

Flood Resilience:

Risks, Mitigation and Funding Solutions



Institute of Actuaries of Australia

HERITAGE BALLROOM, WESTIN HOTEL, SYDNEY

Monday, 16 May 2011

Top 10 Challenges of Flood Pricing

Stephen Jeffery
Executive Manager, Home Insurance
Suncorp Personal Insurance

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1) Data!

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Data Challenges

Q) How often will it flood? To what height?

FLOOD MAPPING

Q) If it does flood, how much damage will there be?

DAMAGE CURVES

Q) Where is the property located?

ADDRESS DATA

Q) What's its elevation? What's it made of? etc.

PROPERTY DATA

- Small changes in data can result in large changes in price
- Consistency and timeliness of information is hard to attain

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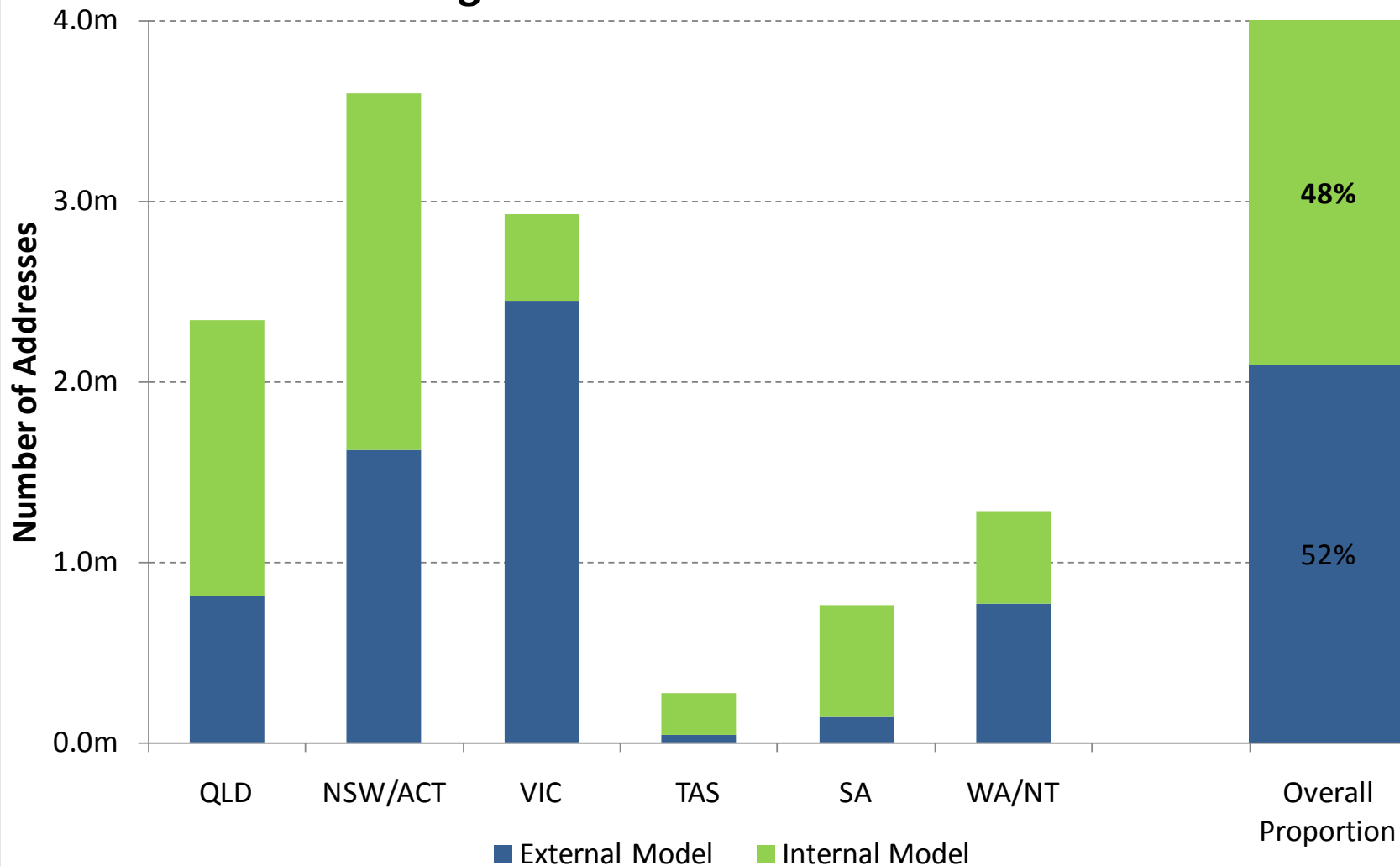


