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The next largest component ($78m, as compared to $79m as at 30 June 2015) relates to projected costs of future claims arising from Canterbury earthquakes during the period of the runoff of existing risks as at 31 December 2015. If earthquake activity in the Canterbury area continues to reduce, it is expected that this component will also reduce over the next few years.

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 $75m.

### Estimated Premium Liabilities - 31 December 2015

<table>
<thead>
<tr>
<th></th>
<th>BAU $m</th>
<th>Minew $m</th>
<th>Cant EQ $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unearned premium reserve</td>
<td></td>
<td></td>
<td></td>
<td>146</td>
</tr>
<tr>
<td>Cost of future claims from unexpired risks</td>
<td>16</td>
<td>46</td>
<td>60</td>
<td>123</td>
</tr>
<tr>
<td>Administration and reinsurance costs for unexpired risks</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Claims administration expenses</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Policy (non-claims) admin expenses for unexpired risks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future reinsurance costs for unexpired risks</td>
<td>0</td>
<td>58</td>
<td>17</td>
<td>75</td>
</tr>
<tr>
<td>Reinsurance recoveries</td>
<td>0</td>
<td>(12)</td>
<td>(3)</td>
<td>(15)</td>
</tr>
<tr>
<td>Net premium liabilities, undiscounted - central estimate</td>
<td>21</td>
<td>97</td>
<td>79</td>
<td>198</td>
</tr>
<tr>
<td>Discounting</td>
<td>(0)</td>
<td>(2)</td>
<td>(1)</td>
<td>(3)</td>
</tr>
<tr>
<td>Net premium liabilities, discounted - central estimate</td>
<td>21</td>
<td>95</td>
<td>78</td>
<td>195</td>
</tr>
<tr>
<td>Diversified risk margin, discounted - 75% PoA</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Net premium liabilities, discounted - 75% PoA</strong></td>
<td></td>
<td></td>
<td></td>
<td>195</td>
</tr>
</tbody>
</table>

Note that the reason that the risk margin is $0 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 greater 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 less than sufficient to cover the expected costs of claims. However:

- The expected claims costs are currently inflated due to the heightened seismic conditions in Canterbury.
- The central estimate claims costs may not be the best decision making tool for setting levy rates for such a highly skewed distribution.
- EQC’s considerations differ from private insurers and will include such factors as the Crown’s appetite for managing earthquake risk including pre and post-funding.
1.15 Data

1.15.1 Sources

The most important sources of data for the investigations were:

- Data extracts from the ClaimCentre Claims Information Management System ("CIMS").
- Data as at 31 December 2015 was used to inform the ultimate incurred claims costs.
- Data as at 31 December 2015 was used to derive the net outstanding claims liabilities.
- ACE apportionment data from the BIU.
- Small PAT results
- EQR paid data.
- Claim-to-address mapping data from the BIU.
- Land cost calculations from EQC & T+T.
- Fletcher Construction completion cost data.
- Trial Balances as at 31 December 2015.
- Discussions with EQC employees and contractors.

1.15.2 Adequacy and appropriateness

The completion of this valuation report requires many sources of data.

The demanding operational aspects of the Canterbury earthquake response and recovery have meant that the provision of data and information suitable for actuarial analysis is but one priority among many – consequently the data available for actuarial analysis is limited in some respects.

However, as for previous investigations, we have sought alternative sources of data and chosen valuation methodologies that mitigate these data issues as much as possible.

1.16 Key uncertainties

1.16.1 General comment

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

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

1.16.2 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:
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- The impact of multiple events on the allocation of damage, EQC coverage and EQC’s reinsurance coverage.
- Severe land damage and a very complex land claims environment from engineering, valuation and legal perspectives.
- Claims development. There has been considerable progress within EQC in regard to the operational aspects of assessing and settling claims, especially in trying to process 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.

Consequently, at this 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.

Some practical outcomes of the uncertainty associated with the valuation are:

- The actual claims outcome will differ to some degree from the estimates.
- There are confidence ranges in the estimated liabilities for each event.
- Different practitioners could legitimately arrive at quite different estimates of claims cost.

A more detailed description of uncertainty associated with this valuation – in particular arising from the Canterbury earthquakes - is set out in Section 12.

1.17 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 1.15.

More details regarding data, information and reliances are set out in Section 3.

1.18 Quality control and risk management processes

The estimation of EQCs 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.
1.19 Key recommendations

1.19.1 Progress against previous recommendations

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

- Improve the quality of building claims data in ClaimCentre  
  Ongoing.

1.19.2 Current Recommendations

The key recommendations, from an actuarial estimate perspective, arising from this investigation are:

- Continue to improve the quality of data in the Data Warehouse.
- In respect of settling the remaining land claims
  - Record the properties that have been sold.
  - Improve the quality of the link between properties in the land model and properties in the ADE.

Further data recommendations are set out in Section 3.6.

1.20 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 judgment 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.
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MJW has agreed to a request from EQC that this report may be provided to EQC’s auditor (Deloitte), reinsurer broker (AON Benfield), reinsurers, legal counsel (Chapman Tripp), geotechnical engineers (Tonkin + Taylor) 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 parties’ 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.

