Thriving on Change

16th General Insurance Seminar

Institute of Actuaries of Australia

9-12th Nov 2008

Hyatt Regency Coolum

The Insurance of Flood Risks

Prepared by the Flood Working Group

Presented by Tim Andrews, Charlie Pollack and David Whittle

Introduction

- Today
  - Paper 1 – The Cost of Riverine Flood
  - Paper 2 – Customer Prices for Flood
- For Completion in 2009
  - Paper 3 – Funding Options for Flood

Paper 1 Cost of Riverine Flood Road Map

- What we mean by flood
- Indicative industry wide costs
- A pricing approach
- Some (theoretical) challenges

What we mean by Flood

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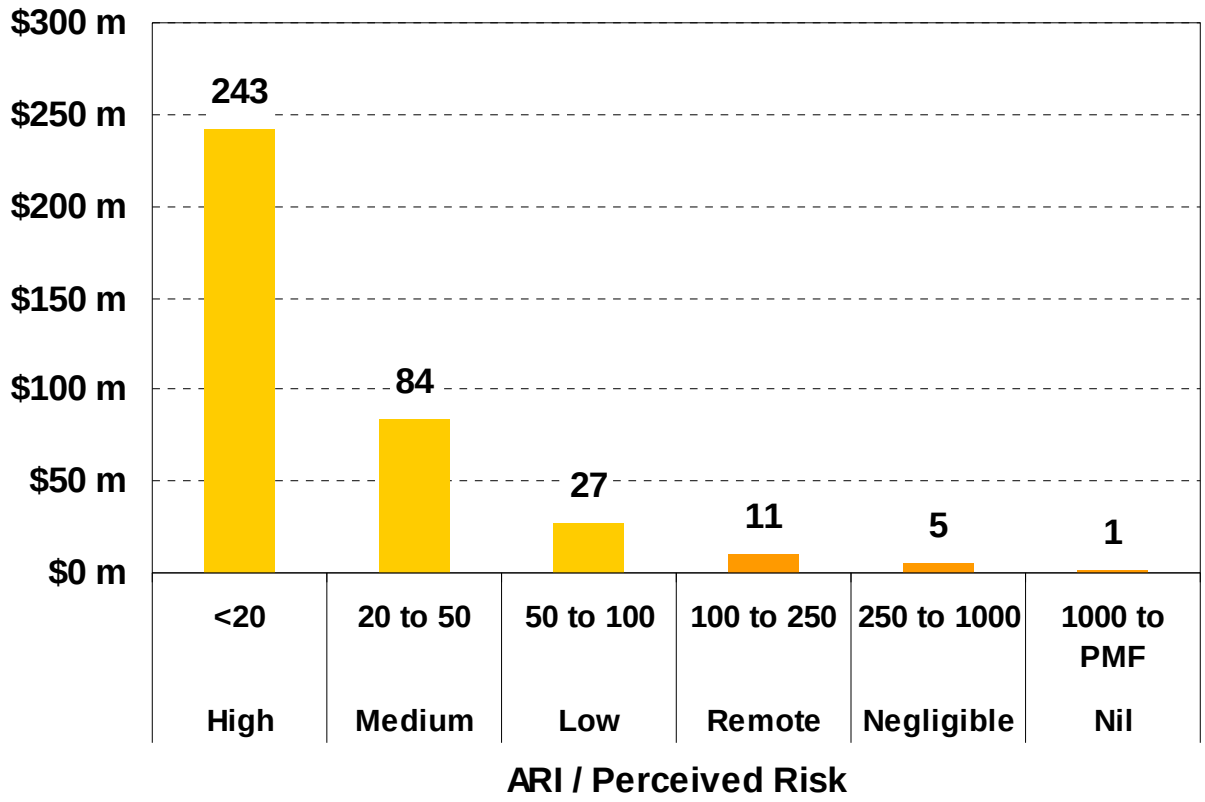
- Flash flooding – typically insured
- Riverine flooding – often covered for large commercial, pockets of coverage elsewhere
- Storm surge – as for riverine flood

We are concerned with riverine flood
Can be difficult to distinguish from flash flooding

Indicative industry wide cost

Annual Average Damage for Riverine Flood Home – Buildings and Contents



Based on Insurance Council study

Annual Average Damage for Riverine Flood
Overall Additional Insurance Cost

Home	$400m
Commercial	$200m
Costs already paid by insurers	($100m)
Extra cost	$500m

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Reality check:
Is $500m of additional extra cost plausible?