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Coverage of NFID v2.4 Of Total Addresses



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- 1) Data!
- 2) Flood Risk Is Not Static

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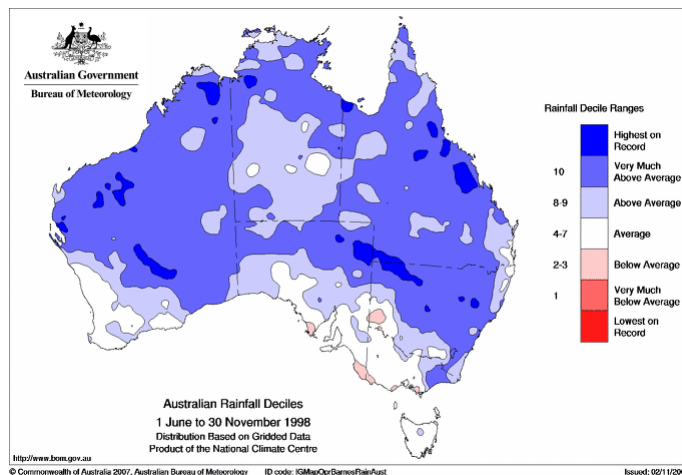
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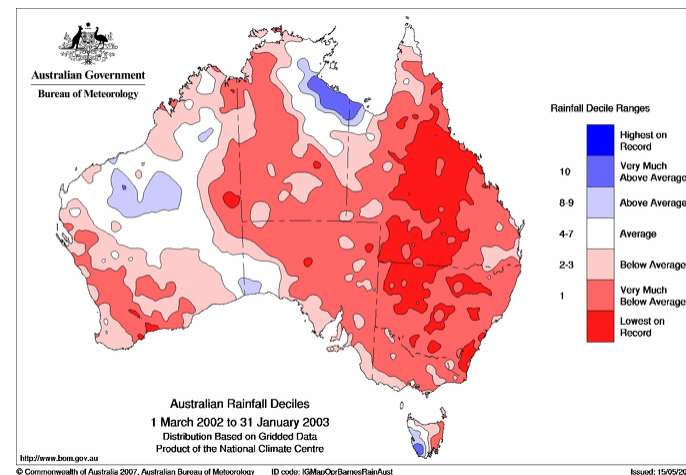
Climate Influences

- El Niño Southern Oscillation (ENSO):

La Nina 1998



El Niño 2002/2003



Source: Bureau of Meteorology

- Indian Ocean Dipole (IOD)
- Pacific Decadal Oscillation (PDO)

Other Influences

- Impact of increased urbanisation

“The urbanisation of the catchment has often allowed development up the edge of waterways, reducing the flow capacity and flood storage along sections of these waterways.

Urbanisation has significantly changed the pre-development drainage characteristics of Gowrie Creek catchment.”

Source: “The Nature and Causes of Flooding in Toowoomba”
ICA Hydrology Panel, 14 February 2011

- Flood mitigation – dams, levees etc.

- Individual property changes:

- Raising the building

- Filling in under the building e.g. Queenslanders

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- 1) Data!
- 2) Flood Risk Is Not Static
- 3) Pricing Analysis Is Complex

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Why is pricing analysis complex?

- Consistency and timeliness of data
- Data quality e.g. incomplete addresses
- Sensitivity of output to data inputs
- Need to combine multiple risk models together with varying levels of predictability
- Formulating a view on the aggregate risk
- Portfolio impacts are hard to model

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- 1) Data!
- 2) Flood Risk Is Not Static
- 3) Pricing Analysis Is Complex
- 4) **Gross Risk vs. Net Risk**

