



16 December, 2011

Barriers to Effective Climate Adaptation
Productivity Commission
LB2 Collins Street East
Melbourne Vic 8003

By email: climate-adaptation@pc.gov.au

Dear Sirs

Climate change and insurance

The Actuaries Institute is the sole professional body for actuaries in Australia, providing independent, expert and ethical comment on public policy issues where there is uncertainty of future financial outcomes. It represents the interests of over 3,800 members, including more than 2,000 qualified actuaries.

Some of the principles that guide the Institute's inputs into public policy are:

- » acceptance of public sector involvement where the market does not meet societal needs,
- » the need to take a long term policy view, with appropriate transitional arrangements,
- » ensuring that consequences of risk taking behaviour are borne by the risk taker,
- » issues of intergenerational equity, and
- » clear and reliable information available for decision-making.

The Productivity Commission released an Issues Paper on 31 October 2011, seeking submissions in response. The Institute has also met with the Commission. Attached are two recent submissions by the Institute which may be relevant to the Commission's work. We forward these to the Commission to assist it in its deliberations, and make ourselves available for further support.

We attach our submission to the *Garnaut Climate Change Review – Update 2011*, which focuses on the potential impact of climate change on the cost of insurance provided by the Australian private insurance market in relation to weather-related claims.

We also attach our recent submission to the *Natural Disaster Insurance Review (NDIR)*.

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The Productivity Commission in its Issues Paper states that:

Insurance can be an efficient way to adapt to climate change by spreading risks to those most willing to bear them. It can also create financial incentives to reduce exposure to hazards, which will be most efficient when insurers can match premiums closely to the risks faced by individual customers. Similarly, when insurance is not available — because it is not commercially viable — households and businesses can choose to respond to this signal by facing the financial risks themselves or relocating.

While this is broadly true, affordability and other issues mean that reliance on insurance pricing signals alone may have undesirable impacts. In particular, it may increase levels of non- and under-insurance, which historically puts pressure on government to provide compensation.

In addition, the statement assumes that insurers and reinsurers will be willing to provide cover, which may not be the case. For example, premiums have increased significantly in north Queensland since the recent floods and cyclones, and insurers usually do not cover sea surge. There is always the possibility that insurers and reinsurers will withdraw from unprofitable markets. For example, some insurers currently do not write business in north Queensland.

Also, the statement assumes that insurers are able to price risks appropriately, which is not always the case, especially in a changing environment.

In summary, the Institute believes that in some cases, inappropriate development and/or inadequate information make it difficult for the insurance industry to provide affordable flood cover. The underlying cause of potential flood and other natural disaster losses, inappropriate development, needs to be addressed as a national priority via mitigation measures.

However, mitigation efforts will take many years to implement. In our submission to the NDIR, for the interim, we recommend government intervention in the market via some form of insurance pool for high risk properties, which will facilitate government subsidy of premiums for those in high risk areas. That pool can also serve as a mechanism to provide financial incentives for flood mapping and mitigation actions, with the aim of eventual wind-up of the pool over 10 or 15 years. A pool also provides a structure to address the chronic problems of non- and under-insurance.

Building codes for future development can go a long way towards minimising the cost of natural disasters – ground clearance, codes on materials etc. Existing development presents difficult issues, and the Institute believes that some level of government subsidy is needed in the short term while mitigation actions, including re-location, are being put in place.

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A lot of natural disaster exposure in Australia arises from inappropriate development around capital cities. Clearly there is potential for climate change to exacerbate the cost of inappropriate development. However, it is possible to see this as an opportunity to encourage appropriate regional development, a policy supported by every level of government in Australia.

The Institute would be pleased to discuss the issues raised in this submission or to respond to specific questions to assist the Commission in the course of its work. Please do not hesitate to contact our Chief Executive, Melinda Howes, on (02) 92396106 if there is any way we can assist.

Yours sincerely

Barry Rafe
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Institute of Actuaries of Australia

3 March 2011

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By email: garnautreview@climatechange.gov.au

Dear Professor Garnaut

Submission to the Garnaut Climate Change Review – Update 2011

I am pleased to enclose The Institute of Actuaries of Australia's submission to the Garnaut Climate Change Review – Update 2011.

The Institute is the sole professional body for actuaries in Australia, providing expert and ethical comment on public policy issues wherever there is uncertainty of future financial outcomes. It represents the interests of over 3,800 members, including more than 2,000 actuaries. Our members have had significant involvement in the development of insurance regulation, financial reporting, risk management and related practices in Australia and in Asia over many years. The Institute also has an Energy and Environment policy, which is one of four main areas of proactive focus going forward. Our members are also active in this area.

Our submission focuses on the potential impact of climate change on the costs of insurance provided by the Australian private insurance market in relation to weather-related claims. The key findings are summarised in the short Executive Summary in the first pages of the submission. In this submission we have not discussed options for responding to the potential increase in costs, and in particular the viability of alternative pooling arrangements.

The Institute would be pleased to discuss the issues raised in this paper or to respond to specific further questions to assist the Garnaut Review in the course of its work. In this regard, please do not hesitate to contact our Chief Executive, Melinda Howes on (02) 9239 6106.

We would be happy to elaborate on aspects of the submission, if required.

Yours sincerely

John Newman
Vice President

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Institute of Actuaries of Australia

Submission to

Garnaut Climate Change Review

Update 2011

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Part I Executive Summary

Introduction

This submission focuses on the potential impact of climate change on the costs of insurance provided by the Australian private insurance market in relation to weather-related claims.

Our starting point has been to examine the current costs of weather-related claims and the associated premium levels. We have not attempted to draw any conclusions or link between climate change and its potential impact on the frequency and severity of various weather-related events. Hence we have used scenario analysis to provide an indication of the potential impact of climate change on insurance costs. This analysis quantifies the extra cost which would emerge from a doubling of the annual average costs of the pure claims component arising from only weather-related events.

We have also considered the response of insurers to the recent increase in costs arising from weather-related events. We have only considered the impact on general insurance and in particular the insurance of property. We have not considered the impact on life, disability or health insurance.

Current Cost of Weather-related Claims

The estimation of the cost of weather-related claims is very challenging. This is primarily because large events occur infrequently, and hence a very long period of time series data is needed to estimate the cost accurately. Unfortunately this data does not exist. The approach underlying the figures presented in this submission is high level and involves judgement.

The Australian private general insurance market collects around \$28 billion of premiums per annum with around \$16 billion of this amount coming from insurance classes most impacted by weather-related claims (Home and Commercial Property, Marine and, to a lesser extent, Motor). We estimate that around 30% of the premium for these classes or almost \$5 billion is associated with weather-related claims.

We further estimate the average annual weather-related claims costs for the weather impacted classes listed above are around \$3 billion per annum. There is significant year to year variability in this aggregate level of cost.

The average claims cost varies materially from property to property, depending primarily on location. For example, in the lowest risk areas the weather-related claims cost for Home insurance would be around \$50 per home, compared to more than \$3,000 per home for the properties most exposed to riverine flood (Source: IAA paper, "The Insurance of Flood Risks", 2008). The high claims cost for the most exposed worst risks creates issues of affordability since these costs flow through to individual household premiums.

Gaps in Private Insurance Market

The estimate of \$3 billion reflects the cost of claims paid by private insurers. The full economic cost of weather-related events to Australia is significantly higher since not

all risks or costs are insured. There are in fact a range of gaps in insurance coverage which, when taken together, are significant.

The private insurance market provides individuals, businesses and government entities with cover against the impact of weather-related events on assets and profits. The following gaps in coverage provided are noteworthy:

- **non-insurance:** where consumers, businesses or government do not purchase insurance
- **under insurance:** where the amount of insurance purchased is insufficient
- **self insurance:** similar to non-insurance, but typically reflects a more specific intention to retain the risk and fund it by other means
- **coverage restrictions:** where there are gaps in the cover provided by insurers. For example, a number of insurers do not cover riverine flood or storm surge

The proportion of economic losses from weather-related events will vary substantially by type of weather peril and by event, but on average the insured proportion of the total direct financial losses from Australian weather-related events is estimated to be around 50%.

In addition we note that climate change may present the community with a number of new risks (for example reductions in the value of riverine and coastal land) for which no insurance is currently available.

Impact of Climate Change on Insured Costs – Scenario Analysis

If the privately insured claim cost due to weather-related claims were to double as a result of climate change, this would represent an additional average annual claims cost of \$3 billion. With such an increase, it is also likely that the volatility from individual severe weather events and from annual aggregate claims costs would increase significantly.

All else being equal, the premiums charged by insurers for an additional \$3 billion of claims cost would have to increase by more than \$3 billion, because the claims cost is not the only cost to which insurers are subject. They are also subject to:

- the costs of managing the claims and for some other relevant management costs, and
- the additional cost of capital and reinsurance that would be needed to support the increased volatility of the business resulting from the higher level of weather-related claims.

This means that the total increase in premiums to consumers would be in the vicinity of \$4.5 billion.

It is noteworthy that a doubling of the underlying expected cost would exacerbate the issue of affordability for some individual insureds, with the claims cost for the highest risk homes increasing to more than \$6,000 per annum causing an increase in individual premiums of an amount even greater than this.

Response of Insurers to Recent Increases in Weather-related Claims

Weather-related claims costs incurred by insurers were low between 2001 and 2006. In the last four years we have observed an increased frequency of these claims. The last 12 months' experience has been particularly heavy, including the Melbourne and Perth hailstorms, the Queensland floods and Cyclone Yasi, amongst other events.

Insurers continually update their catastrophe modelling and pricing models as new experience emerges. Most insurers have increased their assessment of weather claims costs following the recent years' experience. Home premium rates have increased by more than general levels of inflation in recent years, and weather-related claims are one of the reasons for the increases. In contrast, commercial property premiums have not increased on average in the last two years. This does not mean that the cost of claims has not risen; rather competitive market conditions were driving prices down such that it is likely that premiums are not sufficient to cover insurers' costs. As a result it is plausible these premiums will increase in the medium term.

In general and based on improved data and analysis, insurers' pricing approaches have been becoming more granular (i.e. prices vary across risks to a greater extent, with fewer cross subsidies between the best risks and the worst risks). This is another driver of premiums becoming unaffordable for some risks.

Limitations

Due to limitations on data, the short time period for which it is available, and the inherent variability in weather-related claims costs, the estimates of cost provided in this submission are uncertain. There is no guarantee they will prove to be correct. However, we believe they are a reasonable indication of the order of magnitude of the cost.

The claims cost estimates are derived from various sources, including data from APRA and Insurance Statistics of Australia (ISA). The ISA data does not represent 100% of the insurance market and we adjusted for this, although such adjustments are necessarily approximate.

Part II Detailed Findings

1. Introduction

This submission is focused on the potential impact of climate change on the weather-related claims costs of Australian private insurers.

Our approach has involved:

- considering the extent of weather-related claims covered by the private insurers, including gaps in that coverage (Section 2)
- quantifying the current cost of weather-related claims being paid by the private insurance market (Section 3)
- considering the response of insurers to the recent increase in costs (Section 4)
- recognising the potential for climate change to impact frequency and severity of weather-related claims, we have used scenario analysis to quantify potential impact of a doubling in weather-related costs.

We have not considered:

- the link between climate change and the increase in frequency/severity of weather-related events
- potential future shifts in population, demographics and building developments which may materially change the exposure to risk of weather-related claims
- the impact of climate change on life, disability or health insurance costs – this study is limited to general insurance, and in particular the losses to assets, particularly property, and profits
- the impact that any government pooling (for example a national disaster fund) or regulation may have on costs.

All amounts in this submission are inflation adjusted to be in today's values.

2. Private Insurance Market

The private insurance market in Australia is a key component in building the resilience of the Australian community and economy to weather perils. The key role of the insurance industry is the pooling of risks and subsequent payment of claims to indemnify individuals, businesses and government. The private insurance industry is also active in encouraging risk mitigation, such as improvement of building codes and disaster recovery plans.

However, in every weather-related claim, the insurance industry will only cover a proportion of the total economic losses and this proportion varies materially by type of weather peril and from event to event (refer Table 2.1). The reasons for this are explored in Section 2.1. On average it has been estimated that the insured proportion of the total direct financial losses from Australian weather-related events is around 50%.

Table 2.1 – Example of cost of total direct financial loss and insured loss for certain weather-related disaster events in Australia 1999 to 2009

Date	Event	Total Direct Financial Loss \$ millions	Insured Loss \$ millions	Insured %
April 1999	Sydney Hailstorm	2,120	1,700	80%
March 2006	Tropical Cyclone Larry	1,500	540	36%
June 2007	Hunter Valley & Newcastle Storm/Floods	2,145	1,480	69%
February 2009	Victorian Bushfires "Black Saturday"	1,444	1,070	74%

Source: Data from Swiss Re Sigma reports, Insurance Council of Australia. The insured loss amounts exclude claims paid by non-APRA-regulated insurers or insurers that are not part of the Insurance Council database.