Annual Average Damage for Riverine Flood Overall Additional Insurance Cost

Reality check:

Is $500m of additional extra cost plausible?

- Approximately 50% of cost relates to events that occur every 4 years
- In that context $500m may be high, but what impact does benign environment over last 10 years have on our thinking?

Cost of Flood Risk per Property

Insurance Council study suggested

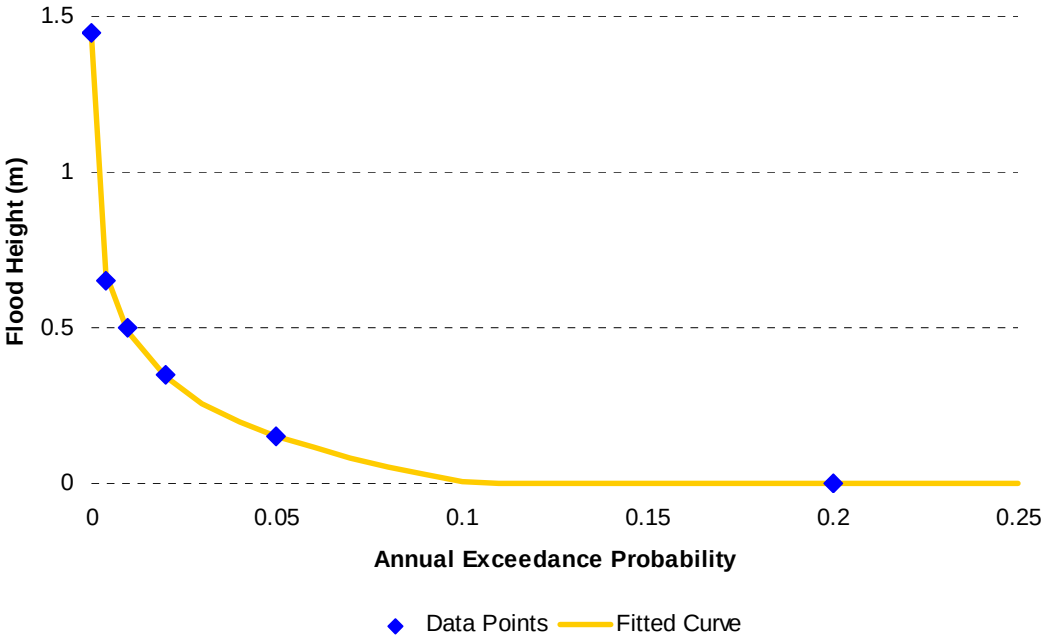
94% of risks	No cost
4% of “low” flood risks	$60 per risk p.a.
Worst 2% of risks	$2,000 per risk p.a.

A Pricing Approach

Data requirements

- Flood risk data
- Damage curves
- Details of insured property
- Information about other costs