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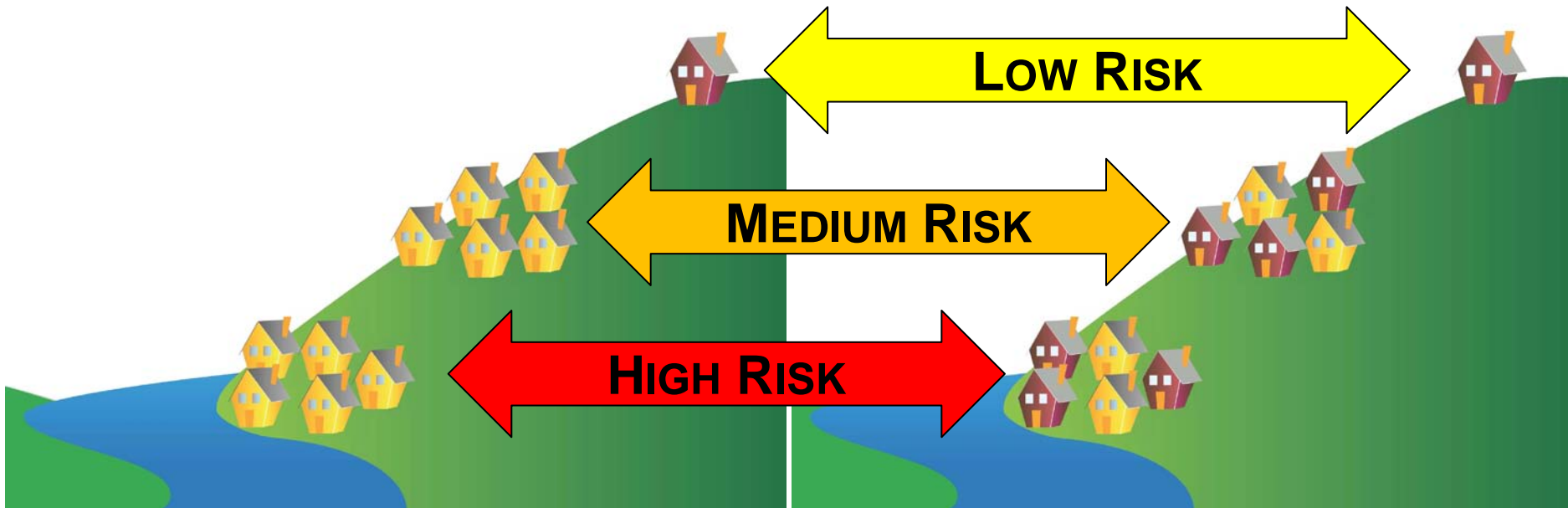


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Gross Flood Risk:



- **Yellow** has all the Medium/High
- **Brown** has the only Low

- **Yellow** and **Brown** share the Medium/High
- **Brown** has the only Low

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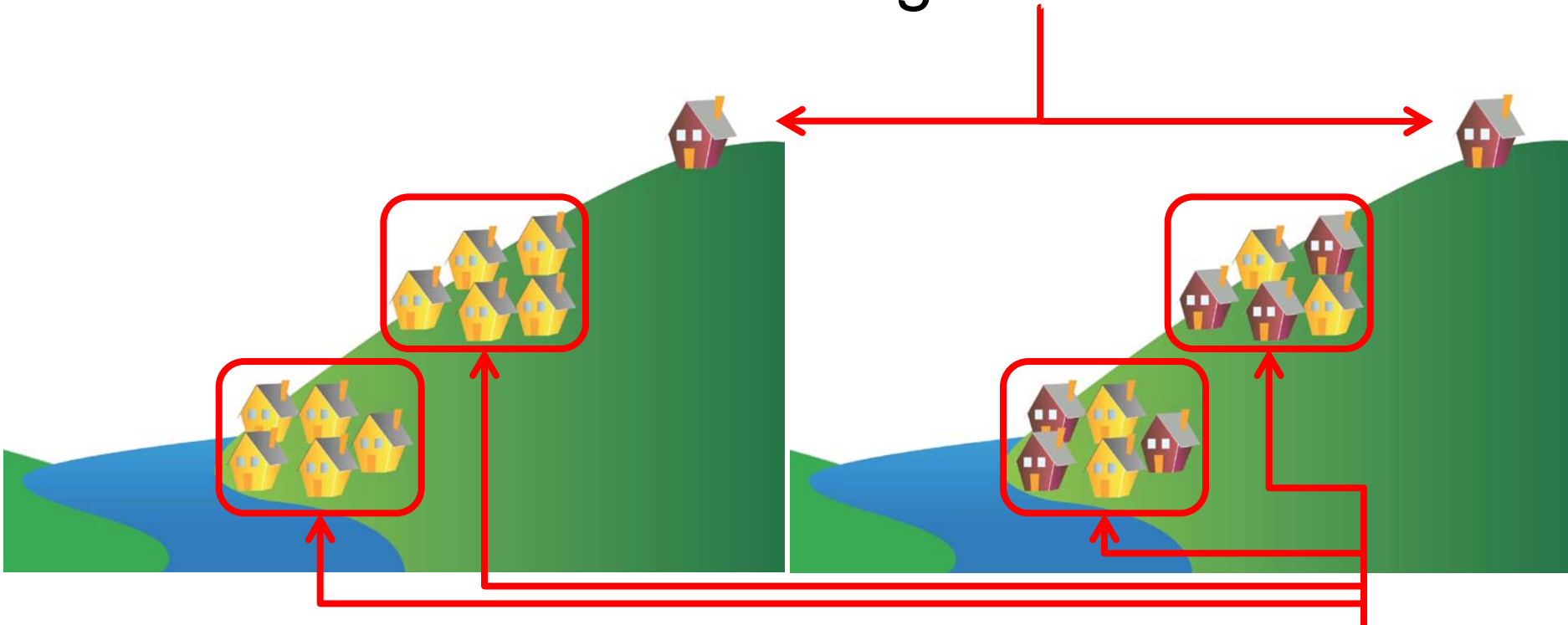