1.20.1 Official Information Act (OIA)

It is also recognised that this report will be covered by the OIA and therefore may be released (subject to any redactions) to the public. It is noted however that we are advised that there are grounds for EQC to withhold the ILVR under the OIA.

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

1.21 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 (peer review)
- analyst
- analyst

1.22 Level of detail and additional information

In writing this report we have tried to strike a reasonable balance between describing what has been done and why, and keeping the report to a manageable size. Because of this, a considerable amount of detail has been either summarised at a high level or omitted. Readers requiring more detailed information are invited to contact the authors of the report.

1.23 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.

1.24 Authors

Craig Lough  Jeremy Holmes
Fellow of the NZ Society of Actuaries  Fellow of the NZ Society of Actuaries
Peer Review
2 Background

2.1 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 (see Appendix B).
- 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 of EQ Recovery and EQC.

A Government Guarantee ensures that EQC will be able to meet its financial obligations in all circumstances.

2.2 Canterbury earthquakes and the implications of multiple events

Since 4 September 2010, a series of damaging earthquakes has affected the Canterbury region in general and the city of Christchurch in particular.

Details of the Canterbury earthquake events are set out in Appendix A.

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
- EQ2 – 22 February 2011 event
- EQ3 – 13 June 2011 event (including 21 June 2011 event)
- EQ4 – 23 December 2011 events
- AS – the eleven other events shown on the Business Information Unit ('BIU') Daily Report as well as 'Other Canterbury claims' included in the Daily Report totals. The logic used to identify these claims is based on the claim's Territorial Local Authority and loss cause and is consistent with the BIU's definition.

Although there have been many earthquake events causing building damage, observable / measurable land damage is associated only with the four identified events (EQ1, EQ2, EQ3 and EQ4). The first three of these events caused enough damage in total to require EQC's reinsurance treaties to respond.

The phenomenon of multiple earthquake events in close succession (as opposed to a single, isolated event) has had many implications from both operational and valuation perspectives; these are considered in more detail below.
2.2.1 More damage

Each subsequent event adds to the existing damage and hinders the repair of already damaged structures. The impact of additional events on a single plot of land or building can be complex.

With buildings, the ‘damage on damage’ effect may limit ultimate repair costs to some extent, although some weakened buildings may suffer greater damage.

With land damage, the costs of repair can be exacerbated by later events, particularly for properties near waterways which were already vulnerable to the liquefaction hazards. Where these sites have materially subsided, the vulnerability of the land to the liquefaction and flooding hazards has considerably increased. This is most common in the residential red zone.

2.2.2 Resource issues

The additional damage creates additional demand for the professions and trades involved in the management of claims and rebuilding:

- Loss adjusters and assessors.
- Engineers.
- Valuers.
- Builders.

There will also be additional demand for rebuilding materials.

Finally there is the issue of Council resources for consents, inspections and code compliance certificates.

2.2.3 Increased complexity in estimation and apportionment of costs

Multiple events result in increased difficulty in:

- Estimating costs of repair.
- Apportionment of repair costs to different events/claims.
- Potential delays in repair of land and buildings as ongoing earthquakes cause problems in planning and securing resources.

2.2.4 Increased complexity in determining cover – reinstatements

The High Court’s declaratory judgment on 2 September 2011 (EQC v the Insurance Council / Vero / IAG, and TOWER Insurance v EQC) clarified the issue of the reinstatement of EQC’s cover after an event.

In summary, EQC is liable for up to $100k plus GST for each building claim and $20k plus GST for each contents 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.
2.2.5 Reinsurance

The operation of EQC’s reinsurance cover arrangements have been made much more complicated due to the multiple events. Cover in later events is contingent upon the reinsurance impacts of earlier events (Top and Drop).

More details are provided in 2.4 and Appendix C.

2.2.6 Ministerial directions

Given the need to apportion the costs of the claims between the various earthquake events, there is the issue that damage is deemed to have occurred to events where no valid 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:

- 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.
- 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.

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).

2.3 EQC operations outside those specified in the Act

EQC assumed, on behalf of Government, responsibility for a broader than usual range of activities related to the Canterbury earthquake recovery. However, the costs of these extra activities outside the Act were accounted for separately and funded from monies made available by the Crown specifically for these purposes.

Such activities include providing for:

- Emergency repairs (where outside EQC cover, for example for uninsured homes).
- Land strengthening at one locality (Spencerville) where the reinstatement of housing required engineering works that could not be facilitated under EQC cover rules and Government agreed to meet the cost.
2.4 EQC reinsurance

2.4.1 Cover

EQC utilises catastrophe reinsurance to reduce net claims volatility. From 1 June 2010 EQC had reinsurance treaties in place providing cover per event above a $1.5b deductible up to an upper limit of $4.0b – i.e. maximum $2.5b reinsurance cover per event (less a small amount of coinsurance). This cover was placed in tranches and layers subject to different terms. Ongoing reinsurance cover after each event is complex as it depends on the usage of each layer and the reinstatement, replacement or renewal of each tranche and / or layer as relevant.

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

From 1 June 2015, EQC’s reinsurance cover has a 100% deductible per event to $1.75b. Reinsurance cover is then provided with 100% coverage up to $5b. There is a further layer between $5b and $6.25b although this is 76% covered.