Insurance Gaps

Recent events have highlighted the problems faced by the community in the wake of weather-related events. Insurance plays a crucial role in shielding the community from the effects of such perils; however it is not able to be a comprehensive safeguard for all losses suffered, due to gaps in insurance coverage. Gaps arise from:

- Product gaps, including
 - Gaps in the range of insurance products available, or
 - Lack of availability of products to all potential customers
 - Lack of coverage within existing products
- Voluntary under insurance or non-insurance.
- Self insurance (typically reflects a specific intention to retain the risk and fund it by some means other than insurance).

2.2 *Product Gaps*

Gaps in the range of insurance products

There are risks to which the community is exposed for which no insurance product is available. This gap can be filled by the creation of new forms of insurance. Depending on the specific risk in question, this may or may not be feasible.

Climate change may induce demand for new forms of insurance. In particular, there may be demand for insurance products offering coverage for climate change solutions.

Lack of product availability to all potential customers

Whilst insurance products may be available to most consumers, there may be certain consumers for whom insurance is not available, or is prohibitively expensive. Of note is the insurance of homes with a high propensity to flood. If a home is expected to flood relatively frequently, the cost of insuring the home against flood damage may be prohibitive. Insurers may offer a product excluding the damage for flood events, but this does not help the consumer to offset their flood risk. On the basis that climate change may cause an increase in the frequency or severity of weather events, there may be more consumers affected in this manner.

Lack of Coverage within existing products

Insurance products will be specifically designed to ensure that insureds retain a proportion of any potential claim, - for example many products have a deductible amount that is paid by the insured in the event of a claim, before the insurance cover responds. This is important to keep the alignment of interests between the insured and insurer, so that the insured retains an interest in preventing claims events from occurring.

In other cases, there are a variety of insurance products in the current competitive marketplace, often offering different coverage. Whilst it may be seen as desirable to offer a range of products to suit the market's needs, this can also inadvertently create issues of under insurance or non-insurance. Based on recent events, flood appears to be a good example of this.

2.3 *Voluntary Under Insurance and Non-Insurance*

A major cause of insurance gaps is voluntary under insurance or non-insurance. We define this as the situation where an appropriate product to offset the risk exists within the insurance marketplace, but is not purchased by the consumer or not enough cover is purchased. This places a cost burden upon the consumer in question and potentially the state when a severe weather event occurs.

A key driver of this behaviour is the cost of insurance. Most consumers are cost conscious to some degree and the natural tension between the cost and level of protection purchased drives a tendency for consumers to under insure.

The cost of insurance products is compounded by the effect of taxes and levies. We note that there have been a number of studies on the effect of taxation and levies on insurance products on insurance uptake. We generally support the conclusions of such studies, which suggest that insurance uptake would increase if such imposts on insurance premiums were removed or reduced. The Institute has discussed this matter at length in its 2010 submission to the Victorian Fire Services Funding Review which can be found at [FSF Review Victoria](#).

Further discussion of the issues surrounding insurance gaps is contained in Appendix A.

3. Current Level of Weather-Related Claims

3.1 Insurance Classes Impacted by Weather-related Claims

For the purpose of this submission, we have focused on weather-related perils in Australia, primarily storm, bushfire, tropical cyclone and flood. The table below shows our assessment of the sensitivity of various forms of insurance cover to changes in the frequency and/or severity of weather perils arising from potential changes in climate.

In many cases, insurance claims experience may be impacted not just by catastrophic weather events, such as severe tropical cyclones, but by less severe changes in the environment. Our estimates relate to all weather-related damage, whether due to an event that caused a single claim or a catastrophic event causing many thousands of claims.

Importantly, there are some claims that we have excluded, as described here, as they are very difficult to estimate. In some cases, the weather can also be seen to have an indirect or contributory effect on claims cost, rather than being the direct cause of a claim. For example, it is frequently observed that the number of domestic motor vehicle claims increases materially during periods of high rainfall, particularly after dry spells, which may arise from slicker road conditions. Whilst not being a direct cause of a claim, in this case the weather conditions increase the propensity for collisions to occur. Our analysis does not make any allowance for any indirect or contributory impacts of climate change on claims cost, and is focussed on the direct costs associated with weather events.

Table 3.1 - General Insurance Products

Product	Australian GWP ¹ (\$M)	Key Perils / Outline of Cover	Weather-related Claims impact (L / M / H)
Personal lines			
Home & Contents	5,073	Burglary, Fire, Other Natural Disasters, Vandalism, Damage (from fallen trees or motor vehicles), Bursting or leaking of water	High (location specific)
Domestic Motor Vehicle	6,512	Accidents, Theft, Third Party property damage, Other damage (e.g. vandalism, natural disasters)	Low/Medium (location specific)
CTP Motor Vehicle	2,609	Injury from motor vehicle accidents	Negligible
Travel	531	Bad Weather or Aircraft complications. Theft, loss or damage to luggage	Low
Consumer Credit	325	Injury / Unemployment	Negligible
Mortgage	1,091	Borrower's default	Low (risk specific)
Other	668	All Guarantees (e.g. Fidelity guarantee), Trade credit, Extended warranty, Kidnap & Ransom, Contingency	Negligible
Commercial lines			
Fire & ISR (Commercial Property)	3,246	Fire, Other Natural disasters, Material damage & consequential losses, Theft, business interruption	High (location specific)
Including:			
Farm and Crop		Theft, Machinery breakdowns, Fire, Other natural disasters	Medium
Construction & Engineering		Construction liability, construction material damage & equipment failure	Low (location specific)
Commercial Motor	1,700	Accidents, Theft, other damage (e.g.	Low

Vehicle		vandalism, natural disasters), Third party property damage	
Marine & Aviation	671	War, Accidents, Damage. Theft of Vehicle, Loss or damage of cargo, Damage to other property and vehicles	Medium
Public & Product Liability	2,024	Damage to third parties and recall of items	Low
Employer's Liability / Worker's Compensation	1,205	Injury in the workplace	Low
Professional Indemnity	1,329	Act, error or omission in service or advice	Low
Other Accident	1020	e.g. Non-ISR Engineering, Guarantee, Sickness & Accident, Miscellaneous (e.g. loss of money)	Low
<i>Including:</i> Livestock		Sickness/Death	Medium
Total direct business	28,002		

¹ Gross Written Premium. The figures represent the 12 months to 30 June 2010, taken from industry statistics published by APRA: <http://www.apra.gov.au/Statistics/GI-Half-Yearly-Statistics.cfm>

For most classes of business, weather-related claims have only a negligible or low impact. The classes impacted to the greatest extent are Home, Fire & ISR (Industrial Special Risks) and Motor and Marine, representing total gross written premiums of around \$16 billion out of total gross written premiums in Australia, (derived from APRA statistics) of \$28 billion per annum. We estimate that around 30% of this premium of \$16 billion is associated with weather-related claims.

More Detailed Analysis

We have undertaken more detailed analysis of the Home, Commercial Property and Motor classes. Table 3.2, Table 3.3 and Table 3.4 show our estimate of the gross average annual claims cost of weather-related claims for Home, Commercial Property and Motor respectively. We show the cost as a percentage of the 2009/10 industry gross premium, derived from APRA statistics. For Home, we also show the indicative range of costs per policy for a standard house in a low risk area and in a high risk area.

The average gross annual costs are estimates and are intended to be indicative of the order of magnitude of costs for each peril. The estimates were selected using judgement with reference to:

- The experience of some individual insurers
- Cyclone modelling data (i.e. synthetic data)
- Data of catastrophes over 44 years collected by the Insurance Council of Australia
- Data provided by Insurance Statistics Australia of the experience since 2003, covering up to 90% of insurers (fewer in some years).

It is worth noting that there is significant variability around the cost in any particular year, depending on the prevailing weather conditions in the year, which will be impacted by both short and long term weather patterns.

Note that some Commercial insurance is placed directly with overseas insurers, such as Lloyd's of London. The ISA data and our estimate relates only to APRA regulated insurers

Table 3.2– Impact of gross cost of weather-related claims on Home

Peril	Average Annual Cost	% Premium ³	Average Cost Per Home ⁴	Cost Per Home ⁴ in Low Risk Areas	Average Cost per Home ⁴ in High Risk Areas
	\$m	\$m	\$	\$	\$
Non weather related costs	1,420	28%	218		
Storm ¹	940	19%	145	40	200
Bushfire	120	2%	18	-	300
Cyclone	270	5%	42	-	3,000
Riverine Flood ²	370	7%	57	-	3,000
Total (weather related)	1,700	34%	262		
Total Claims Costs	3,120	62%			
Expenses/Levies /Other	1,953	38%			
Total Premium	5,073	100%			

Notes:

1. Includes flash flood, hail, windstorm, lightening, rainwater
2. Assumes cover provided by all insurers
3. Based on industry premium levels in 2009/10 including Fire Services Levy
4. Buildings and Contents combined

Table 3.3– Impact of gross cost of weather-related claims on Commercial Property

Peril	Average Annual Cost	% Premium ³
	\$m	\$m
Non weather related costs	1,370	42%
Storm ¹	450	14%
Bushfire	70	2%
Cyclone	150	5%
Riverine Flood ²	200	6%
Total (weather related)	870	27%
Total Claims Costs	2,240	69%
Expenses/Levies/Other	1,006	31%
Total Premium	3,246	100%

Notes:

1. Includes flash flood, hail, windstorm, lightening, rainwater
2. Assumes cover provided by all insurers
3. Based on industry premium levels in 2009/10, incl Fire Services Levy

Please note we have not shown the average cost per policy for commercial property, as the significant range of sums insured per policy means little can be inferred from this sort of measure.

Table 3.4– Impact of gross cost of weather-related claims on Motor (Commercial and Private)

Peril	Average Annual Cost	% Premium²	Average Cost Per Vehicle
	\$m	\$m	\$
Non weather related costs	5,333	65%	533
Storm ¹	310	4%	31
Other catastrophes	60	0.7%	6
Total (weather related)	370	5%	37
Total Claims Costs	5,703	69%	
Expenses/Levies/Other	2,509	31%	
Total Premium	8,212	100%	

Notes:

1. Includes flash flood, hail, windstorm, lightening, rainwater

2. Based on industry premium levels in 2009/10

We estimate the average annual weather-related claim costs to be \$1.7 billion for Home, \$0.9 billion for Commercial Property and \$0.4 billion for Motor, giving around \$2.9 billion in total. Given the uncertainties and noting this figure is an estimate we have referred to a claims cost of \$3 billion elsewhere in this submission.

Relative to the premiums charged, the class most impacted by weather-related claims is Home. We estimate that for a standard house in the highest risk areas, the premium loading for riverine flood would be \$3,000 or more due to the claims cost. The highest risk properties may also have significant premium loadings for cyclone and bushfire claims. Storm claims costs tend to be more broadly spread across policyholders.

4. Scenario Analysis

We have used scenario analysis to quantify the extra cost which would emerge from a 100% increase in weather-related claims. We have considered the following scenario:

If the annual average cost of weather-related events were to double, what is the impact on premiums?

As discussed in Section 3 above, we have estimated an average annual cost of weather-related claims of \$3 billion. A doubling of this cost indicates an additional average annual pure claims cost of \$3 billion.

Under this scenario, the premium charged by insurers would increase by more than the extra \$3 billion claims cost. As highlighted in Appendix B, the premium charged by an insurer needs to cover:

- the expected average annual cost arising from both attritional and weather-related claims, plus
- the insurer's expenses, which include commissions, claims management and overheads, plus
- an allowance for the cost of capital, plus
- the net cost of reinsurance, reflecting the difference between premiums paid by the insurer for reinsurance and the expected reinsurance recoveries.

Thus, an extra \$3 billion of weather-related claims cost is only one portion of the total cost increase. Emerging from these additional claim costs, there will be:

- claims handling expenses associated with these extra claims (usually calculated as a % of claims costs)
- an additional cost of capital. This could increase disproportionately, if the volatility of the overall claims distribution is perceived to increase, thus increasing the cost of capital and hence the profit loading
- an additional allowance for the net cost of reinsurance, which captures the difference between the premium paid by the insurer for reinsurance and the expected recoveries. This could have a magnifying effect on the costs of reinsurance. The premium paid by the insurer for reinsurance could increase due to:
 - the increased claims cost, which is factored into the reinsurer's pricing (whether that is through experience rating or exposure rating or a blend – see Appendix C for details)
 - the cost of additional reinstatements of cover
 - increased volatility for the reinsurer (which is also factored into pricing through profit loadings).
- additional taxes and levies

For Home insurance, we estimated in Section 3 that the additional claims cost associated with a 100% rise in weather-related claims to be around \$1.7 billion. This would increase the total claims cost across all perils (including non-weather) from \$3.1

billion to \$4.8 billion. If we assume the total gross claims cost as a percentage of total gross premiums remains constant at 62%, this would imply an increase in the total gross premiums from \$5.1 billion to \$7.8 billion, an increase of just over 50%.

Similarly, an increase of 100% in the weather-related claims for Commercial property would increase the total premiums from \$3.2 billion to \$4.5 billion, an increase of around 40%. For Motor, the increase in total gross premiums is smaller, from \$8.2 billion to \$8.7 billion, an increase of around 6%. The total increase across all three classes is \$4.5 billion, from \$16.5 billion to \$21.0 billion.