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The net risk of insuring this house...



...probably depends on how many of these houses you also insure

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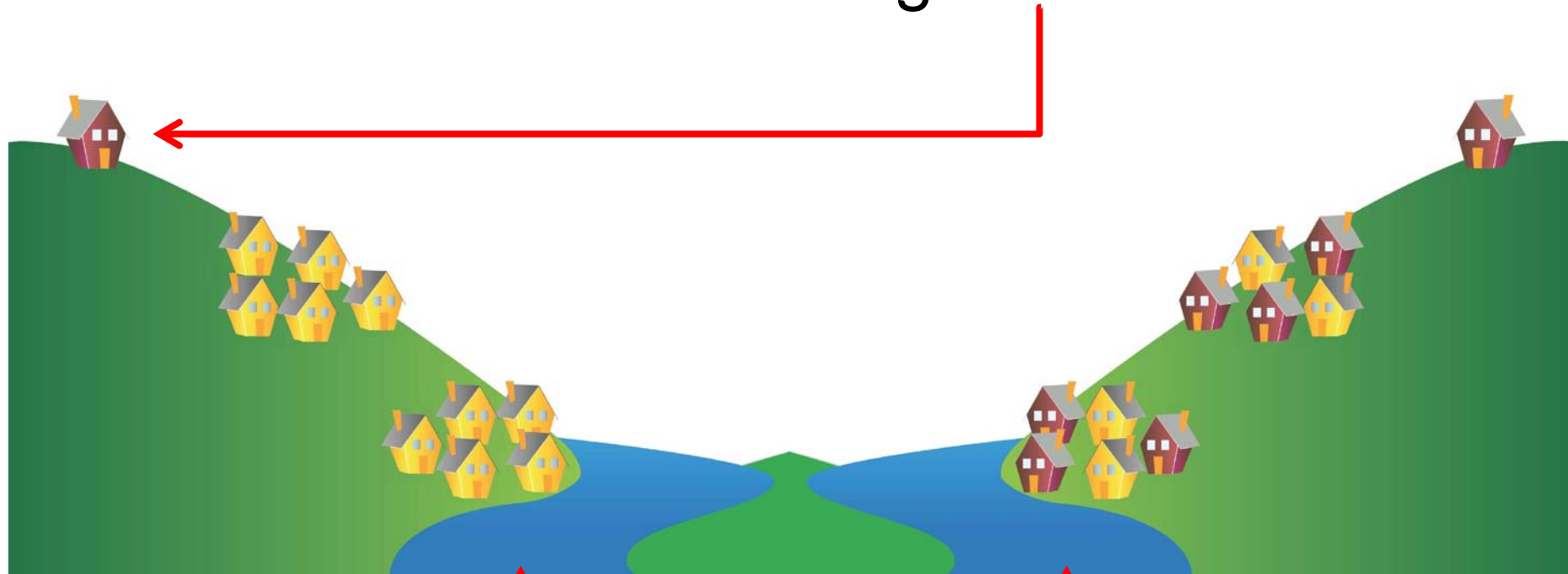


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The net risk of insuring this house...