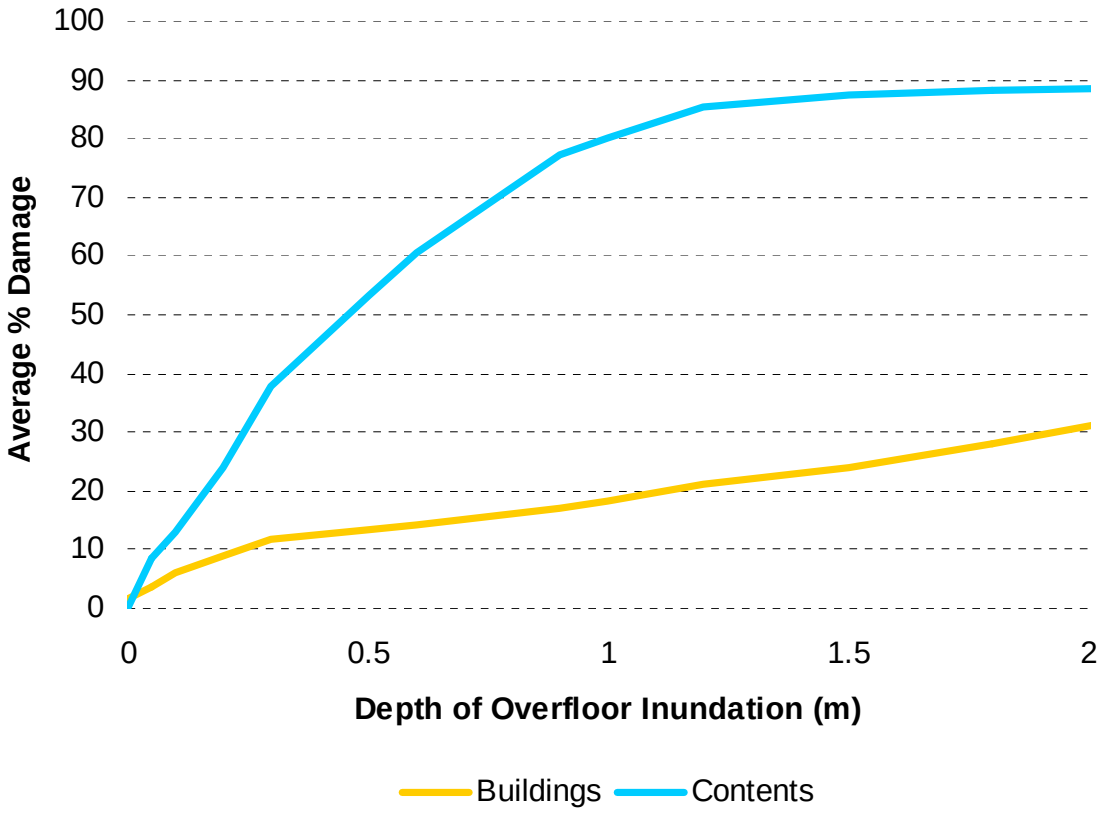
Flood Risk Data



("High Risk" Example)

Annual Return Interval (years)	Flood Height (m)
5	0.00
20	0.15
50	0.35
100	0.50
250	0.65
10000	1.45