2.4.2 Premium accounting

Reinsurance premiums are paid quarterly in advance.

More details are provided in Appendix C.

2.4.3 Recoveries accounting

Reinsurance recoveries processes are described in Appendix C.

2.5 Canterbury land damage and EQC land claim liabilities

This section of the report sets out a high level summary of the situation regarding the land damage caused by the Canterbury earthquakes and the land claim cost implications for EQC. The principal sources of information for this section were Tonkin + Taylor and EQC.

The notes in the remainder of this section should not be considered to be exhaustive – they are merely a high level summary of some of the issues.

2.5.1 Land cover

Section 19 of the Earthquake Commission Act 1993 details what is legally covered by EQC in respect of land damage. In summary, EQC’s maximum liability for each event is the sum of:

- the indemnity value of bridges, culverts and retaining walls that are lost or damaged, and
- the minimum of:
  - the value of the land damaged,
  - the value at the site of the damage of an area of 4000m², or
  - the value of a parcel of land that is the minimum lot size under the District Plan of land used for that purpose.
2.5.2 Land claims

Background

In terms of eligibility, EQC land cover is only given where:
- There is a residential building lawfully situated on the land, and
- The residential building is covered by insurance with a private insurer against fire (although sometimes the cover may have been arranged directly with EQC).

Refer to Appendix B.1 for details.

Canterbury land claims liabilities

The situation regarding EQC’s land claims is complex from several perspectives:
- The nature of the damage caused.
- The engineering solutions to repair the damage (if feasible).
- The valuation of the Insured Land Area and the Diminution of Value.
- The legal issues surrounding the extent of cover provided by EQC in the context of multiple events.

A great deal of work has been done by T+T over the past several years and this has been incorporated into this valuation. However, it should be recognised that there remains uncertainty regarding certain components of the land claims cost estimates.

2.5.3 Land damage recognised by EQC

Flat Land

Land damage has occurred on the flat land as a result of soil layers below the ground surface liquefying, deforming the ground surface and inundating the properties with ejected water, silt and sand.

The flat land in eastern Christchurch is underlain by a series of soil layers of fine-grained alluvial sediments with varying composition and density. Each soil layer has a different liquefaction resistance which means that some soil layers are able to liquefy at lower shaking intensities while other soil layers are only able to liquefy at higher shaking intensities. Generally the more soil layers that liquefy beneath a property, the more liquefaction induced damage that can be expected at the ground surface.
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Each of the four main earthquake events had shaking intensities that were strong enough to trigger liquefaction of soil layers in Christchurch. The shaking intensity from EQ1 was only strong enough to cause consequential (damaging) liquefaction in the most vulnerable parts of Christchurch (these areas generally now comprise the residential red zone). The shaking intensity from EQ1 may have triggered liquefaction in isolated soil layers throughout other parts of Christchurch but with minor to no consequential effects at the ground surface. The shaking intensity from EQ2 was considerably stronger in eastern Christchurch causing more soil layers to liquefy, increasing the extent and severity of liquefaction induced damage at the ground surface. However, the shaking intensity from EQ2 was considerably lower in the western and northern parts of Christchurch resulting in no to minor consequential effects at the ground surface. The shaking intensities from EQ3 and EQ4 were less than EQ2 and were generally more localised, causing less extensive liquefaction damage compared with EQ2.

For the more vulnerable properties where severe liquefaction damage occurred, a lot of silt and sand was ejected also resulting in considerable ground surface subsidence. For these vulnerable properties, subsequent earthquake events have caused increasing amounts of land damage and associated repair cost.

The land damage may be divided into two broad groups – visible surface damage (Categories 1 to 7 land damage listed in the table below) and increased vulnerability to liquefaction and to flooding (Categories 8 and 9 respectively, listed in the table below).

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cracking caused by lateral spreading</td>
</tr>
<tr>
<td>2</td>
<td>Cracking caused by oscillation movements</td>
</tr>
<tr>
<td>3</td>
<td>Undulating Ground</td>
</tr>
<tr>
<td>4</td>
<td>Local ponding</td>
</tr>
<tr>
<td>5</td>
<td>Local settlement causing drainage issues</td>
</tr>
<tr>
<td>6</td>
<td>Groundwater springs</td>
</tr>
<tr>
<td>7</td>
<td>Inundation of ejected sand and silt</td>
</tr>
</tbody>
</table>
Port Hills

The Port Hills also sustained land damage although this was of a more traditional nature, and included rock falls, slips and damage to retaining walls.

The Port Hills now has properties zoned as red following a zoning review completed December 2013. These are properties where either:

- The property has been affected by cliff collapse and there is deemed to be an immediate risk to life, or
- The property has been affected by rock roll resulting in an unacceptable risk to life and an area-wide engineering solution to remediate the issue has been determined not to be practicable.

Recently, some areas of Port Hills land have been recognised as susceptible to risks of ‘Toe Slumping’. Toe Slumping is the characteristic whereby sloped land is at risk of mass land movement.

2.5.4 Rebuilding and land zones

The Canterbury Earthquake Recovery Authority (CERA) has divided the land in greater Christchurch and in the Waimakariri District into two zones - red, and green. The zone definitions are:

- Green (Go Zone): repair / rebuild process can begin.
- Red (No Go Zone): land repair would be prolonged and uneconomic.