...probably depends on the correlation of
flooding in the two rivers

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- 3) Pricing Analysis Is Complex
- 4) Gross Risk vs. Net Risk
- 5) Ongoing Maintenance Of Flood Prices

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Ongoing Maintenance Of Flood Prices

- Targeted flood pricing requires:
 - Pricing at property address level
 - Flood peril separately priced
- Input data changes frequently
 - e.g. address data, NFID updates etc.
- Each change requires impact analysis, portfolio migration to be considered

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- 6) **Balancing Business Objectives**

Balancing Business Objectives

- What is the impact on growth?
 - Different answer now to 6 months ago
- Pricing for the long-term vs. Performance in the short-term
 - Should we have priced for the likely combined impact of La Nina + negative IOD + wet PDO in 2010/11?
- Customers own cars too!

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- 7) Empowering Frontline Staff To Explain

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Empowering Frontline Staff To Explain

- Clearly some prices offered can be very high
- Complexity of pricing doesn't fit into easy "bite-size" messages
- Different customer, different circumstances
- Short memories, long return periods
- Prefer difficult conversation at sales time, not claims time
- "Talk to your council..." doesn't generally solve the problem

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- 8) **Helping The Understanding Of Flood**

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Suncorp Insurance - Flood - Windows Internet Explorer

http://www.floodfacts.suncorp.com.au/#/whatFlood

Suncorp Insurance - Flood



THE MUST-HAVE
QUEENSLAND INSURANCE.

FLOOD FACTS

INTRODUCTION

WHAT IS A FLOOD?

SIMPLE DEFINITION

FLASH

RIVERINE ACTIONS BY THE SEA

UNDERSTANDING FLOOD COVER

BE PREPARED

LINKS

WHAT IS
A FLOOD?

FLOODS IN QUEENSLAND

What you need to know about floods in Queensland

When you live in Queensland, you need to be prepared for water to cause you trouble. Over the last few years, you've probably seen many news reports about flooding, and predictions of more wild weather to come.

Of course, it's not just floods and storms that cause damage. There's any number of water hazards that cause damage to homes every day – from broken pipes to burst waterbeds. It's important to ensure you're covered for it all, whether you live in a major city or a regional town.

As the Home Insurance experts, we've gone to great lengths to understand the risk of flooding to your home, and the importance of being covered. We've even prepared this Queensland Flood Factsheet Website to help you understand:

- the differences between flood types
- how to make sure you're covered
- how we calculate the flood risk of each area.

next



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http://www.floodfacts.suncorp.com.au/#/whatFlood/flashFloods

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FLASH FLOODS

In the mountain and coastal regions, flooding can happen rapidly with minimal warning. Flash floods can occur almost anywhere where there is a relatively short intense burst of rainfall such as during a thunderstorm. As a result of these events the drainage system has insufficient capacity or time to cope with the downpour. Although flash floods are generally localised, they pose a significant threat because of their unpredictability and rapid formation. You probably remember the flash floods in Brisbane in February 2010.

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http://www.floodfacts.suncorp.com.au/#/whatFlood/riverine