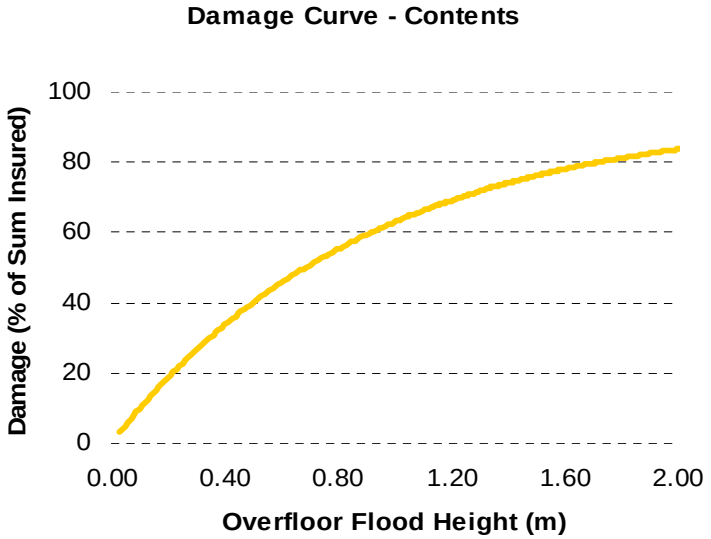
Illustrative Damage Curves

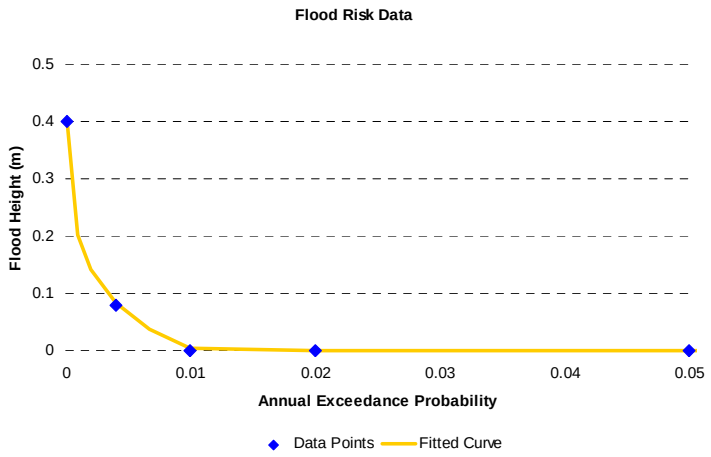


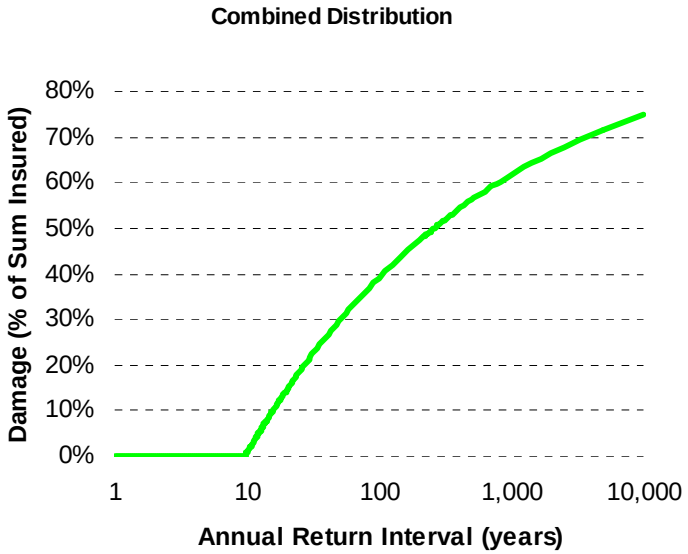
Illustrative Damage Curve (cont'd)

- In theory, different damage curves should be used by:
  - Region; and the type of flood likely in that area
    - Velocity
    - Duration
  - Type of building
  - Product
  - Coverage
  - Rating factors

Combining Flood Risk Data and Damage Curves







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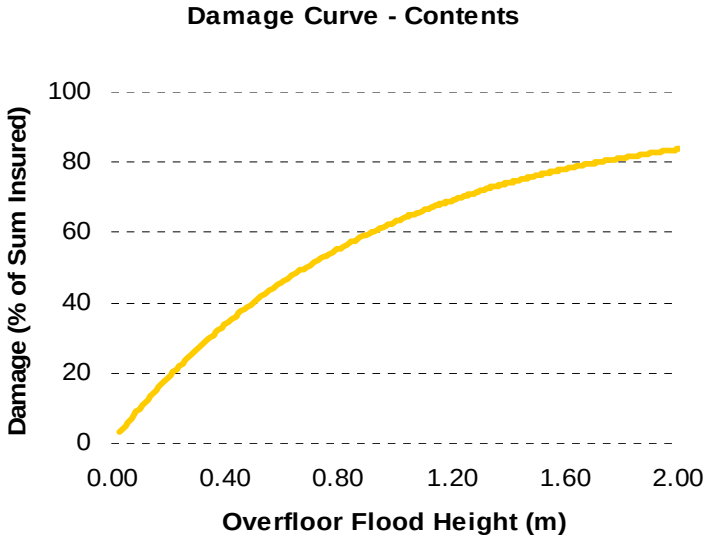
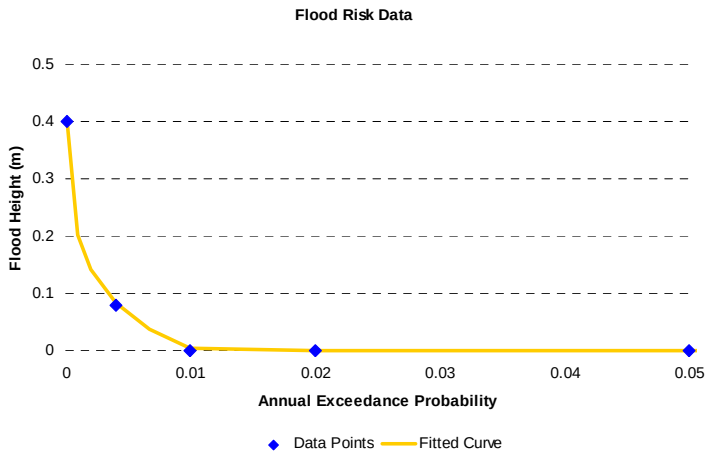
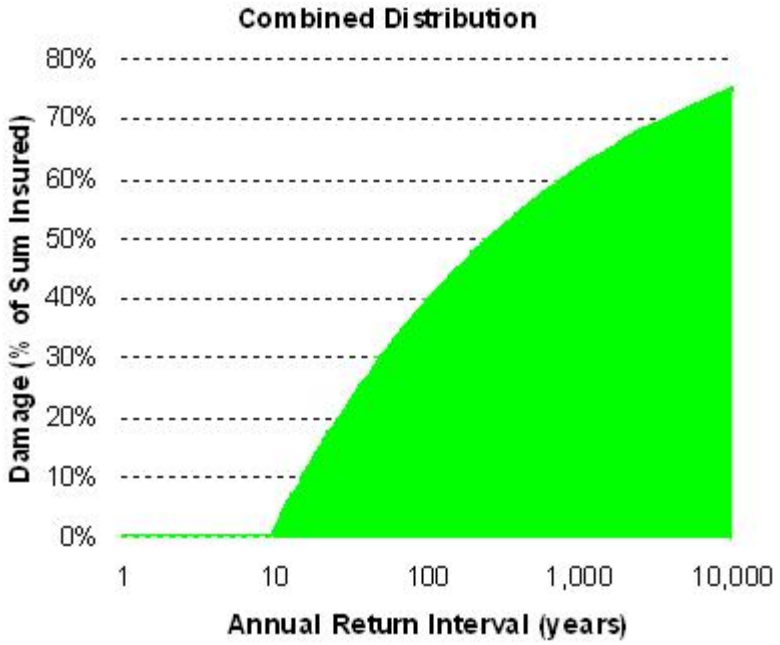