The relative rise in the average premium under this scenario may be different to this if the increase in weather-related claims gives rise to a change in the ratio of gross claims to gross premiums. This could easily occur, as the increase in weather-related claims could cause the overall volatility of the total claims cost to increase. As mentioned above, this may require insurers to hold additional capital and may further increase the cost of reinsurance, the cost of which would give rise to a further increase in premiums.

An additional societal problem then arises that the high risk areas, if risk rated, will bear the brunt of the increase in premiums. This exacerbates the issue of affordability for these particular areas. This may result in more gaps in insurance, as discussed earlier.

5. Response of Insurers to Recent Experience

Insurance losses due to natural events such as storms, cyclones, bushfires, and flood have increased substantially in recent years. It cannot be determined at this stage the extent to which this is a result of climate change.

It is helpful to consider separately the responses of direct insurers and reinsurers. While direct insurers and reinsurers share similar concerns with respect to the impact of climate change on large weather-related losses, their responses to changing claim costs and conditions are subject to different influences.

5.1 Primary Insurers

As a direct result of market competition and the continuing development of modelling techniques and tools, direct insurers have improved the sophistication of their technical risk pricing in recent years. The continuing evolution of IT and systems technology in recent years also now enables analysis which was previously not feasible. This enables insurers to improve the determination of the expected cost of claims for different risk cohorts, to which expenses and other allowances such as cost of capital, are added to arrive at a theoretical risk premium. This theoretical risk premium is then modified according to the insurer's objectives within the competitive environment in order to arrive at the final premium seen within the market.

Insurers are continually re-calibrating their cost models and pricing approaches for weather-related perils as new experience emerges. In recent years they have been investing more in their ability to price risks at the individual address level (rather than at a broader level such as suburbs or postcodes), drawing information from a range of catastrophe modelling and other relevant data. For instance, some insurers have historically provided flood cover on a community rated basis, but the current trend is towards more granular address based approaches, whereby the price can vary from suburb to suburb or even house to house, using available flood map data. The end result of the individual address rating model is that risk cost cross-subsidy is gradually recognised and removed; this naturally leads to large premium increases for some policies in the areas modelled as high risk.

Owing to the commercial considerations in a competitive market, the prices charged by insurers do not always represent the technical premiums, particularly over a short timeframe. A common approach adopted by insurers is to stagger any premium increases for existing and/or new policyholders over a number of years, so as to not cause abrupt and large premium increases which may result in brand damage and/or impact market share over the long term. There may also be cross subsidies between a suite of insurance products sold to the same customers e.g. between the motor, property and liability covers in a business insurance package.

In recent years, the increase in weather-related perils losses has been reflected in substantial increases in personal home and contents insurance premiums. However the premiums of commercial property insurance have not increased to the same extent. This is partly because the commercial insurance markets are far more complex: there is a greater level of cross-subsidisation between different lines of cover, the level of competition also tends to be greater, and thus the influence of the insurance cycle is also greater. The international nature of elements of the commercial insurance market also makes the competitive dynamics different to the personal insurance market.

Nevertheless, the general trend towards more sophistication in pricing individual risks means that those that live or carry out business activities in high risk areas are more likely to face a greater insurance cost. Furthermore, for some insurers, the increased insurance losses in the high risk areas have led to a decision to exit certain areas or market segments where they believe the risks and costs are excessive. This can lead to issues of affordability and availability of insurance in the highest risk areas.

The recent weather-related perils insurance losses have resulted in increases in insurance costs for householders, more so for risks situated in the high risk regions. However, a range of other factors such as insurance and reinsurance cycles also play a part in the market. Whilst market forces have kept commercial property insurance prices in check for the time being, it is expected that there could be similar impacts in the future, particularly in light of the recent weather-related claims experience.

Appendix B covers in greater detail the factors influencing the pricing of insurance.

5.2 Reinsurers

Compared to primary insurers, reinsurers are disproportionately exposed to the large weather-related events owing to the structure of many reinsurance contracts. Accordingly, reinsurers employ experts in a number of disciplines such as engineering, meteorology, seismology, hydrology and actuarial sciences to construct and refine weather-related perils models covering markets across the globe.

In developing their technical premiums, reinsurers draw from both the past loss experience and sophisticated catastrophe modelling for a range of weather-related perils. When large weather events occur, modellers will use the data to revalidate and update their models.

Whilst primary insurers respond in general to local experience, reinsurance is a global market, such that the availability and price of reinsurance cover is subject to the impact global events have on the net assets and the capacity of reinsurers. Australia represents a small percentage of the total global reinsurance market. Consequently, although there is a correlation between the cost of weather events and reinsurance pricing, it is hard to ascertain any direct or automatic flow-through of claim costs to premiums. This is due to the methods which reinsurers use to estimate technical prices and the reinsurance pricing cycles arising from swings in worldwide reinsurance supply and demand.

Following the string of recent large losses, there are some indications that the global reinsurers may have upgraded the risk rating of the entire Australasia region, which may also increase the return on capital component in reinsurance pricing and result in an increase in both reinsurance and insurance premiums. This increase is potentially significant.

Appendix C covers in greater detail the factors influencing the pricing of reinsurance.

Part III Appendices

A Gaps in Insurance Coverage

Recent events have highlighted the problems faced by the community in the wake of weather-related events. Insurance plays a crucial role in shielding the community from the effects of such perils; however it is not able to be a comprehensive safeguard for all losses suffered, due to gaps in insurance coverage. Gaps arise from:

- Product gaps, including
 - Gaps in the range of insurance products available, or
 - Lack of availability of products to all potential customers
 - Lack of coverage within existing products
- Voluntary retention of risk through self-insurance, under insurance or non-insurance.

A.1 Product Gaps

Gaps in the range of insurance products

We observe that there are a number of risks faced by the community for which no insurance product is currently available. Of note is the value of coastal land, which can be a considerable portion of a homeowner's overall assets. Climate change could lead to a rise in sea levels, which will place more coastal land under threat of erosion and inundation. Potential solutions to this issue have been discussed (examples of these were included as part of IAG's submission to the previous Garnaut review). We are not aware of any significant progress in this area in the interim. Overseas' experience, particularly in Florida, indicates that some exposed areas may become uninsurable.

Climate change could create demand for new and expanded forms of insurance in Australia and elsewhere. In addition, activities undertaken to limit the effects of climate change could lead to a demand for new products.

Examples are:

- New products insuring mitigation activities:
 - Insurance for biosequestration (for example insuring the carbon stored within forests planted to offset carbon emissions).
 - Insurance for geosequestration. This could take two forms, both insurance of the operation itself, and insurance for liability to third parties from the activity.
 - Insurance for nuclear energy, if Australia decides to invest heavily in nuclear power generation to reduce carbon emissions.

- New insurance or financial products providing enhanced protection against operational disruption from weather events (i.e. supporting adaptation):
 - Protecting distribution / supply chains (e.g. for resources & agriculture)
 - Protecting against impacts of disruption in water supply
 - Protecting energy supply e.g. conditions being appropriate for renewable solar or wind power generation.

Barriers to creation of insurance products

Insurance can play a major role in assisting the community adapt to the consequences of climate change; however it will only be one element of any package of solutions.

The nature of most insurance products is that the underwriter sets the premium in advance of providing a defined cover. This funding mechanism is suitable when:

- The cover being provided can be clearly defined
- There is sufficient information on the risks so the technical price can be quantified with an acceptable level of certainty
- The price is affordable and there will be sufficient demand to make the product commercially viable
- The risks are not overly concentrated or correlated, or can be managed through reinsurance.
- The extent of risk is not determined by the behaviour of the policyholder (commonly referred to as moral hazard)

The nature of weather perils can challenge a number of these criteria. As such, the insurance industry may be unwilling to provide certain new forms of coverage that may be desired under a scenario of future climate change.

Even when the insurance industry is not well placed to underwrite the risks, it may be well placed to assist with some functions such as undertaking risk assessments, managing claims, assisting with customer communication and policy administration.

Lack of product availability to all potential customers

If climate change were to occur, many models suggest that this may increase the frequency and severity of certain environmental events. This may give rise to a situation where the premium required to cover the risk of an event occurring is prohibitively expensive, essentially making insurance unavailable. In practice many insurers address this situation by limiting some parts of the cover provided, allowing the insured to obtain cover for other perils that are part of the same product. However, this still leaves the insured with a lack of cover for the event in question.

The 2008 Garnaut report discussed at length the use of price as a decision driving tool in helping society to prepare for and to cope with the effects of

climate change. As an example of this, we may expect that a prohibitive cost of home insurance may cause individuals to move to a less risky area. The low replacement rate of housing stock makes this a challenging issue when considered at a whole of community level.

We consider that the insurance industry has a crucial role to play in creating risk-based price signals for certain activities, if this is viewed as desirable. However, we also note the potentially significant social costs of this sort of issue.

Lack of coverage within existing products

We note that in the current competitive marketplace, there are a variety of insurance products, often providing different coverage. Whilst it may be seen as desirable to offer a variety of products to suit the market's needs, this can also create issues of under insurance or non-insurance.

A.2 Voluntary Under Insurance and Non-Insurance

The detrimental effects to society of weather-related events are exacerbated by the issues of voluntary non-insurance and under insurance. We define this to be the situation where an appropriate product to offset the risk exists within the insurance marketplace, but is not purchased by the consumer (or has not been purchased to a sufficient degree to offset the full risk). This contrasts with a product gap, where the appropriate coverage is not available.

If climate change does occur and does lead to an increase in the frequency and severity of weather-related events, ensuring a high uptake of insurance will become even more socially desirable. As such, the issue of non-insurance and under insurance will become more prominent. Ultimately, a high uptake of insurance increases the resilience of the community to future events and serves to reduce the potential burden of the uninsured on the state.

We note the following potential issues relevant to this matter.

Insurance Taxation and Levies

There have been a number of papers written regarding this subject in recent years. Notable is 'The Non-Insured: Who, Why and Trends', published by the Insurance Council of Australia. Refer:

<http://www.insurancecouncil.com.au/Portals/24/Issues/The%20Non%20Insured%20-%20Report.pdf>

This paper makes the argument that significant taxes on insurance serve to increase the proportion of people who decide not to take out insurance. This effect can be seen to be particularly severe for those sections of the community with low disposable incomes, who are often the most exposed following a significant environmental event. We note that there have been developments in this area in recent months (for example the decision of the Victoria state government to accept in principle the recommendation of the Royal Bushfire Commission to abolish the fire services levy and replace it with a property based levy). However there are still areas where high levels of tax and levies on insurance exist. Removal or reform of these taxes and levies may serve to increase the uptake of insurance products within the community.

Affordability and consumer choice

Insurance is an unusual product in that consumers are essentially buying a promise, which only gets tested when a claim event occurs. Price and affordability plays a large role in determining the type and level of cover purchased by many insurance customers. This gives rise to a natural tension between the societal desire for a high take-up of insurance and ensuring a sufficiently high level of cover, since a higher level of cover will necessarily cost more. This issue is exacerbated by competitive forces in the market and by a lack of awareness of product differences amongst some customers.

One option for mitigating this is the compulsion of some level of cover. Whilst the desirability of this is a matter of opinion, this is already the case for some other products such as motor compulsory third party (CTP) and workers' compensation. However, we note that for these compulsory insurances, the policy coverage is for liability claims made by third parties against the policyholder. We consider that it is socially desirable to ensure that the victims of the actions of others have recourse to compensation, and thus there is a strong argument for compulsory coverage for CTP and workers' compensation (and, potentially, other forms of third party insurance). A similar argument for compulsory buildings insurance, for example, is less compelling, as buildings insurance covers the individual's own property, not the cost of compensating a third party for the actions of the insured. The effect of an insured event occurring to an individual who decided not to purchase buildings insurance is, therefore, limited to that individual (ignoring any assistance offered by the state).

Another potential option to reduce insurance gaps would be to standardise the minimum level of cover contained within a policy. However, this could be counterproductive, as insurers will only be willing to provide coverage if they can effectively set a price for the risk undertaken. This may lead to some insurers exiting certain markets altogether, rather than offering more limited cover that they are able to set a price for. Whilst this would ensure a minimum level of cover is present within the remaining policies on the market, this could lead to a reduction in competition. This could result in a rise in prices which may serve to increase the proportion of uninsured or underinsured individuals.

B Primary Insurers Pricing of Weather-Related Perils

We use the term primary insurers to refer to the organisations who underwrite insurance products offered to the end customers.

B.1 Pricing Approach

Overview

The practices used to set insurance premiums vary from insurer to insurer. Generally the larger insurers adopt a more sophisticated approach.

A key principle of the underwriting and pricing of insurance policies generally, and this also applies to the weather-related peril components of the coverage, is that the premium rates be risk-based, with cross subsidies restricted to homogeneous cohorts. Whilst insurance is largely based on pooling of risk, whereby individual claims costs are spread across a wider pool of policyholders, the community generally appears comfortable with the notion that higher risk policyholders should contribute more to the pool and vice versa.

Risk-based rating is important in order to produce fairness and equity among policyholders and to minimise anti-selection. However, it can lead to issues of affordability for those in the highest risk areas.

