TWO DRIVING PRINCIPLES
1 – PREVENTION IS BETTER THAN CURE

“Better to build a fence at the top of a cliff, than park an ambulance at the bottom”

Helen Clark 2015 Sendai
Tomorrow’s risk is being built today. We must therefore move away from risk assessments that show risk at a single point in the present and move instead towards risk assessments that can guide decision makers towards a resilient future.
Interactive modelling platform to assist decision making

Aims:
- Improve thinking about risk into the future;
- Better manage and minimise risk;
- Position organisations and communities to best achieve this.

Applied in Greater Adelaide, Greater & Peri-urban Melbourne & Tasmania

And now WA – Perth metro (extended) region
Framework & DSS for understanding and reducing disaster risk

Considers:

• Long term dynamics & uncertainties
• Exposure
• Hazard intensity and likelihood
• Building vulnerability
• Multi-hazard
  • Riverine flooding
  • Earthquake
  • Coastal inundation
  • Bushfire
• Risk reduction options
  • Land Use planning
  • Structural Measures
  • Land Management
  • Education & Awareness
  • Building Codes
2016 – Flooding that accompanied the storm
Future Use Options

Consider strategic needs – requirements, tools, capabilities for meeting agency and community expectations

- SWOT analysis of organisation
- TCFD Physical Risk Assessment

Modelling to inform long-term resource needs, vulnerabilities, opportunities

Modelling to inform future ‘hotspots’ or areas of concern

- Test opportunities to reduce these
- Areas/factors that agencies have limited control over
Future Use Options – How would you like to use the software?

Highlight inter-connections (risk, demographics, LU) \textit{DELWP}

Prioritise mitigation options based on effectiveness – evidence based \textit{CFA}

To benchmark, monitor, model effectiveness of hazard mitigation, strategic mitigation planning and implementation \textit{EMV}

To articulate how stakeholders contribute and collaborate to implement diverse mixes of treatment for best value \textit{EMV}

Provide advice to Government regarding future operational and mitigation needs \textit{TFS}

\url{bnhcrc.com.au}
NEW RESEARCH DIRECTIONS
Activity-Based Modelling

Improved consideration of vulnerabilities of a range of societal groups

Instead of assuming a uniform population with a uniform behaviour and risk profile

Via modelling the spatial and temporal dynamics of specific demographics groups’ locational choices.
Activity-based Modelling

Land use

Population
Agent-Based Modelling

Improved consideration of the impact of behavioural choices, experiences and risk reduction options on bushfire risk

Help to better understand the impact of social characteristics on bushfire vulnerability;
- the experience people have with bushfires and
- the time they have spent residing in the country or urban environments

Will also aim to enhance the understanding of various risk reduction options
Agent-Based Modelling
THANK YOU

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AND NOW TIM…

BREAKOUT SESSION – 13:20
WHY ARE WE INTERESTED?

1) Build on cross-agency/government collaboration from bushfire reform (common issues, collective solutions)
2) Supporting policy development and integration of science into policy
3) Better informed decisions/longer-term investment decisions
4) More efficient spending of limited funds
EARTHQUAKE – POTENTIAL ACTIVITY IN SW WA
COASTAL INUNDATION

1) Changing climate, rising sea level
2) Increased frequency and severity of tropical cyclones

- Increased likelihood and severity of storm surges and coastal inundation
BUSHFIRE – INCREASING RISK
WA CASE STUDY AREA