Some Other Challenges

Some Other Challenges

- Avoid double counting of costs already implicit in premium
- Allowance for other costs (accommodation etc.)
- Cost of reinsurance
- ENSO, global warming

Paper 2 Customer Prices for Flood Road Map

- Option Vs Standard Cover
- Data sources and systems
- Flash Flood vs Riverine Flood pricing
- Competitors
- Monitoring
- Some other challenges

Optional or Standard Cover?

- Asymmetric information if optional
  - Customer often has better local knowledge
  - Take the option because the cover is needed (or perceived to be underpriced).
- Still charge a premium for the option in an area where it is believed there is ‘no risk’?
- How much should be in the base price to cover flash flood?

Data and Systems

- Individual risk rating very data intensive
  - 7m residential addresses + 4m to 5m ‘other’ addresses
  - Need to update databases as areas develop (both new houses and mitigation)
  - Holes in the data?
  - Handling data and validating.

NFID Data – coming this year!

- Trade off consistency and accuracy
  - 1-in-100 most common survey point.
  - Some catchments better understood.
  - Some catchments with no survey.
  - Some addresses not surveyed.
- NFID Surveyed areas:
  - Water Depth for 1-in-100 Flood
  - ARI Water at ground level, 1m and 2m over ground.

Sample ICA NFID Data – 100Yr ARI Depth

Sample ICA NFID Data – 0m ARI

Sample ICA NFID Data – 1m ARI

Sample ICA NFID Data – 2m ARI

Data and Systems

- Data Quality a major concern
  - On policies
  - External data sources
- Need to deal with devious behaviour/moral hazard
  - Address data ‘modified’ to achieve a lower premium.