The green zone land is broken down further 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. These are defined as:

- Technical Category 1 (TC1) – future land damage from liquefaction unlikely.
- Technical Category 2 (TC2) – minor to moderate land damage from liquefaction is possible in future large earthquakes.
- Technical Category 3 (TC3) – moderate to significant land damage from liquefaction is possible in future large earthquakes.

2.5.5 Land claim cost estimates

The estimation of EQC's land claims liabilities has been determined with assistance from T+T. The work undertaken to understand the nature and extent of land damage and to translate that into estimated land claims costs has been considerable. At this time the resulting information may be regarded as the best available.
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The costing of the 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.

The damage has been apportioned to the first event with qualifying damage.

In the same way that the land damage effects may overlap, so may the reinstatement process and hence tend to reduce the overall cost, i.e. a single repair process may reinstate several categories of damage for several events.

**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 is being used by EQC (amongst other options) to settle land claims.

ILV and IFV land damage (defined in Section 2.5.3) is a result of the ground surface subsidence caused by the four main earthquakes. There may not be any visible signs of the damage and the land may function in a perfectly reasonable state.

For the properties where the houses were not damaged beyond economic repair, remedying IFV or ILV damage by physically repairing the land would incur the combined costs of the (highly intrusive) land reinstatement and possibly the (also intrusive and often inappropriate) enabling costs associated with the demolition or temporary relocation of a building that is otherwise in reasonable condition. In any case, the combined costs for a property would be limited to the maximum level of cover, which is most often (but not always) the minimum lot value (MLV).

Furthermore, in the case of IFV land damage, it may not be possible to identify an appropriate repair for IFV land damage. For example, this may be because:

- It is not feasible to carry out a repair of the IFV land damage. This may be the case if the house has to be removed in order to do land repairs to address IFV damage under the house; or
- It is not possible to carry out the repair legally. For example, it may not be possible to get a resource consent required under the Resource Management Act for the land repairs to the IFV damage.

In these cases, EQC is not able to base the settlement on repair cost.
Declaratory Judgment

The Declaratory Judgment delivered on 10 December 2014 confirms that IFV and ILV are forms of natural disaster damage to residential land for the purposes of the Earthquake Commission Act ('the Act'), and that EQC may – and should – develop a policy to set out how it will settle claims involving IFV and ILV.

It also noted that the use of DoV as a measure of the amount of a settlement payment is lawful and proper in appropriate cases. At the date of the Declaratory Judgment, EQC had developed its IFV Policy but not the ILV Policy. The Declaratory Judgment confirms that use of DoV, in the circumstances set out in the IFV Policy, is lawful and proper; and the payment of claims out of the Natural Disaster Fund in accordance with the IFV Policy and the Act will be lawful.

Given this guidance, EQC has developed its ILV Policy to align with the principles endorsed by the court in relation to the IFV Policy.

Lastly, the Judgment held that individual claimants may contest EQC decisions (e.g. on qualification for, and the amount of, an IFV / ILV settlement) as an ordinary civil proceeding in the District Court or High Court rather than (as EQC contended) only judicial review.

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.

Qualification for IFV land damage is based on three criteria.

- Detailed river flood modelling and overland flow path storm water modelling along with the subsidence information have been considered to determine whether a property is materially vulnerable to flooding
- Whether there is a material change in flooding vulnerability as a result of the ground surface subsidence of the insured land caused by each main earthquake.
- Whether the increase in flooding vulnerability impacted the market value of the property.

EQC’s policy in respect of IFV damaged land considers the costs and ability to repair the land and the DoV that has been incurred. We have modelled the policy as if all properties are settled using the DoV basis.

The DoV settlement amount is apportioned amongst all events which qualify for IFV remediation.

ILV damage on the flat

Qualification for ILV land damage is based on three criteria:

- Detailed analysis of land damage and subsidence information as well as geotechnical investigations and corresponding liquefaction vulnerability modelling have been considered to determine whether a property has material liquefaction vulnerability
- Whether there is a material change in liquefaction vulnerability as a result of the ground surface subsidence caused by the 2010-2011 earthquake sequence.
- Whether the increase in liquefaction vulnerability impacted the market value of the property.
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EQC’s policy in respect of settlement of ILV damaged land considers the costs, ability and homeowner intent to repair the land and the DoV that has been incurred. Many of these criteria are not readily available (e.g. property has been sold, intent of homeowner to repair land) or in a form that is useable for valuation purposes. Consequently, we have modelled the policy in the following manner.

In respect of properties with in-situ houses, the settlement approach will be on the basis of DoV applied to the Insured Land Area. The estimated costs of indemnifying a home owner through DoV for ILV damage have been apportioned amongst all qualifying events.

In respect of land on which houses will be rebuilt, the settlement approach will be a combination of:
- Repair costs applied to the land area that is reasonably required to reinstate the residential building. This land area will be less than the Insured Land Area.
- DoV applied to the remainder of the Insured Land Area.

Note that for the purposes of estimating ILV costs, we have assumed that all Red Zone properties are cleared sites and qualify for the repair cost option.

