b first loss deductible:

- Layer 1: NZD $500m xs NZD $1,500m
- Layer 2: NZD $1,500m xs NZD $2,000m
- Layer 3: NZD $500m xs NZD $3,500m

*Note that EQC co-insured 1.5% or NZD 22,500,000 of Layer 2 (on the 2009 3-year placement).

This cover was placed in tranches and layers subject to different terms.

This reinsurance structure was the same for the 2011/12 year.

L.1.2 Current cover

From 1 June 2021, the reinsurance programme has five layers, beginning at NZD $1,750m and finishing at $8,500m.

M Glossary

Accounting standard

In New Zealand, the accounting standards of the External Reporting Board apply. EQC's insurance activities are reported under *NZ PBE IFRS4 Insurance Contracts*.

Actuarial Data Extract (ADE)

A data extract used to facilitate an actuarial valuation. The data is typically sourced from the claims and policy administration systems.

Actuary

In general, in New Zealand an actuary is a Fellow or Associate Member of the New Zealand Society of Actuaries or equivalent body.

Aggregate excess of loss reinsurance

See **catastrophe reinsurance.**

Apportioned Cost Estimate (ACE) data

A number of properties have had their building damage apportioned between events in a manual fashion. This process uses all available information on that property (quantity surveyor reports, land damage information, neighbourhood damage, customer reports etc.) to inform the apportionment. These apportionments are called Apportioned Cost Estimates and will be included the ACE data set. The ACE data set includes all overcap properties and a number of undercap properties too.

Attachment date

See **inception date**.

Best estimate

In the context of scenarios, a best estimate means a realistic future scenario, rather than a deliberately pessimistic or optimistic one. Also, see **central estimate**.

Brokerage

An alternative term for commission paid to a **broker**.

Broker

An intermediary who acts for an insured in negotiating their insurance. The broker usually receives payment by way of commission from the insurer with whom the business is placed.

Business as Usual (BAU)

A distinction has been drawn between claims that are related to the Canterbury Earthquake Sequence or the Kaikoura earthquake and those that are from other events (earthquake or other). These other events are referred to as Business as Usual (BAU) events.

Canterbury Earthquake Sequence ('CES')

The sequence of earthquakes and aftershocks in the Canterbury area from 4 September 2010 to the end of 2011. This included four main earthquakes on 4 September 2010, 22 February 2011, 13 June 2011 and 23 December 2011.

Cap Cost Review

The process by which EQC determines which costs do or do not contribute towards a customer's cap. The process includes consideration of:

- Valid works. Costs of the work completed to the residential building that achieve EQC's repair standard.
- Workmanship. Costs of works completed to the residential building through CHRP/IHRP that need redoing due to poor quality of those works.
- Affected works. Cost of works completed to the residential building that need redoing because (a) missed earthquake damage and/or (b) a revised repair strategy is required to achieve EQC's repair standard.
- Additional repairs required. Cost of works currently required.
- Corrective costs.
    - Costs reasonably required to undo an original repair strategy before the new repair strategy can be pursued (that wouldn't have been required if all information was known and the repairs now required were completed the first time). OR
    - Costs reasonably required to repair an artificial surface or driveway because either the customer or their insurer have already carried out earthquake damage repairs to that artificial surface or driveway and the work (or parts of) will now need to be redone to enable the new foundation repair strategy to be completed.

Case estimate

The amount recorded by the insurer's claims personnel (including external claims assessors) as being the amount required to settle an open claim, based on the information available on that particular case. When a claim is first reported and recorded, a nominal placeholder estimate may be entered into the system. Estimates should be updated as extra information comes to light and adjusted to reflect any partial payments that may be made prior to final settlement.

Catastrophe

A catastrophe event for an insurer is generally considered to be a single event that results in one or more claims for very large amounts or in an aggregation of many claims collectively costing an extremely large amount. The nature and impact of potential catastrophe events will vary by insurer according to their business, amount of capital and risk management arrangements. Examples include earthquakes and terrorism.

Catastrophe reinsurance

Usually an excess of loss reinsurance arrangement providing cover to an insurer against very high losses arising from a **catastrophe** event, which meets the definition of 'catastrophe' as specified in the reinsurance policy. The nature and extent of the cover available / provided depends on the nature of the underlying insurer's business and the terms available for such protection. For some events, such as storm or earthquake, the reinsurer may impose a specified time limit on when claims may be covered under the catastrophe treaty.