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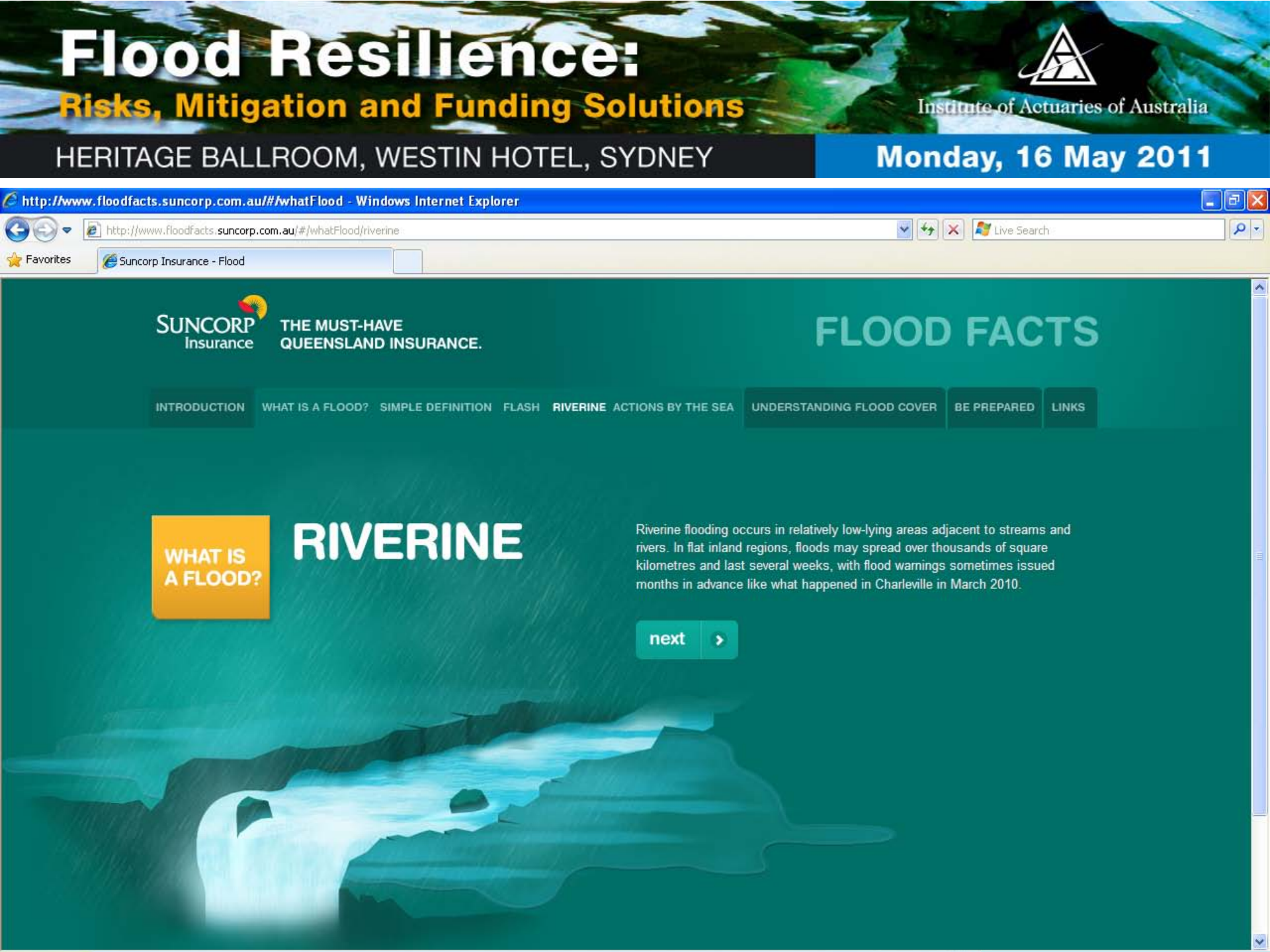
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WHAT IS
A FLOOD?

RIVERINE

Riverine flooding occurs in relatively low-lying areas adjacent to streams and rivers. In flat inland regions, floods may spread over thousands of square kilometres and last several weeks, with flood warnings sometimes issued months in advance like what happened in Charleville in March 2010.

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http://www.floodfacts.suncorp.com.au/#/understandFlood



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UNDERSTANDING FLOOD COVER

MAKING SURE YOU'RE COVERED

CLAIMING

BE PREPARED

LINKS

FLOOD
COVER

CALCULATING RISK



Many factors can influence the risk of flood in your area. Floodplain shape, slope and storage together with man-made structures all have a significant influence on the routing of flood flows.

In general, the factors which influence whether a flood will occur include:

- volume, spatial distribution, intensity and duration of rainfall over a catchment
- the capacity of the watercourse or stream network to convey runoff
- catchment and weather conditions prior to rainfall event
- ground cover
- topography and tidal influences.

SOURCE: GEOSCIENCE AUSTRALIA

Suncorp spends considerable time and resources researching all areas of Australia to map flood prone areas and assign risk estimates to each area. We then consider carefully how to adjust premiums to take into account the fact that some areas and properties are more likely to flood than others.

Our flood pricing is based on the specific flood risk of each individual home. We use data from a wide range of sources including local council flood mapping where available, along with terrain data and independent hydrologist reports. We also work with external companies with expertise in assessing flood risk that validate and provide additional information to determine the true flood risk.

It's important to regularly review your insurance to make sure the information you provide is correct. Details like building construction, foundations and roof type can also make a difference to your insurance premium.