The estimated costs of indemnifying a home owner for ILV damage where the land is repaired are apportioned to the first qualifying event.

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.

Port Hills land damage occurred predominantly during the EQ2 and EQ3 events and most related to the failure of retaining walls. There was also damage arising from landslides and rock fall. There was a lot of minor slope failure in general but it is not considered to be ongoing or to represent an ongoing risk. The overall land stability is the same and any future damage would require the occurrence of future major events. In general, repairs and reinstatement of the damage is possible.

Damage not yet estimated

One component of land damage has yet to be estimated in a detailed way. Removal of ejected silt from underneath dwellings. It is estimated that approximately 5,000 properties (which are not included for ILV and IFV land damage) with silt inundation will require silt to be removed from under the house.

2.6 New Zealand economic environment

2.6.1 Economic growth

GDP increased 1.2% in the September 2015 quarter with annual growth of 3.5%.

2.6.2 Inflation

Inflation has been very low with the December 2015 Consumer Price Index at 0.1% for the year. The CPI fell 0.5% for the December 2015 quarter.
2.6.3  **Interest rates**

The Reserve Bank has recently decreased the OCR so that it is now 2.50% p.a.

The five year government stock rate was 3.00% pa as at 31 December 2015 (3.05% as at 30 June 2015).
3 Data and Information

3.1 Sources of data

The main sources of data used for the investigation are set out below.

3.1.1 Actuarial Data Extract from ClaimCentre

Weekly Actuarial Data Extracts (ADE) were taken from ClaimCentre and the key extract used was dated 4 January 2016.

The extract is structured as a single database table. Each record relates to a single claim (itself relating to up to three sub-claims) with many fields describing the claim’s details.

More information on ClaimCentre can be found in Appendix B.

3.1.2 ACE damage data

The ACE damage data consisted of a table, provided by the BIU, showing apportioned damage estimates for a number of Christchurch properties. There were approximately 130,000 properties in the table although many of these had yet to be populated with apportionment information. There were 52,400 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. A summary of the information that was used is shown in Section 4.2.

<table>
<thead>
<tr>
<th>ACE data cleaning process</th>
<th>Number of Properties</th>
<th>EQ1 $m</th>
<th>EQ2 $m</th>
<th>EQ3 $m</th>
<th>EQ4 $m</th>
<th>AS $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw ACE Data</td>
<td>129,471</td>
<td>1,602</td>
<td>4,734</td>
<td>237</td>
<td>28</td>
<td>49</td>
<td>6,649</td>
</tr>
<tr>
<td>Remove:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAs</td>
<td>77,036</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6,649</td>
</tr>
<tr>
<td>Duplicates</td>
<td>31</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Property ID errors</td>
<td>41</td>
<td>(0)</td>
<td>(1)</td>
<td>(0)</td>
<td>-</td>
<td>(0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Extremely large estimates (&gt;100m)</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data used in model</td>
<td>52,363</td>
<td>1,601</td>
<td>4,733</td>
<td>237</td>
<td>28</td>
<td>48</td>
<td>6,647</td>
</tr>
</tbody>
</table>

The BIU supplied two additional tables of data:

- A supplementary table identifying multi-unit buildings (MuBs) and whether the MuB was comprised of dependent or independent dwellings.
- A claim-to-address mapping. Other address fields in the Actuarial Data Extract were unsuitable for this purpose as there were known issues within their records (e.g. they were free-form text fields).

3.1.3 EQR paid data

The EQR paid data consisted of a table, provided by the BIU, showing the amounts paid to substantively completed properties. There were 66,000 properties from this data set used in the model.
3.1.4 Tonkin + Taylor land data and assumptions

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

3.1.5 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. No more recent outputs have been provided as there has been no input of revised parameters following the Christchurch events.

Details on the Minerva model are given in Appendix D.

3.2 Sources of information

The additional sources of information used for the investigation were:

- Draft accounts for the period ending 31 December 2015.
- Trial balance for the period ending 31 December 2015.
- Small PAT results.
- CHE Forecast 31 December 2015.
- Daily reports supplied by the BIU.
- 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 (more details are set out in Appendix D).

3.3 Validation of data

3.3.1 Actuarial data extract

The first table in Appendix E illustrates a reconciliation of the 31 December 2015 Actuarial Data Extract system against the BIU’s Daily Report for 31 December 2015.

Note that for BAU claims the information from the data extract is calculated on a loss date basis and so does not agree exactly with the accounting data. Overall the level of agreement is satisfactory for our purposes.

Further validation is provided via the claims analyses set out in Section 4.

3.3.2 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.

Further validation of the ACE data and Fletcher data is set out in Section 4.
3.4 Reliances

The key data and information upon which we have placed reliance are described in Sections 3.1 and 3.2 above.

3.5 Concerns and qualifications

3.5.1 General comments regarding the data held by EQC

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

- The need to improve the quality of the claim incurred figures held in ClaimCentre / Data Warehouse; at the moment it is not possible to know whether or not the incurred claims for a particular claim have been completed according to the dwelling reserve apportionment guidelines.
- The Minerva model requires recalibration for new exposure, risk and damage levels, particularly land damage information and changes to building standards (e.g. enhanced foundations).