Costs built into Premiums

The premiums charged by insurers include components for:

- The expected average annual cost of the claims
- The insurers' expenses (e.g. commissions, claims management, overheads)
- Profit to cover the cost of capital
- The net cost of reinsurance, reflecting the difference between the premium paid by the insurer for reinsurance and the expected recoveries.
- Taxes and levies

The premiums charged for weather-related perils are also affected by these elements, being a part of the whole premium.

Prices charged by insurers do not always represent the technical premium (i.e. the theoretically correct premium). There are various reasons for this, with the influence of the competitive environment being the main one.

Rating Approach for Weather-related Perils

For property insurance, the weather-related perils premium for an individual property may be included by the insurer as a component of the overall premium, or it may be calculated as a separate premium that is added to premiums for other perils (theft, fire etc). Some insurers may utilise an overall

weather-related perils premium, whilst others may calculate separate premiums for each weather-related peril (e.g. storm, bushfire, cyclone etc).

The weather-related peril premiums for home insurance typically vary by the amount of cover being provided (most commonly measured using sum insured), type of construction (e.g. wood vs. brick) and by location of the property. Some insurers will vary their prices from house to house, whilst others will charge the same rate for all houses in suburb, a postcode or for a group of postcodes. The granularity and sophistication of this process varies by insurer, and may also vary within an insurer for each weather-related peril.

For other products, such as motor and commercial property insurance, similar types of information are considered. The specific factors vary from product to product and between insurers.

Insurers may also use excesses and policy sub-limits to manage their weather-related peril exposure. In some cases, insurers may decline to quote in high risk areas, or not offer coverage for certain perils.

Assessing the Cost of Weather-related Perils

Calculating of the average annual cost of each weather-related peril is a challenging exercise. For each region long time periods are required to assess the average cost across the full claims cycle. Potentially hundreds of years of data would be required if insurers were to set the price on the basis of the actual claims experience. Clearly this is not practical, and leads to the following approaches:

- For *storms*, which occur relatively frequently, insurers will tend to use actual claims experience over as long a period as possible. This may be supplemented by external data such as wind and rain data collected by the Bureau of Meteorology.
- The cost of *riverine flood* tends to be based on data from flood mapping, showing the estimated frequency and depth of floods for individual properties. The data, where available, can be used to estimate the average cost of damage that would result to a property from flooding. In the past insurers have been hampered by the shortage of available flood map data, although this position has been improving in recent years. Some insurers have historically provided flood cover on a community rated basis but the current trend is towards address based approaches, whereby the cost estimate can vary from house to house.
- *Bushfire* costs tend to be based on the actual cost of claims over as long a period as possible. Some insurers vary prices by individual address, based on factors such as the proximity to bushland and slope of the land.
- For *cyclone* claims, models have been developed by catastrophe modelling firms that can be used to simulate thousands of years of experience. These models are typically used by insurers to manage accumulation of risk – i.e. to ensure they have sufficient funds to cover, say, a worst in 250 year event. Some insurers also use these

simulation models to estimate the claims cost to build into premiums, and some insurers make use of in-house models.

For each of these perils, an insurer may make use of industry data (where available) as an additional source of information in order to assist in setting technical prices.

B.2 Response of insurers to recent catastrophes

The pricing approach followed by insurers continues to evolve, both in the nature of the analytics undertaken and the manner in which the price for an individual customer is calculated.

- Improvements are being made to how insurers estimate the average cost of claims, and this applies equally to weather-related peril claims as to other types of claims.
- Of particular note is that insurers have been investing more in recent years in their ability to price policies at the individual address level (rather than postcode). This trend may lead to large premium increases for some policyholders in the highest risk areas, although commercial considerations may serve to reduce this potential impact.

Insurers are also considering the impact of climate cycles, such as El Nino, on claims costs. These may be factored into analysis of past experience and the seasonal weather outlooks may also be considered.

Insurers are (almost) continually re-calibrating their cost models for weather-related claims as new experience emerges. Whilst the recent weather-related claims experience has been heavy, it is difficult to ascertain whether insurers have been explicitly increasing their estimate of the cost of weather-related perils, or have been merely updating and refining existing models assuming no long term change in underlying cost drivers.

Consideration may be given by insurers to the impacts of climate change on emerging costs, although we believe that the level of explicit allowance built in to prices so far is probably limited. To the extent that climate change has been a factor in the higher costs observed in recent years, this may implicitly be flowing through to higher estimates of future cost.

C Reinsurers Pricing of Weather-Related Perils

Reinsurers provide insurance products to primary insurers. These products transfer part of the overall risk and related claims costs from the primary insurer to the reinsurer.

C.1 Reinsurers' Pricing Approach

Technical Pricing

Technical reinsurance pricing is a function of risk premiums (i.e. the reinsurer's expected future claims costs), internal and external expenses and return on capital requirements. The reinsurer will also need to incorporate the cost and benefit of any retrocession coverage (i.e., reinsurance of reinsurance).

Reinsurers use two main approaches to technical pricing, often in combination: (1) experience rating, and (2) exposure rating. These are described in more detail below.

Exposure rated technical premiums are generally considered more credible and reliable than experience rated estimates. However, robust and detailed exposure rating models are largely only available for major perils such as tropical cyclone, earthquake and (increasingly) flood. Some reinsurers have also developed and are using exposure based models for bushfire and hail.

Other perils such as hail and storm are more widespread and variable in impact, but generally smaller in size. Detailed exposure based models are not widely available for these perils and reinsurers tend to rely more on experience rating and high level aggregate exposure models.

Experience rating may also be used as reasonableness check on the exposure based cost estimates, or blended with exposure based models.

Experience Rating

Experience rating focuses on historical reinsurance claims experience and uses this as the basis to estimate projected claims costs.

The experience rating approach is based on two steps: (1) collect weather event insured claims data and adjust for claims inflation, future additional claims reporting and changes in exposures, and (2) calculate the pro-forma reinsurance claims that would have been payable under the projected reinsurance structure.

- The key parameters are the number of years of claims history to use as the observation period and the factors used to project forward these historical claims. Since these factors are high level averages across an entire portfolio, the resulting estimates are always subject to high uncertainty. It is particularly difficult to judge if the claims observation period will be representative of the projection period. For example, there was low frequency of weather catastrophes in Australia from 1991 to 2005, but potentially higher than average frequency from 2006 to 2011.

- For some reinsureds, particularly smaller ones or new start-ups, historical claims data by weather event may not be available. Market/industry level information (such as that from Insurance Council of Australia) may be used and the reinsured's estimated market share by line of business/area/peril would be applied to reinsured's estimated proportionate share of industry claims cost for a very approximate estimate of pro-forma historical claims. Even for reinsureds with good historical claims data, adjustments for changes in exposure is quite difficult, since changes in underwriting policies or target markets (e.g., switching marketing focus from Victoria to Queensland) will not be reflected in simple exposure measures such as premium volumes.

Experience rating estimates are subject to high uncertainty, particularly for weather perils which occur infrequently such as tropical cyclones, since insurers can only draw inferences from weather-related claims which have occurred in the past.

The main shortcoming of experience rating methods is that, unless the historical experience includes weather events at the most extreme level possible, the experience rating estimate will fail to allow for the risk that these extreme events may occur in the future. Australia's experience in particular has not included any extremely large or "mega" events generating insured claims costs greater than \$10 billion, although such events are clearly possible.

Exposure Rating

Exposure rating combines the estimated exposure to loss (such as sums insured) with models of the weather peril to estimate claims costs by weather peril. Generally the weather peril models are probabilistic distributions, and the exposure rating exercise will provide reinsured claims cost estimates and the variability around these estimates.

Exposure rating approach is based on four steps: (1) build models of weather perils, estimate the key parameters and create a statistical distribution of weather events (for detailed models, this is a probabilistic weather perils event set of thousands of simulated possible cyclones or other perils), (2) construct a vulnerability model for the likely claims or damage ratio in relation to different constructions and exposures, (3) collect the reinsured's granular exposure data including geographic location and vulnerability rating, and (4) estimate original and reinsured claim costs by combining the distributions from the first three steps with the projected reinsurance structure.

Exposure rating approaches can require large amounts of information, and may rely on input from scientific experts such as meteorologists to build credible models of weather events such as tropical cyclones. A detailed claims cost model may use exposure data down to individual street address level and incorporate assumptions for land use, type of building construction, age of building and relevant building code, growth in insured values and the impact of demand surge (post event inflation in re-building costs).

Other Influences on Reinsurance Pricing

The above discussion relates to technical reinsurance pricing rather than the actual reinsurance premiums paid which are heavily influenced by market forces.

Reinsurance is a global market with global capacity, so is the availability and price of reinsurance cover are indirectly subject to the impact of major claims events worldwide and other financial impacts, because of the impact that such events have on the net assets of reinsurers and therefore the available supply of reinsurance protection. For example, after the terrorist attacks of September 11th, 2001, the capital and capacity of global reinsurers was greatly reduced and this resulted in higher reinsurance premiums across all lines of business.

Reinsurers' pricing is also a function of behaviour of other reinsurers in the market. Some reinsurers spend less time on technical pricing and will tend to accept pricing as offered (on the basis that it has been accepted by competitors who have undertaken technical pricing analysis).

As part of this global perspective, reinsurers write global books and as such reinsurance capacity is generally a global resource. Additionally, opportunistic capacity flows in and out of the market as perceived reinsurance returns increase relative to other investment opportunities in the capital markets.

C.2 Sensitivity of Reinsurance claims to weather events

The impact of weather-related claims on reinsurance claims costs with type of claim and type of reinsurance:

- Proportional reinsurance (i.e., the reinsurer and the reinsured have pre-agreed fixed proportions of claims and premiums) are more impacted by attritional weather activity, and often there will be a contractual limitation on the amount that reinsurers will have to pay per catastrophic weather event.
- Non-proportional reinsurance is divided into two types: per risk covers (i.e. the reinsurer covers the amount of large individual claims from both weather and non-weather sources above a deductible) and catastrophe excess of loss (the reinsurer covers the aggregate claims cost of the reinsured from each weather-related peril catastrophe event, subject to a deductible and limit).

The discussion below primarily focuses on catastrophe excess of loss reinsurance pricing, although much of the discussion is equally applicable to the catastrophic weather peril component of proportional and per risk reinsurance.

The impact of very large weather perils claims on both technical and market pricing is magnified for catastrophe excess of loss covers. This is because changes in the severity of weather events will affect excess of loss reinsurance more than would changes in frequency.

For example, in a specific scenario, the modelled claims cost estimate for tropical cyclone event may be \$12 million. If the insurer buys reinsurance coverage for claims greater than \$10 million, the expected reinsured claims cost for that scenario is \$2 million. However, if the severity of the insured loss increases by 10%, the insured's ground up claims cost increases from \$12 million to \$13.2 million, but the reinsured claims cost increases from \$2 million to \$3.2 million.

This leverage factor may be 150% or more, and means that reinsurers are extremely sensitive to factors which increase the size of insured claim costs, such as more severe or widespread perils, or inflation on building replacement costs.

Increased frequency in weather claims events and variability in claim severity may impact both the size expected claims and the uncertainty of the expected claim cost estimate. Because reinsurers must hold capital to protect their solvency against such uncertain events, the reinsurers' required capital levels may also increase, and this may increase the return on capital component of the technical reinsurance price.

C.3 Response of reinsurers to recent catastrophes

Impact on Technical Prices

Reinsurance pricing will tend to vary with high claims activity, particular large weather events, since reinsurers are disproportionately exposed to large catastrophe events due to the structure of many reinsurance contracts. As historical claims increase, technical claims cost estimates will change, although the extent of this will vary between experience rating and exposure rating approaches as discussed below.

- If reinsured weather-related claims are increasing, this will increase the estimated claims cost from an experience rating approach. Higher recent claims cost will essentially flow directly into the estimated technical premiums. This impact may be muted if a longer term historical measurement period is used to estimate the expected future recoveries (e.g., if the observation period is 20 years, the impact of one year of high claims experience will be much less than if the observation period is only the latest three years).
- The impact of claims events on exposure rating will tend to be more gradual and variable than experience rating.
 - Exposure rating is prospective in nature, and the perils distributions used by modellers will attempt to include a wide range of potential events. However, large weather events may be used to confirm if model assumptions are correct, or re-calibrate models if the reinsured claim costs are outside the range of potential outcomes. One recent example is the 2010 hailstorm in Perth – prior to this, most hail models did not include any allowance for hailstorms in Perth, so the event set for hail models were re-calibrated to include these scenarios.
 - When large weather claims occur, modellers will use the actual event data to "backcast" the model's result by

inputting the exact peril details, such as the tropical cyclone track, barometer pressure, wind speed, etc. and then using the vulnerability and exposure modules to generate anticipated reinsurance claim costs. By comparing this to actual emerging claim cost experience, the validity of the model assumptions is tested, and may be revised. Models are usually recalibrated after each event. Recent examples of this are recalibration of the vulnerability curves, for the demand surge impact from Tropical Cyclone Larry which was the first Queensland cyclone of significance since the 1970s, and recalibration of the coverage assumptions, for Hurricane Katrina and resulting claims from storm surge.