Cedant or ceding insurer

An insurer who has ceded (passed on) all or part of the risks it has underwritten by way of reinsurance. Analogous to an insured who cedes risk to an insurer.

CEDAR

Canterbury Earthquake Defect And Repair review. MBIE commissioned an independent survey of the repairs of a sample (101 properties) of the earthquake-damaged Canterbury homes selected from more than 2,700 addresses provided by the Earthquake Commission (EQC), Housing New Zealand, and insurers Southern Response and IAG. The survey also included a small sample of houses where homeowners had opted out of an insurer-led home repair programme.

The aim was to assess the Building Code compliance of structural repairs that were exempt from a building consent under Schedule 1 (repairs and maintenance) of the Building Act.

Central Estimate

An estimate that contains no deliberate or conscious over- or under-estimation. NZ Accounting standards define this to be the mean of the probability distribution of future outcomes. Also, see **probability of adequacy**.

Claim frequency

The number of claims divided by exposure over a given time period. This could apply to **reported** or **incurred** claims.

Claims handling expenses (CHE)

The expenses involved in the processing and settlement of claims. Note that this term usually relates only to indirect claims expenses such as internal general administration claims costs. Expenses such as assessors' fees or legal costs, that arise in relation to specific claims, are termed direct expenses and are usually treated as part of the cost of those claims.

Claims paid

The amount paid in respect of claims.

Claims provision and claims reserve

These are both terms used to refer to the amount held or required to provide for future payments on outstanding claims. These terms are sometimes seen as being interchangeable. However, there are variations in the precise usage of both terms according to the context in which they appear.

A claims provision is often used to refer to the amount held in an insurer's accounts. In management accounts, claims reserve may refer to the total **case estimates**, possibly with an additional amount for **IBNR** claims. In actuarial contexts, the technical terms are, respectively, **incurred claims liability** and **outstanding claims liability**. These amounts might also include allowances for **CHE**, **discounting**, **claims paid**, and a **risk margin**. Figures may be given **net** or **gross of reinsurance**.

Closed claims

Those claims for which records have been closed, because settlement has been made and no recoveries are expected. However, see **reopened** claims.

Cover

The extent and nature of protection provided by an insurance policy. This will be defined in the policy documentation.

Deductible

See **excess.**

Demand surge

The increase in the cost of insurance claims following a major loss event. The event puts pressure on the demand for labour and materials to pay for repairs which, in the absence of increased supply, increases the price of these costs.

Diminution of Value (DoV)

Diminution of Value, in the context of IFV or ILV is the loss in value suffered by the homeowner, as a result of the land damage that caused the loss. In assessing the DOV, it does not include any change in value resulting from matters other than the land damage (e.g. a change in the building regulations and practices after the 2010-2011 Canterbury earthquakes).

Discounting

Discounting refers to the (absolute) reduction, for the time value of money, of any future cashflows. The extent of discounting is a consequence of two factors: length of time until payment and the discount rate with an increase in either of these increasing the impact of discounting. Cashflows which have been discounted are said to be *present values*.

Actuarial **professional standards** state that **risk-free discount rates** must be used to calculate present values.

Effective date

The effective date of an **ILVR** is the date to which the valuation calculations apply.

Excess

The amount of an insured loss that must be borne by the policyholder before the insurer becomes liable to make a claim payment. The amount of the excess will be set out in the policy documentation.

Excess of loss reinsurance

A non-proportional form of reinsurance whereby the insurer pays the cost of a claim up to a specified point (their **retention**) and the reinsurer pays the remainder of the cost. The amount payable by the reinsurer is usually subject to a specified maximum amount which may apply per claim or to the total amount. Also, see **catastrophe reinsurance**.

Experience

The term used to describe the results of blocks of insurance business, particularly when the results are the subject of detailed analysis.

Future Claim Liability (FCL)

A term sometimes used to refer to the **premium liability** arising from unearned policies. It is the value of future claim payments and related **CHE**, arising from future events for which the insurer is liable.

Green Zone

Canterbury land areas such that land repair / rebuild can begin. The Green Zone was further divided into commercial zoned land, Port Hills land, rural land, and three residential flat land categories. The three residential flat land categories describe how the land is expected to perform in future earthquakes, and also describe the foundation systems most likely to be required in the corresponding areas. Also, see Red Zone, TC1, TC2, and TC3.