3.6 Recommendations

3.6.1 Progress against previous recommendations

Several data-related recommendations were set out in Section 3.6 of the 30 June 2015 report. The progress against these recommendations is as follows:

- ClaimCentre:
  - Incorporate EQR claims data in the EQC claims database.      *On hold*
  - Improve the quality of building claims data.            *Ongoing*
- Minerva:
  - Review the model in the light of the recent events.          *Ongoing*
  - Consider whether other catastrophe events besides earthquakes should be included. *Ongoing*

3.6.2 Current Recommendations

The recommendations that were noted in the previous ILVR are outstanding although we note that EQC are planning to address these in the near future.

We recognise that our recommendations relate to actuarial data only. We also recognise the unique operational challenges EQC is facing and the need for EQC to prioritise process and systems changes according to the areas of greatest need.

As a consequence we have no additional recommendations to those noted above.
3.7 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 Sections 3.5 and 3.6, we consider that the information provided to us was adequate and appropriate for the purposes of this valuation.
4 Canterbury Earthquake Claims Analysis

The figures in the following tables are based on an Actuarial Data Extract from ClaimCentre as at 31 December 2015.

4.1 Actuarial Data Extract from ClaimCentre (31 December 2015)

4.1.1 Number of notified claims

<table>
<thead>
<tr>
<th>Number of notified claims (ClaimCentre)</th>
<th>EQT</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>80,780</td>
<td>71,464</td>
<td>29,843</td>
<td>33,817</td>
<td>34,048</td>
<td>249,952</td>
</tr>
<tr>
<td>Open</td>
<td>64,188</td>
<td>72,794</td>
<td>24,329</td>
<td>13,484</td>
<td>16,176</td>
<td>190,971</td>
</tr>
<tr>
<td>Total</td>
<td>144,968</td>
<td>144,258</td>
<td>54,172</td>
<td>47,301</td>
<td>50,224</td>
<td>440,923</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of notified claims (ClaimCentre) - all incl duplicates</th>
<th>EQT</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>92,259</td>
<td>84,254</td>
<td>32,058</td>
<td>35,282</td>
<td>35,470</td>
<td>279,323</td>
</tr>
<tr>
<td>Open</td>
<td>64,330</td>
<td>73,004</td>
<td>24,373</td>
<td>13,512</td>
<td>16,198</td>
<td>191,417</td>
</tr>
<tr>
<td>Total</td>
<td>156,589</td>
<td>157,258</td>
<td>56,431</td>
<td>48,794</td>
<td>51,668</td>
<td>470,740</td>
</tr>
</tbody>
</table>

- Duplicate claims are excluded from our tables (unless noted otherwise). Duplicate claims are included in the BIU daily report.

- The total number of claims on the daily report includes those from a number of other earthquake events which are not specifically identified. In this section we have included these claims in the AS group.

The following tables are based on sub-claims rather than claims. Each claim lodged with EQC includes up to three sub-claims (also known as ‘exposures’) corresponding to land, building or contents losses.
### Number of notified sub-claims

<table>
<thead>
<tr>
<th></th>
<th>EQ1</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>37,233</td>
<td>51,803</td>
<td>14,735</td>
<td>10,951</td>
<td>4,839</td>
<td>119,561</td>
</tr>
<tr>
<td>Open</td>
<td>9,342</td>
<td>11,144</td>
<td>3,361</td>
<td>2,322</td>
<td>1,455</td>
<td>27,624</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46,575</td>
<td>62,947</td>
<td>18,096</td>
<td>13,273</td>
<td>6,294</td>
<td>147,185</td>
</tr>
<tr>
<td><strong>Building sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>85,182</td>
<td>73,076</td>
<td>31,112</td>
<td>33,656</td>
<td>33,883</td>
<td>256,909</td>
</tr>
<tr>
<td>Open</td>
<td>50,673</td>
<td>53,294</td>
<td>17,676</td>
<td>8,972</td>
<td>13,125</td>
<td>143,740</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>135,855</td>
<td>126,370</td>
<td>48,788</td>
<td>42,628</td>
<td>47,008</td>
<td>400,649</td>
</tr>
<tr>
<td><strong>Contents sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>55,204</td>
<td>81,988</td>
<td>20,257</td>
<td>12,100</td>
<td>8,312</td>
<td>177,861</td>
</tr>
<tr>
<td>Open</td>
<td>59</td>
<td>152</td>
<td>19</td>
<td>6</td>
<td>14</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>55,263</td>
<td>82,140</td>
<td>20,276</td>
<td>12,106</td>
<td>8,326</td>
<td>178,111</td>
</tr>
<tr>
<td><strong>All sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>177,619</td>
<td>206,867</td>
<td>66,104</td>
<td>56,707</td>
<td>47,034</td>
<td>554,331</td>
</tr>
<tr>
<td>Open</td>
<td>60,074</td>
<td>64,590</td>
<td>21,056</td>
<td>11,300</td>
<td>14,594</td>
<td>171,614</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>237,693</td>
<td>271,457</td>
<td>87,160</td>
<td>68,007</td>
<td>61,628</td>
<td>725,945</td>
</tr>
</tbody>
</table>

- In respect of the Canterbury earthquake claims, there were 1.6 sub-claims per claim on average.
- 554,331 sub-claims (76% of the total) have been closed to date.
- It is worth noting that a significant portion of the 144k open building sub-claims are closed with EQR but are not recorded as such in ClaimCentre.
- Comparing EQ1 and EQ2 we see a similar number of building claims but a higher number of land and contents claims for EQ2.
Released under the Official Information Act 1982

The following table shows the number of sub-claims, including duplicates. The total matches closely to the BIU daily report as at 31 December 2015 which records a total of 764,608 sub-claims.