Some modellers update models annually and others more frequently. One particular impact of recent bushfire and flood claims has been the development and use of detailed exposure models for these perils by many large insurers and reinsurers. Exposure models were not in widespread use for these perils five years ago.

In addition to re-calibration of exposure models for past events, insurers and reinsurers will also aim to project observed trends in insured claims experience. This is difficult to do since it is almost impossible to separate the causes, which are a combination of (1) randomness (2) cycles, e.g., El Nino vs. La Nina (3) building development in high risk areas and (4) possibly climate change. Modellers may provide both long term and short term projections, based on long term average weather or immediate outlook for weather, e.g., if a very active tropical cyclone season is expected.

Impact on Premiums

Although there is a correlation between the cost of weather events and reinsurance pricing, there is no direct or automatic flow-through of claims costs to premiums due to the methods which reinsurers use to estimate technical prices (the theoretically correct price) and the reinsurance pricing cycles arising from swings in worldwide reinsurance supply and demand.

Reinsurers globally have relatively benign weather-related catastrophe claims in 2009, 2010 and the first two months of 2011. However, it is important to note that there has been very poor catastrophe claims experience in Australia and New Zealand. Given the reinsurance is a risk pooling mechanism at a global level, reinsurers may conclude that Australia and New Zealand represent a higher proportion of this overall risk, and may increase the risk rating and cost of capital requirements to continue to provide reinsurance. On the other hand, covering Australian and New Zealand risks has the benefit of providing geographic diversification to reinsurers.



Institute of Actuaries of Australia

18 July, 2011

Natural Disaster Insurance Review
c/- The Treasury
Langton Crescent
PARKES ACT 2600

By email: ndir@treasury.gov.au

Response to Natural Disaster Insurance Review Issues Paper

The Institute is the sole professional body for actuaries in Australia, providing independent, expert and ethical comment on public policy issues where there is uncertainty of future financial outcomes. It represents the interests of over 3,800 members, including more than 2,000 actuaries.

Some of the principles that guide the Institute's inputs into public policy are:

- acceptance of public sector involvement where the market does not meet societal needs;
- the need to take a long-term policy view, with appropriate transitional arrangements;
- ensuring that consequences of risk taking behaviour are borne by the risk taker;
- issues of intergenerational equity; and
- clear and reliable information available for decision-making.

The NDIR Panel released an Issues Paper in June 2011, seeking submissions in response. Attached is the Institute's response. In summary, the Institute believes that in some cases, inappropriate development and/or inadequate information make it difficult for the insurance industry to provide affordable flood cover. The underlying cause of potential flood losses, inappropriate development, needs to be addressed as a national priority.

However, mitigation efforts will take many years to implement. In the interim, we recommend government intervention in the market via some form of insurance pool for high risk properties, which will facilitate government subsidy of premiums for those in high risk areas. That pool can also serve as a mechanism to provide financial incentives for flood mapping and mitigation actions, with the aim of eventual wind up of the pool over 10 or 15 years. A pool also provides a structure to address the chronic problems of non and under-insurance.

The Institute response to the NDIR Issues Paper is divided into three sections. The submission first summarises the Institute's key recommendations, and provides some background to these recommendations. Attachment A provides alternative models for a national insurance pool. Attachment B gives feedback on particular matters raised in the Issues Paper.

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The Institute would be pleased to discuss the issues raised in this submission or to respond to specific questions to assist the NDIR in the course of its work. Please do not hesitate to contact our Chief Executive, Melinda Howes, on (02) 9239 6106 if there is any way we can assist.

Yours sincerely

A handwritten signature in black ink, appearing to read 'B. E. Rafe', with a stylized flourish at the end.

Barry Rafe
President

Submission to

Natural Disaster Insurance Review

Inquiry into flood insurance and related matters

18 July 2011

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Summary of Key Recommendations

The Issues Paper and much of the discussion following its release have revolved around flood insurance and potential ways of addressing the lack of availability of flood cover in buildings insurance. The Review's terms of reference are wider than just this matter and the Institute's response is aimed at addressing the broader issues as well as flood insurance options.

Short term insurance pool linked to long term mitigation actions

In most cases, the insurance industry meets the requirements of society to align risk taking and loss funding associated with natural disasters. In some cases, particularly for exposure to flood and actions of the sea, inappropriate development and/or inadequate information make it difficult for the insurance industry to provide affordable cover.

The underlying cause of potential loss, inappropriate development, needs to be addressed as a national priority. However, mitigation efforts will take many years to implement. In the interim, **we recommend government intervention in the market in some form of national insurance pool which will facilitate subsidy of premiums for those in high risk areas.** That pool can also serve as a mechanism to provide financial incentives for flood mapping and mitigation actions, with the aim of eventual wind up of the pool over a period of 10 or 15 years. A pool also provides a structure to address the chronic problems of non- and under-insurance. We recommend that the pool cover flood and actions of the sea, with extension to other perils if insurance affordability is an issue.

Any government intervention in the insurance market must be careful not to inadvertently promote risk taking behaviour by dampening the relationship between risk taking and loss funding. A government-sponsored insurance pool has many shortcomings and should only be considered as an interim solution. Attachment A to this report sets out some alternative structures for an insurance pool.

Making exposure transparent

In order to determine the exposure of properties to flood there is a need to develop national flood maps.

The Institute recommends the development of government sponsored national flood mapping which is made widely accessible to all stakeholders, including all levels of government, businesses and consumers.

The Institute also recommends that information provided to consumers be communicated in language that encourages prudent risk interpretation. For example, the quantitative measures of flood frequency may be better described in terms such as low, moderate, high and extreme, the same way that bushfire risk is communicated.

The Institute recommends that to minimise disputes any national flood insurance pool cover water-off-the-ground losses. "Water-off-the-ground" has no regard for the nuances of the way the water came and coincident rainfall.

Government funding options

Catastrophe bonds and similar financial instruments may be an effective funding mechanism for natural disasters. A national insurance pool could use catastrophe bonds to access capital and debt markets. There is also the option of the government issuing catastrophe bonds to provide cover for insurers.

Discussion of Recommendations

Current Insurance Market

The Australian insurance market generally meets societal needs. Premiums are determined to a great extent as a function of risk, enabling insurance costs to be an effective tool to encourage risk management. Any government intervention in the insurance market must be careful not to inadvertently promote risk taking behaviour by dampening the relationship between risk taking and loss funding.

We do not advocate replacing or impairing the insurance industry where it is currently meeting the requirements of society. We do, however, advocate consideration being given to the need for intervention to assist consumers who either cannot afford insurance, or avoid insurance with the expectation that the community will provide compensation for losses.

If society holds the view that it is the responsibility of able individuals to take care of themselves, then insurers should avoid making ex-gratia payments and governments should minimise post-event compensation. The present system of government and charitable funding of disaster losses may not promote equitable outcomes. The level of funding and donations has varied considerably from one disaster to the next. Past examples of government funding of losses may discourage individual responsibility and promote inappropriate risk taking.

There have been moves toward simplifying the definition of "flood" in insurance contracts. Currently, actions of the sea are not covered under standard insurance contracts, and the Review is an opportunity to address this gap. Some climate scientists have anticipated an increase in the frequency and severity of weather events as well as increases in sea levels, which means that losses from natural disasters may increase in the future, exacerbated by demographic changes.

Particular issues facing strata title and small business policies can also be addressed and are discussed in Attachment B to this submission.

Non- and Under-insurance

Non- and under-insurance is a very significant problem and has been observed across a range of natural disasters. Non- and under-insurance can be due to the following factors:

- **Inadequate sum insured** - Insurance solutions need to consider better ways of ensuring that properties have adequate sums insured. Consumers may have difficulty estimating an appropriate sum insured – anecdotal evidence suggests that most under-insurance is not a result of a deliberate decision to reduce the insurance premium. Insurers have an important role in providing consumers with guidance and tools to assist consumers to estimate their appropriate sum insured.
- **Deliberate acceptance of risk** - Consumers may rationally and consciously choose to take on the risk of loss. Coverage of 1 in 100 year flood risks may have material capital implications for an insurer. An individual, on the other hand, may interpret the same information as unlikely to impact them personally and therefore a low risk.

- **Insurance is unavailable or unaffordable** - Where insurance is not available, or an individual cannot afford insurance, society may support communal funding for losses arising from a natural disaster, particularly if some level of government has approved development.
- **Inadequate insurance of contents** – Research suggests that the take up of buildings insurance exceeds 90% of domestic properties, but is much lower for contents insurance. In the event of a natural disaster there are many uninsured people who do not own a dwelling and lose most of their possessions. These people tend to be among the most vulnerable in society and any government support comparatively more effective.

A national flood insurance pool provides a structure to address the chronic problems of non- and under-insurance.

A pool to provide financial incentives for mitigation actions

Inappropriate development means that there are properties in locations which are currently unsustainable, in the sense that full knowledge of the flood risk would have led to different development decisions, or at the least different land, housing and insurance pricing signals. Appropriate mitigation and prevention strategies can eliminate or minimise to an acceptable level many of these risks. Some risks may be beyond any mitigation actions.

Any mitigation efforts will take many years to implement. **In the interim, we recommend government intervention in the market in some form of national insurance pool which provides a mechanism for subsidy of premiums for those in high risk areas.** We recommend that the pool cover flood and actions of the sea, with extension to other perils only if mitigation actions are to be implemented.

A national insurance pool can be constructed to provide financial incentives to encourage flood mapping and mitigation actions, with the aim of eventual wind up of the pool over 10 or 15 years.

It is important to align risk taking with loss funding. Cross-subsidisation of premiums can reduce the incentive for risk mitigation and promote new development in flood prone areas. **A national insurance pool which provides financial incentives for mitigation actions as a primary aim is a mechanism for co-ordinating loss funding and appropriate development decisions. Government should set an objective to reduce the size of any intervention in the insurance market over time as mitigation actions reduce the number of properties at high risk of flood.**

To avoid moral hazard and maintain incentives for risk management and flood mitigation, key stakeholders (homeowners, businesses, councils, governments) need to have a vested interest in outcomes. **The Institute recommends that the extent of any cross subsidisation of premiums should be contingent on local and state councils, and potentially home owners and businesses (i.e. the stakeholders) undertaking (or at least contributing to) adequate risk mitigation.**

It is important that the premiums charged for high risk properties provide an incentive to individuals and communities to implement risk mitigation efforts and not encourage undesirable development. It is an option for government to subsidise premiums charged for high-risk properties directly without a pooling mechanism, but we feel that an alignment of interests is better achieved via a pool mechanism which

has the providing of financial incentives for mitigation actions as a primary objective. A pool also provides a structure to address the chronic problems of non- and under-insurance.

The most straightforward and transparent option for flood is to have a national pool cover water-off-the-ground losses for either declared events or defined perils. "Water-off-the-ground" has no regard for the nuances of the way the water came and coincident rainfall. An event could be declared either by government or an independent body. An issue with providing coverage for declared events only is that those living in low density areas may not receive equitable support.

Mitigation actions

There are many pieces to the puzzle of natural disaster resilience and insurance is only one of them. To remain accessible and affordable, insurance requires the other pieces of the puzzle to play their appropriate role. Ideally, in terms of the order in which the pieces of the puzzle should be considered, insurance should be the last.

All levels of government, homeowners, councils and businesses should consider ways to reduce risks to existing assets as well as limiting growth in exposure to floods and other natural disasters. There is much evidence that effective mitigation efforts will likely be more cost effective in the long term than post-event funding of losses arising from a series of disasters. This is before consideration of the social impacts associated with natural disasters.

Mitigation options include revising future building codes, dams and levies, re-location, renovations to existing buildings and infrastructure, and other actions, the specificity of which the Institute leaves to others. Different mitigation actions apply to existing buildings and new buildings. Clearly, it is simpler to prevent new development than it is to move existing development. Planning regulations and building codes will need to be refined to reflect the mitigation strategy.

Better Information

In order to determine the exposure of properties to flood there is a need to develop national flood maps. **The Institute recommends the development of federal government sponsored national flood mapping which is made widely accessible to all stakeholders.** We are aware of previous federal government actions to promote widely available flood maps, and understand that these prior efforts¹ may provide a cost effective basis for further development.

Outputs from flood maps and flood models will always have some uncertainty associated with the exact level of flood risk, and should be as dynamic as possible, in the sense that changes to topography, infrastructure and land improvements are easily allowed for in the model.

The Institute recommends that information provided to consumers be communicated in language that encourages prudent risk interpretation. For example, the quantitative measures of flood frequency may be better described in terms such as low, moderate, high and extreme, the same way that bushfire risk is communicated.

¹ The Institute has had some discussions with various parties about ANUGA, the open source software developed some years ago by staff from the Australian National University and Geoscience Australia.

The Institute recognises that widely available flood maps could lead to disputes between governments, councils, developers and consumers where new information differs from that relied upon in the past or currently. Nevertheless, we consider that these issues must be faced at some time and ignoring the problem will not make it go away. Such disputes could be managed by the introduction of appropriate transitional arrangements. In fact, the longer the delay to an informed market, the greater the potential extent of disputation.