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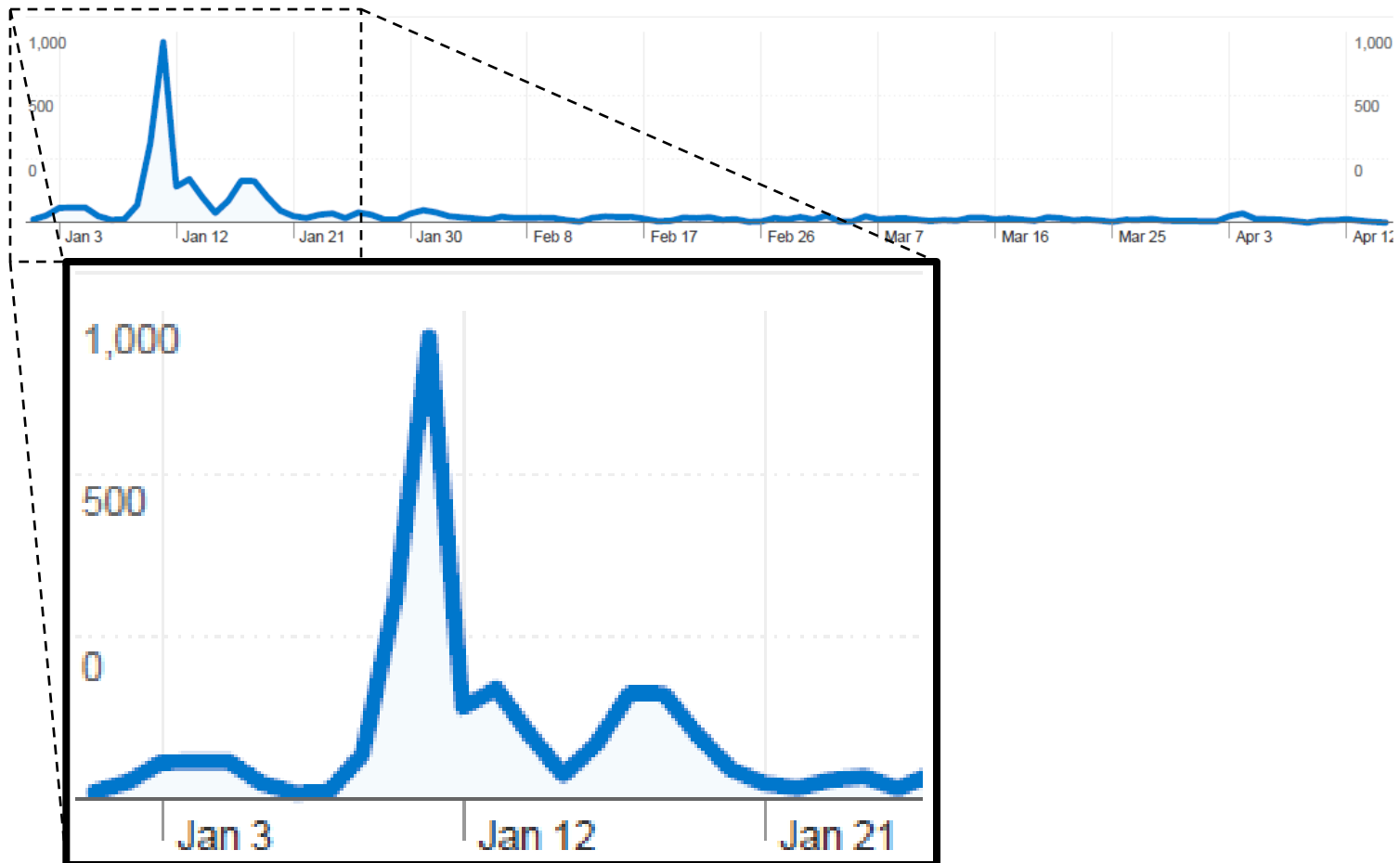


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Site visits to www.floodfacts.suncorp.com.au



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- 8) Helping The Understanding Of Flood
- 9) **Encouraging & Managing Feedback**

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Source: "Bureau warns water could break Goondiwindi levee"
ABC News, Friday Jan 14 2011, www.abc.net.au/news/stories/2011/01/13/3112552.htm