Gross

Refers to the amounts of premiums, claims and expenses before allowing for the costs or income (including commission as well as claim recoveries) from reinsurance and other non-reinsurance recoveries.

Inception date

Inception date is the date on which cover commences.

Increased Flooding Vulnerability (IFV)

The physical change to land as a result of an earthquake which adversely affects the use and amenity that could otherwise be associated with the land by increasing the vulnerability of that land to flooding events.

Increased Liquefaction Vulnerability (ILV)

The physical change to land as a result of ground subsidence from an earthquake which materially increases the vulnerability of that land to liquefaction damage in future earthquakes.

Incurred

A term relating to claims arising from events that occurring in a specified period.

There are differences in the precise usage of the term according to the context in which it appears. In some contexts, it may refer to the group of claims *occurring* in the period (whether **reported** to the insurer or not) and their eventual cost. In accounting contexts, the term may refer to the amount of *claims payments made plus the change in outstanding claims provisions* from the start to the end of the period.

In an actuarial context, 'incurred' costs are taken to mean the claim costs cost which arise or come to light) during the period. An alternative expression of this is: claim payments made plus outstanding estimates (inclusive of **IBNR** and **IBNER**).

Further differences may also apply in regard to the inclusion (or not) of **CHE** and **risk margins.** Clarification should be provided in the actuarial commentary as to the precise meaning applied. It should also be stated whether there has been allowance for **discounting** in the quantification of future payments to be made on these claims. Also see **discounting** and **ultimate cost**.

Incurred but not reported (IBNR)

Any claim or claim amount for which, at a particular point in time, the loss event has occurred, but the insurer has not yet been notified and/or the claim entered into the claims system. Any **outstanding claims liability** must include an allowance for these claims.

Incurred but not enough reported (IBNER)

A monetary amount relating to **reported** claims. IBNER is defined as the ultimate cost of the claim less the current **case estimate** and could be positive or negative. The **outstanding claims liability** must include an allowance for this.

Incurred claims

Claims that were **incurred** during a specified time period.

Incurred claims liability

See **Outstanding Claims Liability**.

Indirect claims handling expenses

See **claims handling expenses**

Insurance liability valuation report (ILVR)

A report detailing a valuation by the **actuary** of the **insurance liabilities** of an insurer.

Joint Assessment and Review Team (JART)

The process whereby EQC and the relevant insurer would review building claims to assess whether it was likely to go overcap and if so, how it should be apportioned and settled. The JART report is a summary of the properties that had open building issues, categorised by the reason for the issue.

Kaikoura Earthquake ('KEQ')

The earthquake and related aftershocks that occurred on 14 November 2016, beginning 15 km north-east of Culverden and proceeded north-east through Kaikoura to Seddon.

Liability adequacy test (LAT)

A test applied under the **accounting standard** which consists of a comparison of the **unearned premium**, less deferred acquisition costs (DAC), against the **premium liability**. If the test indicates a deficiency, the DAC must be written down by an appropriate amount in the entity's income statement. If the deficiency is greater than the DAC, a premium deficiency reserve must be set up.

Material

In the context of an actuarial report, an item is deemed material if it is significant in the professional judgement of the actuary. This may not necessarily correspond exactly with 'material' as applied in an accounting context.

Net

Refers to the amounts of premiums, claims and expenses after allowing for the costs or income (including commission as well as claim recoveries) from reinsurance and other non-reinsurance recoveries.

Net outstanding claims liability

See **outstanding claims liability.**

Non-reinsurance recoveries

Non-reinsurance recoveries refer to the recoveries against claim payments that come from entities other than reinsurers. It includes amounts in respect of salvage and third parties. It doesn't refer to excesses and deductibles that are deducted from the claim.

Open claims

Those claims that have been **reported** to the insurer but are not regarded as finally settled as claim payments and/or recoveries associated with the claim, may occur in future.

Outstanding Claims Liability (OCL)

The expected value of future payments on claims that were **incurred** on or before the **effective valuation date**. This usually includes future **CHE** associated with those claims, allows for **discounting**, and includes a specified **risk margin**. It may be calculated **gross** or **net of reinsurance** and **non-reinsurance recoveries**.