<table>
<thead>
<tr>
<th></th>
<th>EQ1</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>38,634</td>
<td>54,808</td>
<td>15,217</td>
<td>11,257</td>
<td>5,015</td>
<td>124,931</td>
</tr>
<tr>
<td>Open</td>
<td>9,364</td>
<td>11,166</td>
<td>3,363</td>
<td>2,327</td>
<td>1,455</td>
<td>27,675</td>
</tr>
<tr>
<td>Total</td>
<td>47,998</td>
<td>65,974</td>
<td>18,580</td>
<td>13,584</td>
<td>6,470</td>
<td>152,606</td>
</tr>
<tr>
<td><strong>Building sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>95,598</td>
<td>83,603</td>
<td>32,976</td>
<td>34,926</td>
<td>35,171</td>
<td>282,274</td>
</tr>
<tr>
<td>Open</td>
<td>50,731</td>
<td>53,371</td>
<td>17,695</td>
<td>8,986</td>
<td>13,137</td>
<td>143,920</td>
</tr>
<tr>
<td>Total</td>
<td>146,329</td>
<td>136,974</td>
<td>50,671</td>
<td>43,912</td>
<td>48,308</td>
<td>426,194</td>
</tr>
<tr>
<td><strong>Contents sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>57,679</td>
<td>87,341</td>
<td>20,950</td>
<td>12,469</td>
<td>8,543</td>
<td>186,982</td>
</tr>
<tr>
<td>Open</td>
<td>59</td>
<td>153</td>
<td>19</td>
<td>6</td>
<td>14</td>
<td>251</td>
</tr>
<tr>
<td>Total</td>
<td>57,738</td>
<td>87,494</td>
<td>20,969</td>
<td>12,475</td>
<td>8,557</td>
<td>187,233</td>
</tr>
<tr>
<td><strong>All sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>191,911</td>
<td>225,752</td>
<td>69,143</td>
<td>58,652</td>
<td>48,729</td>
<td>594,187</td>
</tr>
<tr>
<td>Open</td>
<td>60,154</td>
<td>64,680</td>
<td>21,077</td>
<td>11,319</td>
<td>14,606</td>
<td>171,846</td>
</tr>
<tr>
<td>Total</td>
<td>252,065</td>
<td>290,442</td>
<td>90,220</td>
<td>69,971</td>
<td>63,335</td>
<td>766,033</td>
</tr>
</tbody>
</table>


4.1.3 **Sub-claims paid to date**

<table>
<thead>
<tr>
<th>Land sub-claims</th>
<th>EQ1 $m</th>
<th>EQ2 $m</th>
<th>EQ3 $m</th>
<th>EQ4 $m</th>
<th>AS $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>13.8</td>
<td>198.6</td>
<td>3.6</td>
<td>0.2</td>
<td>0.8</td>
<td>216.9</td>
</tr>
<tr>
<td>Open</td>
<td>2.5</td>
<td>2.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16.3</td>
<td>201.0</td>
<td>3.7</td>
<td>0.3</td>
<td>0.8</td>
<td>222.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building sub-claims</th>
<th>EQ1 $m</th>
<th>EQ2 $m</th>
<th>EQ3 $m</th>
<th>EQ4 $m</th>
<th>AS $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>1,262.6</td>
<td>2,670.7</td>
<td>260.6</td>
<td>95.5</td>
<td>91.2</td>
<td>4,380.7</td>
</tr>
<tr>
<td>Open</td>
<td>83.3</td>
<td>195.3</td>
<td>32.9</td>
<td>7.3</td>
<td>9.1</td>
<td>327.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,346.0</td>
<td>2,866.0</td>
<td>293.5</td>
<td>102.8</td>
<td>100.3</td>
<td>4,708.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contents sub-claims</th>
<th>EQ1 $m</th>
<th>EQ2 $m</th>
<th>EQ3 $m</th>
<th>EQ4 $m</th>
<th>AS $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>124.6</td>
<td>296.0</td>
<td>28.5</td>
<td>12.4</td>
<td>7.7</td>
<td>469.2</td>
</tr>
<tr>
<td>Open</td>
<td>0.1</td>
<td>0.6</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>124.7</td>
<td>296.6</td>
<td>28.6</td>
<td>12.4</td>
<td>7.7</td>
<td>470.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All sub-claims</th>
<th>EQ1 $m</th>
<th>EQ2 $m</th>
<th>EQ3 $m</th>
<th>EQ4 $m</th>
<th>AS $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>1,401.0</td>
<td>3,165.3</td>
<td>292.6</td>
<td>108.1</td>
<td>99.7</td>
<td>5,066.7</td>
</tr>
<tr>
<td>Open</td>
<td>86.0</td>
<td>198.4</td>
<td>33.1</td>
<td>7.4</td>
<td>9.1</td>
<td>333.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,487.0</td>
<td>3,363.7</td>
<td>325.7</td>
<td>115.4</td>
<td>108.7</td>
<td>5,400.6</td>
</tr>
</tbody>
</table>

- This table only includes claims paid to date as recorded in ClaimCentre.
- Claims costs attributable to Fletcher EQR are not in ClaimCentre and account for another $2,513m. Total building sub-claim payments equal $7,222m.
- EQ1 and EQ2 account for 90% of the total claims paid to date and building claims amount to 87% of the total paid.