Government funding options

Catastrophe bonds and similar instruments may be an effective funding mechanism for natural disasters.

Catastrophe bonds allow monies to be raised from the private investment sector, at a certain interest rate, in advance of an event. These funds are then released when a defined catastrophe occurs. The net interest payable, less any recoveries, is the cost of catastrophe bonds.

Following a prescribed catastrophe, a bond's face value falls, possibly to zero, meaning that the money raised by the sale of the bonds does not need to be repaid to the private sector investors, therefore freeing it up for use in catastrophe payments.

Catastrophe bonds works like reinsurance, and allow capital and debt markets to participate directly in insurance profit and losses. Catastrophe experience is often seen as uncorrelated to the substantive part of investment portfolios, and the contingent nature of reinsurance financing (pre-event) and the relative magnitude of potential losses involved can make these instruments attractive investments for capital and debt markets.

Frictional costs and sufficient capacity in the traditional global reinsurance market has meant that the catastrophe bond market has not developed to the magnitude expected by some.

The size and nature of government exposures make catastrophe bonds worthy of further investigation. Such financial instruments may be able to provide a viable source of funding for governments, which have a credit rating allowing them to incur lower costs than the private sector accessing capital and debt markets.

There is also the option for the government to issue catastrophe bonds to insurers. Catastrophe bonds may become relatively more economic if reinsurance rates charged by international reinsurers for Australian disaster risk increase significantly.

Attachment A – Potential Models

A government-sponsored insurance pool has many shortcomings and should only be considered interim solution, as any government intervention in the insurance market may inadvertently promote risk taking behaviour by dampening the relationship between risk taking and loss funding.

Recognising the need for government intervention while long term mitigation measures are being put in place, we recommend that any national insurance pool serve as a mechanism to provide financial incentives for flood mapping and mitigation actions, with the aim of eventual wind up of the pool over 10 or 15 years.

Linking any national insurance pool to mitigation actions is key, and there are a number of alternative structures available to facilitate this. A pool also provides a structure to address the chronic problems of non- and under-insurance.

We recommend that the pool cover flood and actions of the sea, with extension to other perils only if mitigation actions are to be implemented.

This attachment gives alternative models for a national insurance pool. We first discuss some key considerations, then summarise the NDIR models.

We then give a skeletal outline showing how a community funded model might be structured, and describe some variants to that basic model.

How should the various models be assessed?

The NDIR Issues Paper proposes two criteria for assessment of flood insurance models:

1. Accessibility;
2. Affordability.

Whilst these criteria are critical to a satisfactory resolution to the flood insurance problem, we also recommend taking account of the following four additional criteria:

3. Equity – are the right people paying?
4. Efficiency – is the solution an efficient use of resources?
5. Mitigation incentives – does the proposed solution leave the relevant stakeholders with an incentive to act in ways which will mitigate risk (by restricting development to areas not at risk of flood and taking steps to mitigate the risk of flood or the potential damage)?
6. Practical viability ("gaming the system") – if subsidies are to be provided to insureds at high risk of flood, will insurers and insureds be able to "game the system" to their advantage, e.g. by misrepresenting the flood versus non-flood component of premium to obtain higher gross premiums for the insurer and lower net premiums to the insured, at the expense of the parties that are subsidising flood-prone properties?

We note that there is inevitable conflict addressing these criteria: there is no ideal solution.

Insurer or Reinsurer?

The NDIR models suggest a pool which operates as an insurer. A national insurance pool may more effectively operate like a reinsurer, where it provides coverage etc. to insurers, and does not require large numbers of claims handling and other staff. If insurers retain some portion of the flood risk, they can settle claims and have an incentive to keep claims costs down.

Premium determination

Most models have the pool determining the flood premium. Some insurers may not be happy about accepting risk (for both the flood risk and the non-flood risk) at rates that have been determined by a third party, and which the insurer may or may not regard as acceptable for the risks underwritten. Insurers should determine the premium for risk they retain.

Full risk rating is not necessary but advisable, as it allows the extent of any subsidies to be determined.

Pool Coverage Considerations

If a national insurance pool is set up, it will be necessary to set out who has coverage, and what events and perils are covered, and any limitations on claim payments.

For flood cover, a national pool could cover water-off-the-ground losses (aka flood and storm water) for either "declared events" or defined perils for properties deemed high risk. "Water-off-the-ground" has no regard for the nuances of the way the water came and coincident rainfall. An event could be declared either by government or an independent body. An issue with providing coverage for declared events only is that those living in low density areas may not receive equitable support.

Cover from the pool could be capped at (say) \$300,000, or full replacement cover may apply up to a pre-determined limit. Insurers may have the option of providing top-up cover.

To encourage better development decisions, participation in pool cover could be restricted to houses built or extensively renovated before (say) 2012. Claim payments could be contingent on the funds being used to rebuild in a more resilient way (elsewhere or to higher standard in same location). The pool can possibly cover public, commercial premises and residential units. Home contents cover may or may not be provided.

A possible alternative would be for a national pool to cover certain catastrophic events rather than high risk properties. The pool could provide non-conditional coverage in an event of a certain catastrophic scale, determined based on certain criteria by the government or a body such as Geoscience Australia or the Bureau of Meteorology. Conditional coverage could also be made available for events below the determined catastrophic scale, with consideration of those living in low density areas. With this approach, where the volatility of larger events is transferred to a national pool, insurers are likely to be in a position to offer lower premiums to consumers, which may also help reduce non-insurance.

It would be possible for pool coverage to extend to earthquakes, tropical cyclones, bushfires and related hazards.

NDIR Models

The NDIR models proposed in the Issues Paper share the following features.

1. Insureds would approach insurers for quotations in the usual way. If a quotation can be found in which the "flood inclusive" price is less than a certain threshold (say 150% of the "flood excluded" price) then the insured can take out insurance without the need for cover from the pool.
2. If no quotation is provided where the "flood inclusive" cover is priced at less than the threshold, then the insured will be entitled to a "flood discount". The pool will calculate the rate for both "flood inclusive" and "flood excluded" cover and will also calculate the discount based on a formula such as "90% of the excess of the 'flood included' price over 150% of the 'flood excluded' price". The selected insurer will pay the flood premium (net of the "flood discount") to the pool.
3. Subsidy providers would pay the "flood discount" into the pool.
4. The pool would settle flood claims with insureds in the usual way. Other claims would be settled by insurers.
5. The pool operates as an insurer and would bear flood risk and would need to adopt governance structures, to put appropriate reinsurance management and risk management strategies in place, and so on.

The models proposed in the Issues Paper require significant claims resources to facilitate fast payment of claims in the event of a major flood event. It may be more cost effective to rely on insurers' resources in some way. If insurers are paying claims merely as agents for the pool, there would be need to be incentives to manage and minimise claims costs in place.

Community Funded National Insurance Pool

We set out a generic community funded model, where in this example charges are levied to ratepayers.

1. Charges would be levied on all property owners directly. Charges may only apply to certain dwellings, e.g. exclude units. The charges could replace or extend the current flood levy.
2. Alternatively, rate payers could purchase insurance from private insurers and provide a certificate of currency to local councils when paying rates.
3. Claims can be settled by the owner's normal home insurer, which recovers from the national insurance pool, with the insurer being reimbursed for claims handling costs.
4. Owners without buildings insurance could claim directly off a representative (an insurer or a statutory body) of the pool.
5. Contents cover is not easily allowed for where charges are levied to rate payers. Contents coverage could be provided at a fixed level, possibly extending to contents cover for renters.

There are a number of variations available. For example, a levy could be imposed on all properties via the councils, based on the replacement value of properties.

Councils could be required to conduct an assessment of the replacement value of properties on a regular enough basis (e.g. once every two years). So, if the average replacement value is \$280,000, a rate of 0.1% will equate to \$280 p.a. There are approximately 9 million risk addresses found in GNAF, and this would imply that the scheme is able to collect at least \$2.5b p.a. Alternatively, a levy could be collected based on an existing land value basis that each council is using.

We now set out some variants to components of this basic model.

Variable Quota Share Model

There are a number of ways of determining how premiums and losses are shared between insurers and a national insurance pool. A fixed dollar threshold or fixed percentage of losses can be applied. Alternatively, a variable quota share model² has the flood risk shared between the insurer and the pool in differing proportions. For properties subject to high flood risk, the flood pool underwrites the great majority of the flood risk, but for lower risk properties, the insurers bear most or all of the risk.

With this approach, the insurers will keep relatively more of the flood risk for properties where the flood risk is least, which may be a relatively attractive feature of the scheme for insurers. With the variable quota share model, the insured's premium is retained by the insurer, with the government directly paying the pool's portion.

Market Model with Subsidies

It is possible to subsidise premiums directly without setting up a national pool. This model reflects the current insurance market, with the exception that subsidies would be provided to those who are at elevated levels of flood risk. The following are possible design features:

1. Insureds would approach insurers for quotations in the usual way.
2. Insurers would quote both "flood inclusive" and "flood excluded" premiums. There may be an agreed formula for determining a "flood discount". For example, the "flood discount" might be 90% of the excess of the "flood inclusive" rate over 150% of the "flood excluded" rate, with both rates as calculated by the insurer.
3. Insureds would choose with which insurer they wanted to place their business.
4. Insureds would pay the insurer premiums net of flood discount. The flood discount would be collected separately by insurers from the subsidy providers (governments or councils or insurers, as per the NDIR Issues Paper) via a purely administrative mechanism. There would be no "flood pool" apart from the flood discount collection mechanism.
5. Insurers would settle claims with insureds in the usual way.

In summary, this model constructs a normal competitive market except that the subsidy providers would support those who are deemed eligible for discounts. The premium payment mechanism would be akin to CTP insurance in NSW and Queensland.

² More details are available at http://www.finity.com.au/wp-content/uploads/2011/06/df_Flood_Jun-2011_FINAL_Secured.pdf

Historical Reference

Another model which could be considered is similar to the scheme proposed by the Natural Disaster Insurance Scheme Working Party following Cyclone Tracy.

The following are possible design features:

1. A co-operative arrangement between insurers and government:
 - a. A pool of insurers would be established to operate the scheme;
 - b. The government would offer reinsurance to the pool.
2. The scheme covers buildings and possibly also contents losses from earthquakes, floods, tropical cyclones, bushfires and related hazards. Some of the cover currently provided by insurers would be provided by the scheme.
3. The scheme would only cover "declared events". Only events of a certain catastrophic scale would be considered declared events. Guidelines would be established and the events declared by an independent body.
4. For declared events, the cover will be the same for all insureds (e.g. full replacement cover may apply up to a pre-determined limit).
5. Participation would be compulsory.
6. The pool would be managed along traditional insurance principles. Premiums may be collected with council rates.
7. Premiums would be risk rated, possibly with some level of cross subsidisation for high risk properties. The level of cross subsidisation may vary for new properties built in high risk areas after the commencement of the scheme.
8. Premiums would be set by a Premiums Advisory Committee and would be the same for all insurers participating in the pool. Premiums would be intended to generate a profit for insurers.
9. Special arrangements could be apply to those who, subject to a means test, could not afford to take out cover.

Attachment B – Response to the Issues Paper

This attachment responds to specific parts of the Issues Paper. We have responded to those parts of the Issues Paper where the Institute has particular views or comments.

Numbers and headings in this attachment reflect numbering and headings in the Issues Paper. Any undefined term has the meaning defined in the Issues Paper.

Chapter 2. Home Insurance Cover for Flood

We set out below some matters for consideration in response to the proposed alternatives given in the Issues Paper. The issues raised are not necessarily unique to the proposed alternatives.

Automatic Cover and the Opt Out Alternative

We have a range of comments in relation to the alternatives provided in the Issues Paper that are common to both the automatic cover and the opt-out options:

- Not all damage that occurs at the same time as a flood is clearly from an overflowing watercourse. Many floods occur during a period of prolonged rainfall, often accompanied by strong winds. It would be useful to clarify how the causes of claims will be determined when there is a mixed event.
- The level of cross-subsidies will impact the extent of insurance take up and the viability of proposed options. With any increase in premiums, albeit subsidised, there is potential that there will be a reduction in the take up of home insurance.
- The need to offer flood cover will require insurers to be able to assess an appropriate risk premium. This will result in considerable expense to insurers, including the need to develop IT systems. The increased costs could result in some, particularly smaller, insurers exiting the market or “red zoning” flood prone areas.
- The introduction of a pool could leave insurers without incentive to manage efficiently the cost of claims that are covered by the pool. This could see claims costs for the pool being higher than would be the case if insurers were impacted by the cost of the claims. It would be optimal for insurers to have a financial incentive to effectively manage the cost of claims.

There are some issues that are specific to the opt out alternative:

- It may be difficult for consumers to make an informed decision whether or not to opt out. The opt out option is aided if information provided to consumers is communicated in language which facilitates prudent risk interpretation. This may be via describing risks in terms such as low, moderate, high and extreme – the same way that bushfire risk is communicated.
- The opt out solution does not resolve the recent experience of financial and emotional distress for many customers because of the mixed event dispute problem. Disputed claims will still occur at a significant rate under the opt out alternative, especially amongst consumers who are unaware of, or unable to, adequately assess their own flood risk, and amongst those on low incomes.
- The take up of the opt out alternative would be expected to be biased toward those customers of genuinely very low risk (because the premium will be very low) and those customers of extremely high risk (due to the subsidised premium).