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- 10) **Affordability...**

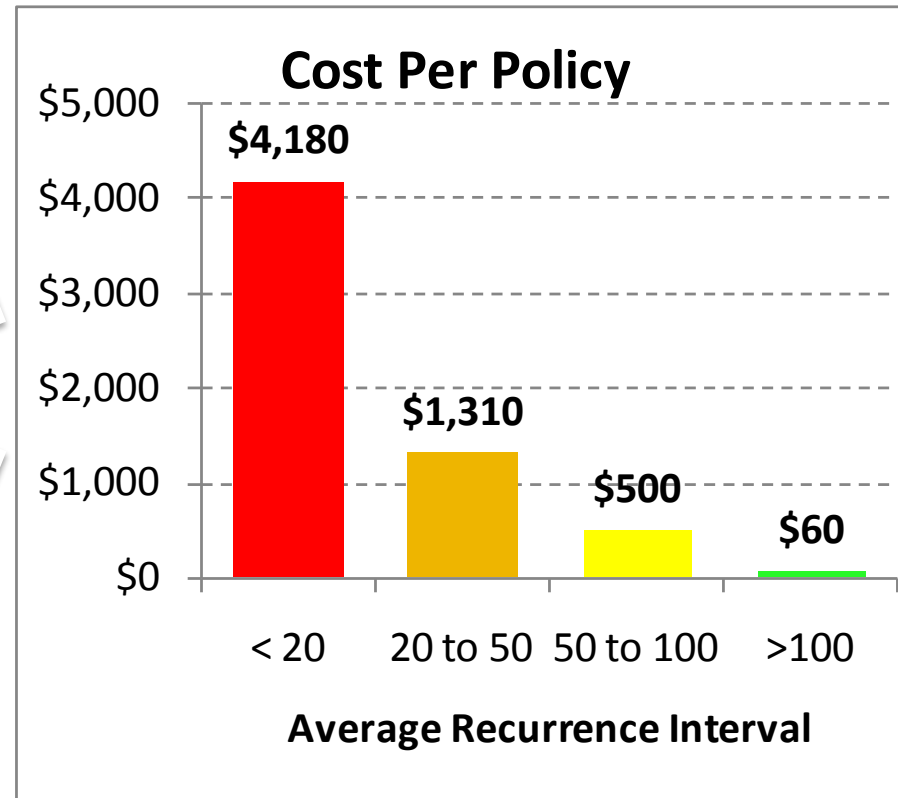
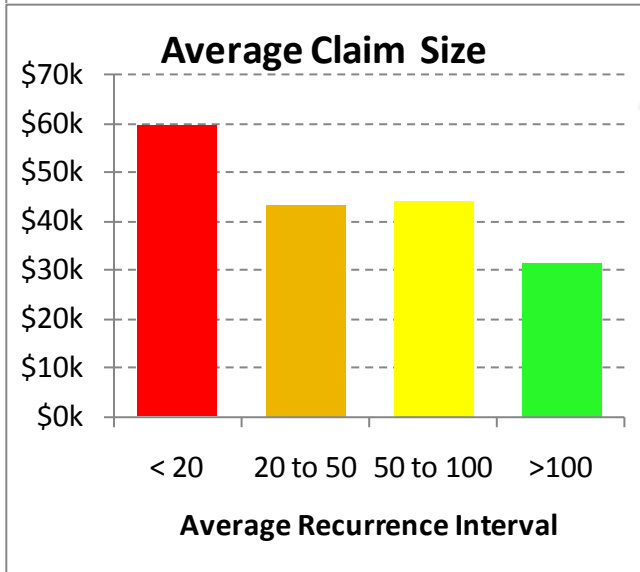
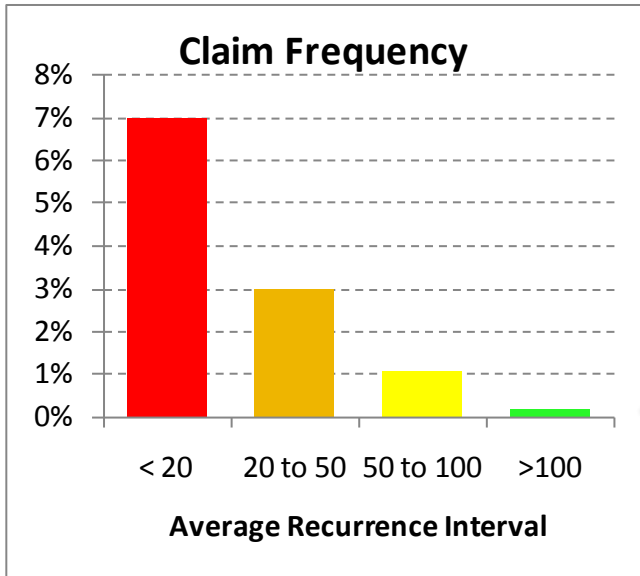
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Source: "The Insurance of Flood Risks",
Institute of Actuaries of Australia Flood Working Group, November 2008

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“Floodplains are for Floods”

Moss Cass

Federal Minister for the Environment

1974