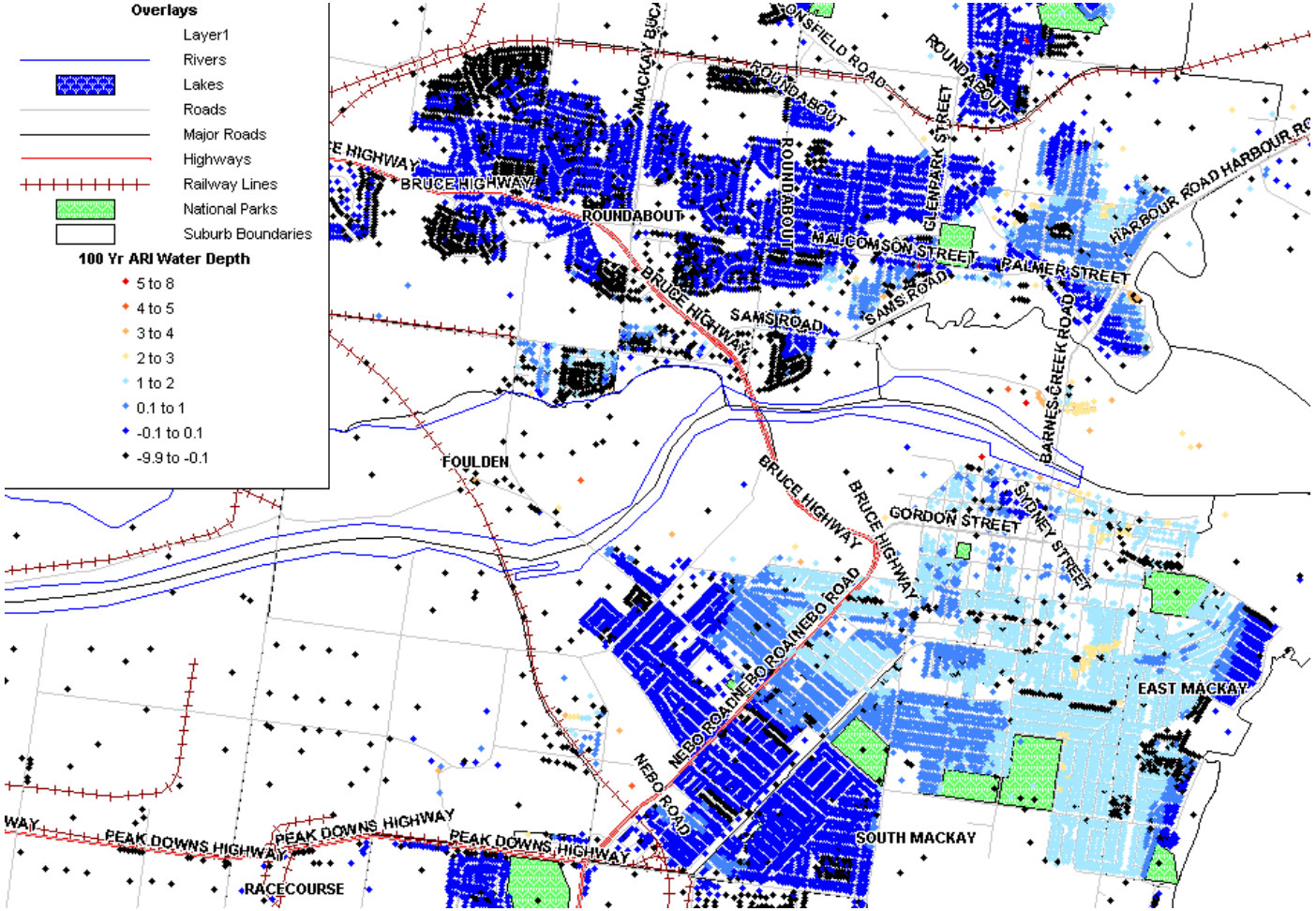
Data and Systems

- What is attitude to wrongly identifying a customer as being at risk of flood?
  - Miss out on potentially profitable customers
  - Run risk of customer backlash, especially existing business.
- What is attitude to not finding all the flood risks?
  - Still will be exposed to flood losses to some degree
- Distribution channels will react differently to these errors.
- Confidence in data will play a part.

Flash Flood Vs Riverine Flood

- Floods in ‘short’ river systems have circumstances that mean they fall under most definitions of flash flood.
- Local rain in last 24 hours mixed with upstream flooding makes distinction difficult in any case. Eg Rockhampton 2008
- Most damage would be paid under flash flood or rainwater runoff wordings.