4.1.4 Reported incurred sub-claims

<table>
<thead>
<tr>
<th></th>
<th>EQ1</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
<td>$m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>306.3</td>
</tr>
<tr>
<td><strong>Land sub-claims</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>13.8</td>
<td>198.6</td>
<td>3.6</td>
<td>0.2</td>
<td>0.8</td>
<td>216.9</td>
</tr>
<tr>
<td>Open</td>
<td>26.7</td>
<td>41.1</td>
<td>11.7</td>
<td>5.1</td>
<td>4.8</td>
<td>89.4</td>
</tr>
<tr>
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<td>5.2</td>
<td>5.5</td>
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<td>3,915.0</td>
<td>539.9</td>
<td>153.8</td>
<td>230.2</td>
<td>6,960.0</td>
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<tr>
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<td>1,263.1</td>
<td>2,671.9</td>
<td>261.7</td>
<td>92.0</td>
<td>91.2</td>
<td>4,379.9</td>
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<td>1,243.1</td>
<td>278.3</td>
<td>61.8</td>
<td>139.0</td>
<td>2,580.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,121.1</td>
<td>3,915.0</td>
<td>539.9</td>
<td>153.8</td>
<td>230.2</td>
<td>6,960.0</td>
</tr>
<tr>
<td><strong>Contents sub-claims</strong></td>
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<td>296.8</td>
<td>28.5</td>
<td>12.4</td>
<td>7.7</td>
<td>469.4</td>
</tr>
<tr>
<td>Closed</td>
<td>124.7</td>
<td>296.1</td>
<td>28.5</td>
<td>12.4</td>
<td>7.7</td>
<td>469.4</td>
</tr>
<tr>
<td>Open</td>
<td>0.2</td>
<td>0.7</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>124.9</td>
<td>296.8</td>
<td>28.6</td>
<td>12.4</td>
<td>7.8</td>
<td>470.4</td>
</tr>
<tr>
<td><strong>All sub-claims</strong></td>
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<td></td>
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<tr>
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<td>290.0</td>
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<td>4,451.6</td>
<td>583.8</td>
<td>171.4</td>
<td>243.5</td>
<td>7,736.8</td>
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</table>

This table includes claims paid to date as recorded in ClaimCentre and claims arising from Fletcher EQR. Reported claims incurred is the sum of claims paid to date plus the case estimates held as of 31 December 2015.

Building claims closed by EQR may still be recorded as open claims within the ClaimCentre.

4.1.5 Observed average sub-claims cost (reported incurred only)

<table>
<thead>
<tr>
<th></th>
<th>EQ1</th>
<th>EQ2</th>
<th>EQ3</th>
<th>EQ4</th>
<th>AS</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land sub-claims</strong></td>
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<td></td>
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<tr>
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<td>2,178</td>
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<td><strong>Total</strong></td>
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<td>3,688</td>
<td>3,723</td>
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<td>5,061</td>
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<td>36,564</td>
<td>8,410</td>
<td>2,733</td>
<td>2,692</td>
<td>17,048</td>
</tr>
<tr>
<td>Closed</td>
<td>14,828</td>
<td>36,564</td>
<td>8,410</td>
<td>2,733</td>
<td>2,692</td>
<td>17,048</td>
</tr>
<tr>
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<td>23,325</td>
<td>15,742</td>
<td>6,891</td>
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<tr>
<td><strong>Total</strong></td>
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<td>59,889</td>
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<td>3,611</td>
<td>1,408</td>
<td>1,024</td>
<td>929</td>
<td>2,639</td>
</tr>
<tr>
<td>Closed</td>
<td>2,258</td>
<td>3,611</td>
<td>1,408</td>
<td>1,024</td>
<td>929</td>
<td>2,639</td>
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<td>4,502</td>
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<td><strong>Total</strong></td>
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<td>3,614</td>
<td>1,411</td>
<td>1,024</td>
<td>931</td>
<td>2,641</td>
</tr>
</tbody>
</table>
4.2 ACE data

The tables below show a summary of the ACE data (received as at 31 December 2015). Costs are shown only in respect of ACE approved properties. These figures relate to costs damage caused to a property rather than EQC liability arising.

4.2.1 Costs

The following conventions were used when determining average damage figures:

- In respect of the average damage, for each event and zone, the average is determined as the total apportioned damage divided by the number of properties in that zone.
- In respect of the EQ4 / AS events, the total damage has not been divided by the number of events that apply to the properties as the data did not allow this analysis.

4.2.2 Percentages

This table converts the damage costs (as determined in the table in 4.2.1) into percentages.