- Providing consumers a choice to opt in or out of flood insurance means that the pool and insurers may be selected against, at least in the medium term until information about the elevation of and location of improvements on the land parcel is widely accessible. This is expected because sometimes local knowledge will be better than model projections. Anti-selection will occur due to the inadequacies of the terrain/elevation models (DTMs) used as inputs to the flood models. This arises in two main ways. The DTMs used as inputs into the flood models are of varying vertical resolutions. A small measurement error (e.g. +/- 3m) could have a very large impact on the flood risk assigned to the property. Secondly, the DTMs do not provide an indication of where on the land parcel the property actually is.

Chapters 3 and 4. Identifying the Homes with High Flood Risk; An Insurance System for Homes with High Flood Risk

The Institute's comments in relation to Chapters 3 and 4 of the Issues Paper somewhat overlap and have been combined.

Affordability framework

The proposal in the Issues Paper of using non-flood premium as the benchmark to measure affordability may be workable, but it assumes that:

- The private market is efficient and charges the same level of premiums for the same risks and coverage,
- Each consumer currently takes up buildings and contents insurance,
- Each insurer provide insurance cover for all policyholders,
- The same coverage is offered for all policies, and
- All consumers take out policies that provide an appropriate sum insured.

In practice, none of these assumptions hold. Specifically:

- Premium levels can vary substantially between insurers for the same risk and coverage.
- As noted below, the level of take up of insurance varies.
- Not all insurers will provide access to insurance in all areas (e.g. a number of insurers do not offer cover north of Rockhampton), nor will they offer insurance to all potential customers.
- Coverage, including excesses, varies significantly between policies and between insurers.
- As illustrated by the Victorian, fires there are significant levels of underinsurance for most buildings and contents policies.

Some of these drawbacks, particularly the extent of non- or under-insurance, make the suggested approach difficult to apply in practice. The current level of non- and under-insurance bring into question whether the non-flood premiums currently offered in the market are truly affordable.

Paragraph 3.2 of the Issues Paper states “There is evidence of a high level of home insurance coverage, implying that such cover is affordable.”³ However, this appears to contradict:

- (i) Mike Wilkins’ noted in his April 2011 address to CEDA that almost two million (around 20%) homes were thought to not having any insurance cover;
- (ii) ASIC 2005 report on “Getting home insurance right” suggests that the proportion of uninsured homes ranges from 2% to more than 15%.

It seems likely that insurance is deemed unaffordable by many low income earners, which is supported by the relatively high level of non-insurance observed in the 2009 Victorian bushfires.

Supposing Paragraph 3.2 is correct, i.e. the level of non-insurance is low, then there is still the issue of under-insurance, which remains significant in Australia. There are probably a range of reasons that result in under-insurance including:

- Consumers do not appreciate the value of their building and contents; and
- Consumers find insurance covers to be expensive and deliberately underinsure to help contain the cost.

The alternative affordability concept raised in the Issues Paper, which considers a benchmark of income or assets, is possibly more equitable, albeit more difficult to determine. Non-insurance and under-insurance are discussed below in our response to chapters 11 and 12.

Engineering Threshold or Price Threshold

The Issues Paper identifies two potential bases for determining the threshold for high risk properties: an engineering threshold and a pricing threshold. We observe that the two approaches may not be that distinct, since insurance premiums are determined by reference to engineering and other physical analysis.

We note that the premiums which are used in the pricing threshold may also include market and other components which may not reflect the relative risk among properties.

The aim of a threshold is to distinguish properties with high flood risk. A pricing threshold may instead distinguish those properties high flood risk relative to risk associated with other perils.

For example, consider two buildings A and B valued at \$200,000, each with a 1 in 100 year flood exposure. Both buildings have the same flood risk exposure, and ideally the same flood premium, say \$2,000.

For many reasons, building A could be exposed to greater non-flood risks than building B, and have a higher non-flood premium. For illustration, assume building A has a non-flood premium of \$1,000, and building B \$500.

³ Paragraph 11.2 later makes reference to the proportion of owner-occupied homes with no insurance being estimated at 4%.

A pricing threshold will assess building B to have higher flood risk because of the relativities of the flood and non-flood premiums, both buildings are exposed to similar flood risk.

Notwithstanding these issues, a pricing threshold may be more viable in the short term in the absence of comprehensive, reliable and publicly available flood maps.

Pooling

We do not consider that the provision of affordable flood insurance for high risk properties provides a suitable long term solution; i.e., longer than 10 or 15 years.

The Institute supports the view that it is not the role of policy makers to make insurance cheaper for these individuals, but rather it is to make use of the knowledge we have about these properties to find a way of reducing the risk of this event happening to them at all. Only after exhausting all risk reducing possibilities or as a short-term solution does it make sense to devise a way of making insurance more affordable.

It is often argued that the cost of mitigation is prohibitive. This may be the case over a short term financial assessment but will not be the case when considered over the longer term and when the full economic cost is considered, including government subsidies as well as the non-financial costs such as emotional distress.

The Cost of Pooling

The Issues Paper proposes a pooling mechanism which relies on the pool calculating the flood and non-flood peril premiums in order to calculate the premium discount.

The Institute notes that such a process would involve considerable expense and it may be more efficient to utilise the resources of insurers.

Discount Eligibility

Some level of discount to existing properties in flood prone regions to ensure affordability may be an appropriate short term option. Assuming that home owners with higher-valued properties are in a stronger financial position and should be well-placed to cope with higher flood premiums, it may be appropriate for the level of discount to reduce with the value of the property; i.e., the higher the value of the home, the lower the discount. Lower discounts could act as an incentive for higher-valued properties to put in place mitigation actions.

Appropriate development standards may be encouraged by allowing discounts only when adequate risk mitigation strategies are put in place. The level of discount for properties developed after a specified date (perhaps the date when national flood map information is expected to become available, so that all parties have full transparency over the level of flood risk) should either not be offered at all, or at least should be commensurate with the level of risk mitigation effort implemented.

For existing properties, discounts may be provided either for a limited time or on a reducing scale (where mitigation actions can reasonably be expected to be implemented).

In both cases, premium discounts are not adequate long term solutions.

Chapter 5. Flood Cover for Contents Insurance

It is the Institute's view that the impact of floods and the affordability of contents insurance should be addressed for low income individuals as part of any insurance solution to the flood issue.

In the case of owner occupied buildings, the inclusion of contents insurance is relatively straightforward. The key difficulty for the inclusion of contents insurance is the fact that many properties are not owner occupied and the take up rate for contents insurance amongst non-owner occupied properties is considerably lower than that for owner occupied properties.

Chapter 6. Flood Cover for Strata Title and Other Residential Property

The Institute recommends that strata title and other non-standard residential properties be included as part of any solution developed for flood. The paragraphs below elaborate on this issue.

a. Strata title should be included

- i.* There are a large number of laterally structured strata properties in Australia where properties are physically similar to a standard home. It will prove difficult to explain to the public why these strata properties are excluded from the flood arrangements.
- ii.* There is a growing trend towards the development of apartment blocks in Australia.
- iii.* The flood risk for apartments may be lower as the risk of inundation would only affect the lower levels of the building. Hence, the accumulation risk in the event of a flood is likely to be lower for apartments relative to that of standard homes.
- iv.* Offsetting this, planning processes often result in concentrations of apartment blocks, often in high risk locations. This could result in accumulations of risk and insurers may decide to withdraw from the market in those areas.
- v.* To help reduce the risk of flood damage to the fixtures of strata properties, regulations should be modified so that expensive fixtures (e.g. lift motors and controls, ventilation systems, alarm systems and sprinkler pumps) are located above a specified flood level (instead of the basements) or "water-resilient" based on some stipulated standards (we note that Brisbane City Council is currently addressing some of these issues).
- vi.* If strata title is covered for flood, it would be necessary for the owners' corporation to allocate the premium charged to each apartment.
- vii.* In all but a few exceptions, legislation requires the owners' corporation to purchase building insurance. Unlike home owners, the owners' corporation would not be able to avoid flood cover and the associated cost by deciding not to insure.

b. Mixed use strata properties should only be included if the floor area of the building for commercial activities is below a certain limit/threshold

- i.* As noted in the Issues Paper, the nature of the cover is essentially commercial insurance and the strata property manager should be able to seek flood cover via insurance brokers.

- ii. However, there will be properties where the amount of floor area committed for commercial purposes is not significant, e.g. only a grocery store located on ground floor of a building. In such instances, these properties should be treated like an ordinary strata property and be included in the flood arrangements.
 - iii. Otherwise, it is the Institute's view that larger mixed strata properties should be excluded.
- c. *Retirement villages and aged care facilities should have limited coverage*
- i. Whilst such residences may be in some respects similar to a standard home, these properties may house a range of expensive medical equipment and supplies.
 - ii. It is the Institute's view that coverage for such items is most efficiently provided by the private insurance market. This contains costs for any national pool, and may restrict building such properties in flood prone areas.
- d. *Caravans and mobile homes should be included*
- i. The Institute believes that these properties should be included on the basis that the caravan or mobile home may be the only asset the insured owns.
 - ii. However, many caravan sites are located in high-risk areas, a total loss is likely given the construction type, and there is a risk of moral hazard.

Chapter 7. Flood Cover for Small Business Insurance

The Institute is of the opinion that small and medium sized businesses (SMEs) should also be included in any flood arrangements because:

- 1) Similar to households, SMEs do not adequately understand their insurance needs and are therefore more at risk of under-insuring or not insuring at all.
- 2) SMEs may need better advice on flood and insurance generally. In a 2008 report for the Insurance Council of Australia it was noted that there was a mismatch between the perceived applicability of the various cover types with the claims experience. The failing of SMEs as a result of a flood event (or any insurance event) can have a flow-on impact to the economy. Both the livelihoods of the business owner and their employees (and potentially other businesses or suppliers) will be significantly impacted.

The Institute suggests that any proposed flood cover should be offered only if business owners have private business insurance and the sum insured nominated is above a certain threshold of the value of their business, where that value is determined in a straightforward and transparent way.

Many SMEs are renters of properties and it is the contents which should be covered to the extent possible.

A key issue for the insurance of SMEs is the take-up and extent coverage of business interruption insurance. In terms of a general flood pool, the Institute is of the opinion that business interruption as a result of flood should be excluded. The Institute considers that the issue of under- and non-insurance in relation to business interruption by SMEs should be addressed separately to any pooling arrangements proposed for domestic properties.

Natural Disasters Other Than Flood

For most natural disasters insurance cover is readily available, largely because other peril events are more random than flood, particularly for the very high flood risk pool.

The level of public funding via governments and donations for an insurable event such as the Victorian bushfires in February 2009 was considerable. The fact that such a large proportion of residents had no or insufficient insurance needs to be addressed if the NDIR and the federal government is to achieve desired outcomes.

There are conflicting reports on the level of under- and non-insurance in Australia, but clearly there is a correlation between insufficient insurance and the low income population. It is not clear that private sector insurers are in a position to address this issue.

Chapter 9. Measuring Flood Risk

The Institute believes that a government-sponsored flood mapping initiative would support the development of better risk pricing, accumulation management, and risk transfer mechanisms for flood risk.

A national insurance pool or other arrangement may also be facilitated by the availability of comprehensive and unified flood mapping, as risk can be transferred to capital markets or reinsurers who currently cannot support the flood peril because of the lack of information of potential exposure.

The EQC in New Zealand (pool model) or the UK system (market model) both rely on comprehensive mapping of exposure to covered risks.

Single Standard National Flood Mapping

The Institute supports the development of a single national standard for flood mapping in Australia that would help support the development of better risk pricing, accumulation management, and risk transfer mechanisms for flood risk.

The benefits of comprehensive flood mapping are optimised if a single national standard is developed. Having multiple digital terrain models (DTMs) developed from various sources is likely to create confusion and potentially result in inconsistent understanding of flood risk amongst different parties and may engender disputes.

If insurers are required to offer flood cover, having standard flood mapping information will enable greater confidence in monitoring and maintaining the solvency of the insurance industry. If every insurer was to establish its own flood mapping capability, there is greater risk of insurers (especially the smaller ones) misjudging the level of risk accepted, leading to the purchasing of inadequate reinsurance protection which, in turn, may have a significant impact on their solvency positions.

In relation to the question of developing and funding comprehensive flood mapping, the Institute considers that:

- (i) The federal government is best placed to take the lead in co-ordinating and establishing a single national standard approach to flood mapping.

- (ii) A body with appropriate expertise in hazard risk and geo-spatial capabilities should be assigned the task of producing and maintaining all flood maps across Australia⁴.
- (iii) All parties identified as stakeholders in the management of flood risk, including federal and state government, local councils, insurers, the construction industry and, to some extent, lending institutions, should contribute to the cost or their use of establishing and maintaining the flood mapping capability.