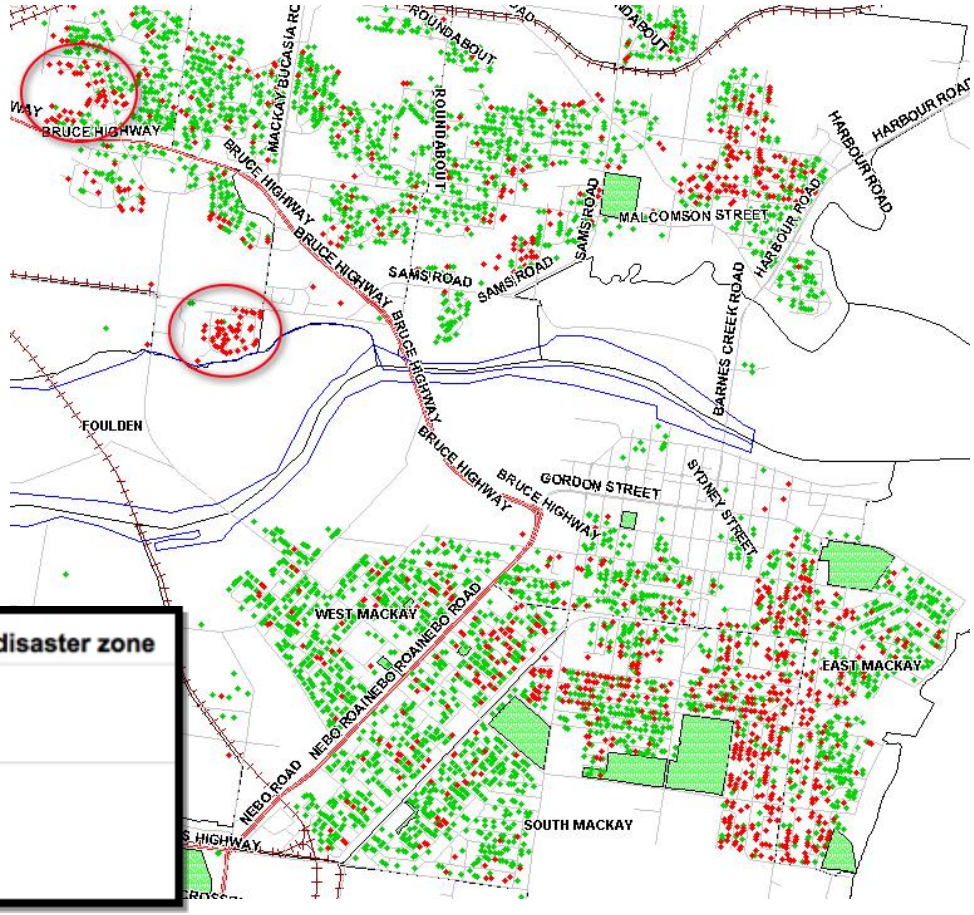
Example: Mackay 100Yr ARI Depth



Example – Mackay Feburary 2008

Where were the claims?

Claim (Red)
Vs
No Claim (Green)



625mm of rain turns Queensland's Mackay into disaster zone

Font size: Email article: Print article: Submit comment:

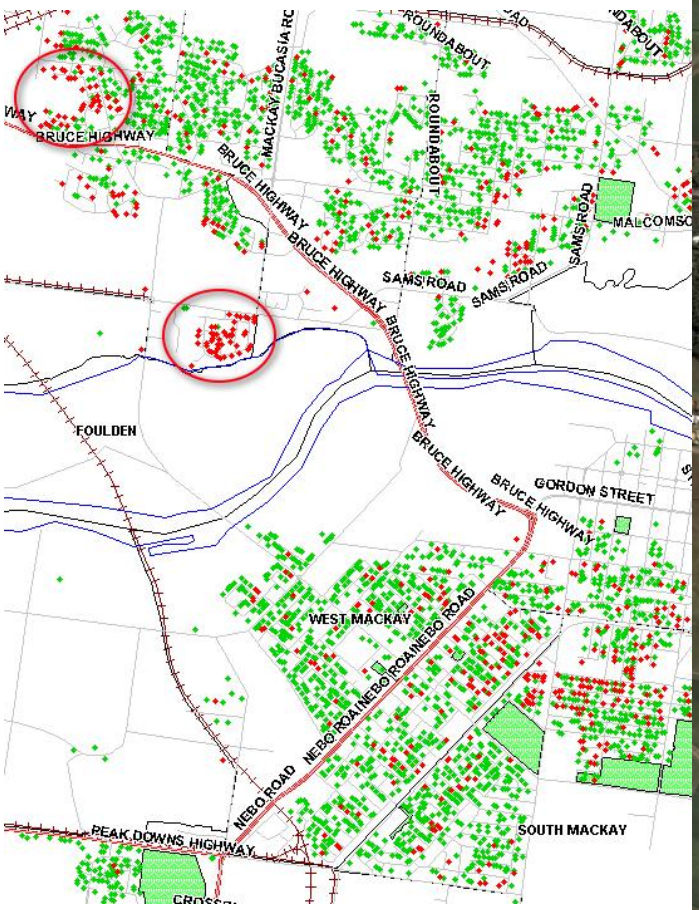
AAP
February 15, 2008 03:46pm

AUTHORITIES are evacuating up to 1000 people in Mackay in Queensland after it was swamped by a record 625mm of rain overnight.

Flood-bound residents have been warned to beware of crocodiles, following sightings of the reptiles today.