Outstanding Claims Provisions

The amount in the insurer's accounts providing for **outstanding claims liabilities** at the accounting date.

Premium Liabilities

The value of future claim payments and related **CHE**, arising from future events for which the insurer is liable at the date of calculation.

Probability of adequacy

The statistical probability that a reserve or provision will ultimately prove to be adequate to provide for all relevant payments to be made.

Professional Standard

The form of professional guidance as issued by the New Zealand Society of Actuaries, or such other professional body as may be stated.

Red Zone

Canterbury land areas such that land repair would be prolonged and uneconomic. This includes flat land areas, which sustained significant crustal thinning and Port Hills areas which were at imminent risk of cliff collapse or rockfall. Also see Green Zone, TC1, TC2, and TC3.

Reinstatement premiums

Premiums that become payable under reinsurance treaties, particularly catastrophe reinsurances, when all or part of a layer of cover has been 'used' by the insurer making a claim, but the insurer wishes to reinstate full coverage for the remaining term of the treaty. A 'free reinstatement' may sometimes be included in the original terms of a treaty.

Reopened claims

Claims that had been regarded as settled (i.e. no further claim payments or recoveries) but for which claims records have since been reopened because an additional payment or receipt has been made or is now expected to be made. The **Outstanding Claims Liability** must take the possibility of claims reopening in future into account.

Reported

Claims are said to be reported if the insurer has been notified of their existence. This is in contrast to **IBNR** claims.

Resolved

For exposures settled by cash payment, the valid building, contents or land exposure is recorded as resolved when the claimant has been paid for that exposure. In the case where the building exposure is settled by managed repair, building exposures are only recorded as resolved when all planned repairs are complete (but the 90-day defect liability and warranty period may not have expired) and the customer has received a full cash payment from EQC for all contents and land exposures. Exposures are also considered resolved if the exposure has not been accepted and the customer informed.

Retention

The amount of risk retained by the direct insurer above which an excess of loss reinsurance will be triggered. Also see **excess**.

Risk-free discount rates

These are the rates of interest that would be available on a theoretical, riskless investment. In practice, they are the rates available on very secure investments, such as government bonds of suitable durations, which may be assumed to be free of default risk.

Risk Margin

The amount of extra provision over and above the **central estimate** which is intended to allow for the inherent uncertainty of insurance liabilities. The relevant **probability of adequacy** associated with the increased amount should be stated.

Sensitivity

The uncertainty in the calculation of insurance liabilities due to the assumptions involved. Accounting and **professional standards** require statements of the effects on the results to be illustrated by sensitivity tests. These involve reviewing the calculations after varying key assumptions.

Technical Category 1 – TC1

TC1 refers to Green Zone land where it was assessed that future land damage from liquefaction was unlikely. Residential buildings on TC1 land required no special foundation systems, relative to most flat land throughout New Zealand.

Technical Category 2 – TC2

TC2 refers to Green Zone land where it was assessed that minor to moderate land damage from liquefaction was possible in future large earthquakes. Residential buildings on TC2 land require face some restrictions on the type of foundation that is permitted, subject to the house design.

Technical Category 3 – TC3

TC3 refers to Green Zone land where it was assessed that moderate to significant land damage from liquefaction is possible in future large earthquakes. Residential buildings on TC3 land require a site-specific geotechnical investigation and a specific engineering foundation design.

Uncertainty

Where full, known information is not available, uncertainty exists as to the exact nature and extent of the ultimate outcome. In particular, there is inherent uncertainty in any estimation of insurance liabilities, which are necessarily based on assumptions, usually derived from analyses of past experience. Deviations from estimates are normal and are to be expected. See also **central estimate, probability of adequacy** and **sensitivity**.

Unearned Premium

The proportion of written premium that relates to the risk still to be covered after the balance date or effective date of the valuation. The calculation usually assumes that premium is earned evenly over the term of a policy, except for unusual types of risk where this is clearly not the case (for example, Contractors All Risks). Should a policy be cancelled, the unearned premium as at the cancellation date may be refunded to the policyholder, possibly after allowance for expenses incurred.

Unearned Premium Reserve (UPR)

The total amount of **unearned premiums** held, reflecting the periods of future cover to be provided under policies in force at the balance date or effective date of the valuation.

Valuation date

The **effective date** as at which a valuation has been made.