Can insurers provide cover without comprehensive flood mapping?

Whilst paragraph 9.21 of the Issues Paper describes some of the problems with the current flood mapping information available, paragraphs 9.20, 9.22, 9.23 and 9.24 appear to suggest that these limitations or inadequacies with current flood information may not be an impediment to the insurance market providing cover.

Current inadequacies of flood mapping may seriously impede insurers being able to offer cover at all, if cover automatically includes flood cover. Making flood cover automatic changes the dynamics of the market and exacerbates the issues of inadequate flood mapping. Insurers will lose the ability to deny coverage for unmapped properties and will be subject to potential loss accumulations that they will not be able to monitor. This may have ramifications for the price of reinsurance.

Smaller and medium sized insurers will be most affected. For these insurers, the cost of filling in the gaps for unmapped areas is proportionately much larger. The larger insurers will have a significant competitive advantage in acquiring better data and developing alternative and robust flood models. Small insurers may exit the market.

Measuring flood risk is difficult

There are many uncertainties regarding the output from a flood study, even when conducted by a highly skilled practitioner. A separate issue is the range in quality of different flood studies.

To provide a picture of the sources of uncertainty and their magnitude we provide a description of the basic components of a flood study:

1. A model of rainfall events is the starting point. This requires measurement of rainfall intensity and duration across Australia. This is complicated by the limited number of data collection points, a considerable amount of missing data, and the need to predict rainfall events with a frequency that is uncommon relative to the volume of data available.
2. A terrain model is required to help predict the flow of water on the ground of the catchment into the river system and surrounding terrain.
3. From points 1 and 2, a hydrologic model is developed to translate the rainfall event to a description of water flow. Usually historical watercourse gauge data and rainfall gauge data are used to develop the relationship between rainfall and river flow. This relationship is then used to help calibrate the river water flow predicted from the design rainfall event and the hydrologic model. However, the watercourse gauge data are notoriously unreliable. Further,

⁴ A possible candidate is Geoscience Australia (GA) which has produced a number of publications on flood and developed ANUGA. In addition, if the flood maps are used in conjunction with its national-wide property exposure database (known as NEXIS), GA is well positioned to help promote greater and improved understanding of flood risk across Australia.

historical rainfall may not include a 1 in 100 year event, so extrapolation may be needed to apply this relationship to the design rainfall in point 1, increasing the uncertainty.

4. A hydraulic model is then needed to predict water flow in the watercourse. This will depend on the characteristics of the river such as the topography of the underwater surface, depth, and width of the river. Gathering this information is very difficult to obtain for a whole river system, so a range of modelling assumptions is required.
5. A terrain model is then used as an input to a hydrologic model to predict the flow of water over the ground after it leaves the watercourse. The currency and resolution of the terrain model will impact the output flow of water, meaning that the flow of water over land after a flood occurs can be quite uncertain.
6. When the flood output is applied to individual addresses, there is also uncertainty about where exactly the property is located on the land parcel.

Finally, damage to property and infrastructure is determined as a function of flood depth. There is considerable variation in the relationship between depth and damage from river system to river system, because this will depend upon the velocity of flood waters and the duration that the property is underwater.

In summary, there is a lot of uncertainty around flood modelling, significant data gaps, and no easy way to turn model output into premium rates.

Chapter 10. Risk Mitigation and Insurance

The relationship between the availability and affordability of insurance and the impact of risk mitigation efforts remains unclear.

There is a widespread economic and social cost of natural disasters. Natural disasters can affect large parts of the Australian economy – operation of mines, operation of ports, the ability to transport goods, lost agriculture production, the inability for people to get to work due to damage to roads or public transport, possible undesirable inflationary effects (e.g. demand surge of certain types of labour and materials, "cost of bananas") etc. Natural disasters cause physical damage to infrastructure assets, some of which may not insured, but also cause large economic costs due to the disruption of a normal functioning economy.

Given this broad impact, the community may find it acceptable for the cost of risk reduction measures to be spread across the whole of society. That is, society may accept as reasonable federal and state governments contributing a significant proportion of natural disaster loss costs.

However, effective risk management requires that those who make decisions which impact loss costs bear a portion of any costs. It is not appropriate for local councils and individuals to take on risk and expect a higher level of government to fund any losses that arise.

Insurers may have difficulty passing on the benefits of risk mitigation to their customers due to lack of access to relevant information. There are broadly three types of information required:

- (i) Property-specific mitigation measures – these are mitigation efforts carried out by the home owners themselves e.g. upgrading homes to meet a current or revised building code, lifting buildings higher in flood plains and reinforcing home features such as garage doors, window and door panels;
- (ii) Government-initiated mitigation measures – e.g. constructing levee banks, sea walls, barrages for unusual tides, fire breaks, improved drainage and dams;
- (iii) Government planning and building rules.

Having to collect this information is likely to significantly increase the underwriting cost for insurers. On the other hand, this information (both property-specific and government-initiated) should be readily available within local councils⁵.

It is important for both government and the insurance industry to collaborate to ensure that this information is made available and all parties are fully aware of the expected benefits of various types of risk mitigation measures so that these benefits are subsequently passed on to those who invest in such measures.

Chapters 11 and 12. Non-insurance of Homes: Should Home Insurance be Compulsory; Under-insurance of Homes

There have been many investigations into non-insurance and under-insurance in the wake of natural disasters in Australia. Although private insurance is currently available for most non-flood perils, many people, particularly those on low income, are left exposed to losses. Sometimes financial relief is available for the under- and non-insured, often in the form of government assistance or charitable donations.

There are a number of reasons for non-insurance and under-insurance. One of the major reasons, particularly for those on lower incomes, is the affordability of insurance, which is discussed above in our response to chapters 3 and 4. Additional imposts such as stamp duty and fire services levy make premiums more expensive and further contribute to under-insurance. For example, in NSW, statutory charges including GST add more than 40% to buildings premiums.

One solution to the issue of non-insurance included in the discussion paper is making home insurance compulsory. A main advantage of making home insurance compulsory is that if all buildings are covered, there will be significantly lower reliance on handouts from governments and charitable donations following natural disasters. This would lead to more consistent coverage between home owners, and would enable communities to recover more quickly from disasters.

However, compulsion is a measure exercised sparingly in society. Currently in Australia the only forms of compulsory general insurance is to cover injury or damage to third parties (i.e. not injury or damage to the insured). There will likely be resistance from those people who made prudent building decisions if they are asked to pay increased premiums or fund losses arising for those who knowingly took on risks.

⁵ All home upgrades or renovations are likely to require approval from local councils.

Compulsion impinges on our freedom of choice as to how we spend our income, mandates insurance as the only loss funding tool, and would require a significant change to the way property insurance currently works and is regulated.

Alternatives to compulsion are available which may have a similar impact. To the extent that premium levels do increase the rate of non-insurance, reducing the impact of stamp duty and other imposts may increase take up rates, particularly in NSW. It may also be possible to target initiatives such as subsidised premiums at those who are not insuring, particularly low income earners.

Raising awareness of the need for individuals to take responsibility for their own insurance coverage may both increase the take up of insurance and lessen the tendency to expect government or charitable handout after a loss.

Lending institutions, which have a vested interest in people having appropriate insurance in place, may be able to play some role in increasing insurance coverage. The role of lending institutions is discussed below in our response to chapter 14.

Under-insurance is a more widespread issue than non-insurance. A report by the Australian Securities and Investments Commission following the 2003 Canberra Bushfires estimated that between 27% and 81% of Australian households were under-insured by 10% or more against rebuilding costs.

The three types of cover discussed in the Issues Paper, are:

1. Sum insured;
2. Sum insured plus top up;
3. Replacement cover.

Replacement cover and sum insured plus top up will lead to lower levels of under-insurance than the traditional sum insured cover, and higher premiums.

We offer the following comments on the advantages and disadvantages of sum insured plus top up cover:

Advantages:

- Homeowners are free to choose their level of cover, with the top up providing a buffer.
- Compared to replacement cover, it should be easier to determine a cash settlement amount in the event of a total loss.

Disadvantages:

- Homeowners are free to choose their level of cover, which still may not be enough even with the top up.
- Risk of under-insurance remains with the insured. Determining the sum insured is a difficult task.

We offer the following comments on the advantages and disadvantages of replacement cover:

Advantages:

- In theory should eliminate under-insurance.
- From a householder's point of view, most of the risk of undervaluing the property lies with the insurer.

Disadvantages:

- Can lead to issues with determining cash settlements in the event of a total loss.
- Changing cover from sum insured to replacement cover will increase in premiums compared to current levels.

Chapter 13. Non-insurance and Under-insurance of Contents

The issues in relation to under-insurance of contents are similar to those discussed in relation to Chapters 11 and 12. These issues are particularly relevant for low income tenants as their contents may be the main assets that they have, and any loss of contents is a much more significant financial burden than for homeowners.

It is the Institute's view that consideration should be given to the reasons for non-insurance and under-insurance of contents for low income tenants, and premium subsidies and alternative payment options (e.g. paying premiums with rent) or policy changes be considered.

Chapter 14. The Role of Lending Institutions

Given the high proportion of homes with mortgages in Australia, it is possible that lending institutions could be utilised to improve various aspects of home insurance. Some suggestions are:

1. *Ensure all borrowers have adequate building insurance on an on-going basis*
 - Most (if not all) lending institutions currently require borrowers to purchase full buildings insurance, at times engaging property surveyors to the site to estimate the replacement value of the building when the loan is taken out. This acts to reduce the level of underinsurance amongst mortgagees. It may be prudent for lending institutions to ensure this requirement is policed on an on-going basis for loans above a certain level or below a certain age.
2. *Ensure responsible new property development*
 - For new properties, it is common practice for potential home owners to seek full and unconditional home loan approval from the lending institution before any building construction commences.
 - If flood data information is made available publicly, as well as aiding prudent development decisions by councils, lending institutions could use this information to help deter new developments in flood prone regions by rejecting such home loan applications. Devaluation of existing properties may also occur.

Introducing these actions would most likely result in increased administration costs for lending institutions and increases in home loan lending rates. The positive impact would be greater resilience and less risk of property devaluation, once legacy issues have been addressed.

Chapter 15. Consumer Awareness of Risk and Insurance

Measures such as issuing a single page key facts statement and adopting a standard flood definition will help increase the level of awareness of exposure to perils. Efforts to increase awareness of personal responsibility for insurance will increase insurance take up rates and reduce expectation of government or charitable handouts in the event of a loss.

The non-tangible nature of insurance can make it difficult for different parties to interpret and respond to the same circumstances in a consistent manner. What consumers understand or perceive risk to be can be quite different to the perspective of insurers and local councils.

Insurers and local councils consider a wide range of event return periods e.g. 1 in 1,000, 1 in 250, 1 in 100 etc. As a general rule, individuals do not assess such risks on such scale. For an insurer, a 1 in 20 year event (for flood) is extremely risky. For an individual, this is likely to be longer than their expected dwelling duration at that location.

Consumers place greater emphasis on short term financial implications. For a property that has a 1 in 20 year risk of flood, one may have lived in this property for 20 years and not have experienced any flood. This is likely to have occurred in the recent Brisbane floods where residents have lived through a long period of low rainfall, have lived in their house for 10-20 years and the risk of flood hardly even enters their mind. When given a choice, many are likely to decide not to insure their risk.

Consumers are likely to take for granted that mitigation measures implemented by the government are sound and reliable. The example of the Wivenhoe Dam in the February 2011 Queensland floods demonstrates that there is still significant risk of events happening with unintended consequences. Whilst insurers are likely to think about such possibilities, most consumers would not and in most circumstances, would be find it difficult to assess (or even understand) such risk.

Chapter 18. Funding Public Infrastructure

Item 9 of the Review's Terms of Reference states that:

"The Review will also consider whether the existing Commonwealth and State arrangements for dealing with natural disaster recovery and resilience should be supplemented by the establishment of a national disaster fund to support the rebuilding of public infrastructure in the aftermath of events such as the recent floods."

Australia has a lower cost of capital than private sector insurers, and the ability to spread and diversify risk, including inter-temporally. In addition, the size of the economy allows the country to withstand the cost to public infrastructure of even relatively large natural disaster events such as those recently experienced. Prima facie, this suggest that it may not be economically optimal for Australia to incur the

costs of private sector insurance, which are generally greater than expected costs, but instead to rely primarily on its own resources to fund the cost of natural disasters.

The Issues Paper briefly discusses the issues of pre-funding and the National Disaster Relief and Recovery Arrangements (NDRRA). There are arguments for and against both pre- and post-funded arrangements, and we note that an allocation of (expected) costs to the time (and taxpayers) where the risk is borne can be viewed as being equitable.

In relation to the NDRRA, the Institute makes no comment on their detail. We do note, however, that the underlying principle of the Commonwealth supporting the states' exposure to the volatile costs of natural disasters is sound. While the arrangements were amended following recent events, we believe that tests of cost effectiveness are important and in the public interest. As stated, it is likely that the most cost effective solution for the Australian people is for their governments to rely primarily on their own resources to fund the costs of natural disasters.

We are available for further discussion on funding public infrastructure and the NDRRA, or any other matter.