Example – Mackay Feb 2008

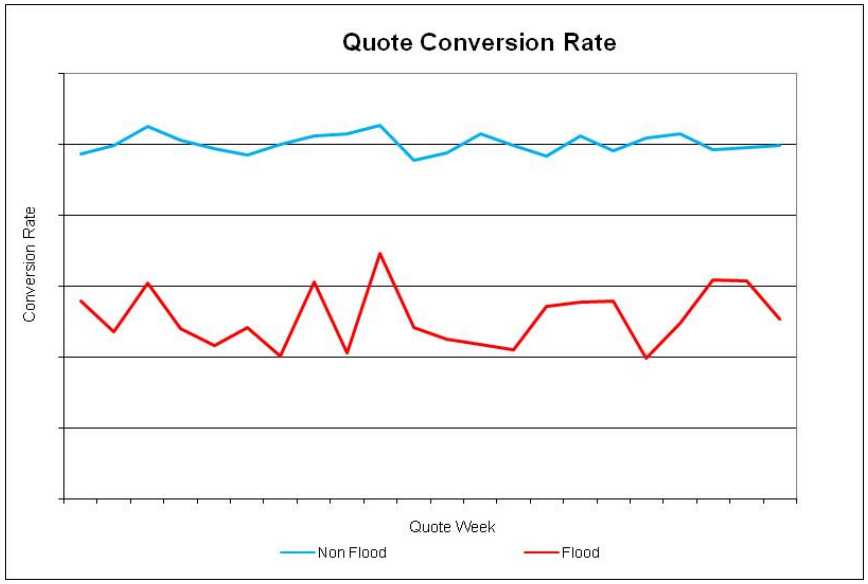
New houses on flood prone land

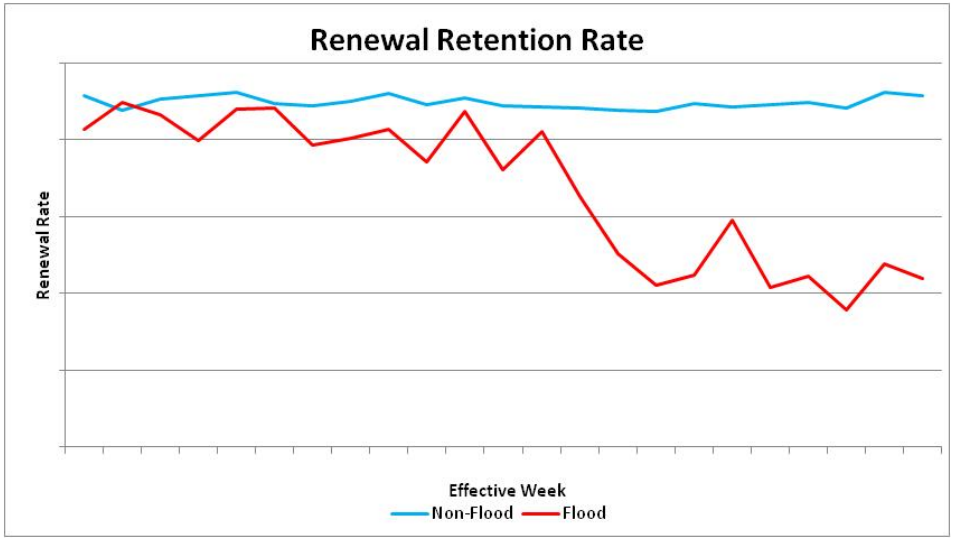


Competitors

- Even with the same data source, different approaches will lead to different outcomes for each competitor.
- Success against objectives will depend on where competitors sit.
- Need to monitor mix of business to confirm objectives are being met.

Monitoring the business mix…





Pricing approach and objectives

- "Right" approach is different for each individual company.
- "Perfect" set of rates difficult to achieve.
- "Phased" approach is useful. Improve over time.

Further Challenges

- Legacy systems
- Cost of development and maintenance of rates – not just a one-off exercise!
- Customer resistance
- Encouraging mitigation activities

Paper 3 - Criteria for evaluating solutions to the flood cover problem

- Equity of price
- Affordability
- Accessibility
- Practicality
- Commerciality
- Legal and tax implications
- Overall cost reduction and risk mitigation
- Government acceptability
- Public acceptability

International solutions

Consider flood insurance funding models elsewhere:

- Who provides flood cover (State/Private Insurers/Other)?
- What are the regulatory processes in place?
- What are the flood insurance penetration levels?
- How has the system responded to significant events?

Next steps for Flood Working Party

- Paper to be presented at Biennial Convention (April 2009)