



At what cost?

Mapping where natural perils impact on economic growth and communities

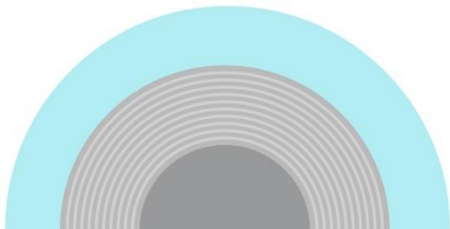
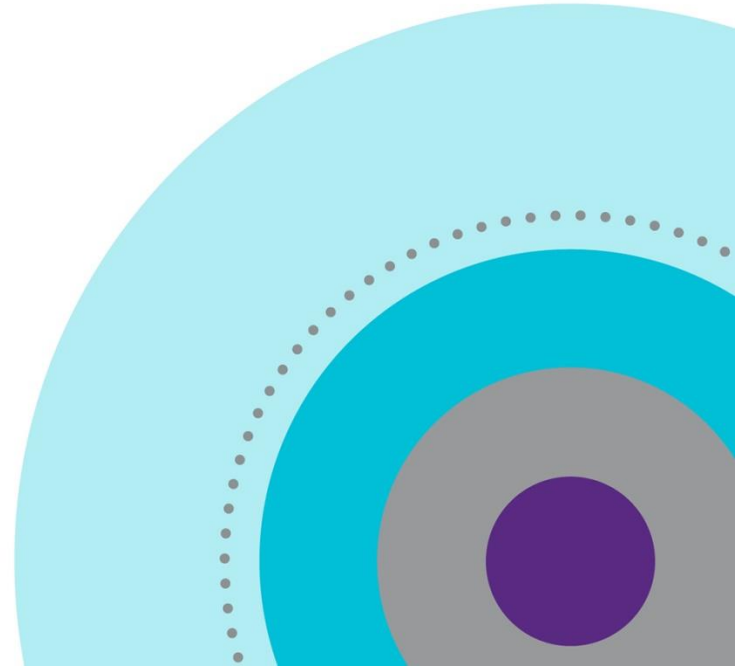
Peter Harmer

Managing Director and
Chief Executive Officer

Terry Rawnsley

Principal and Partner
SGS Economics & Planning

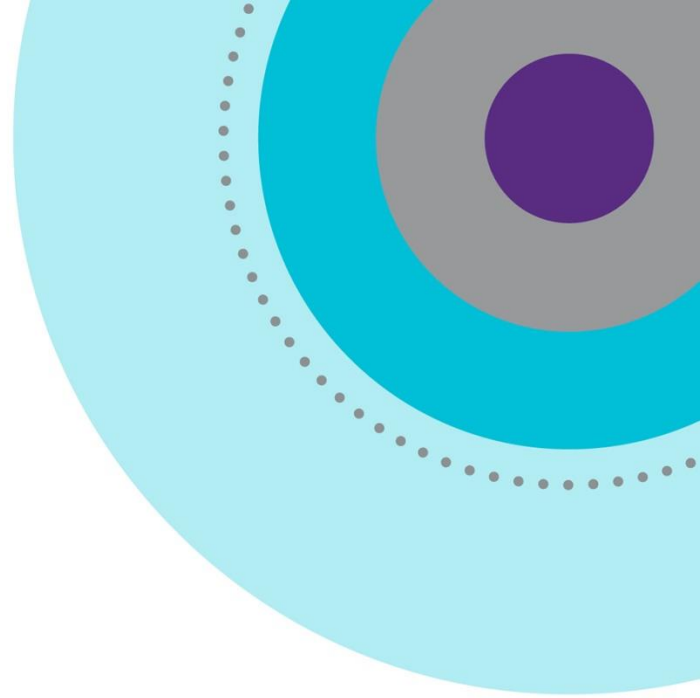
8 November 2016



Welcome

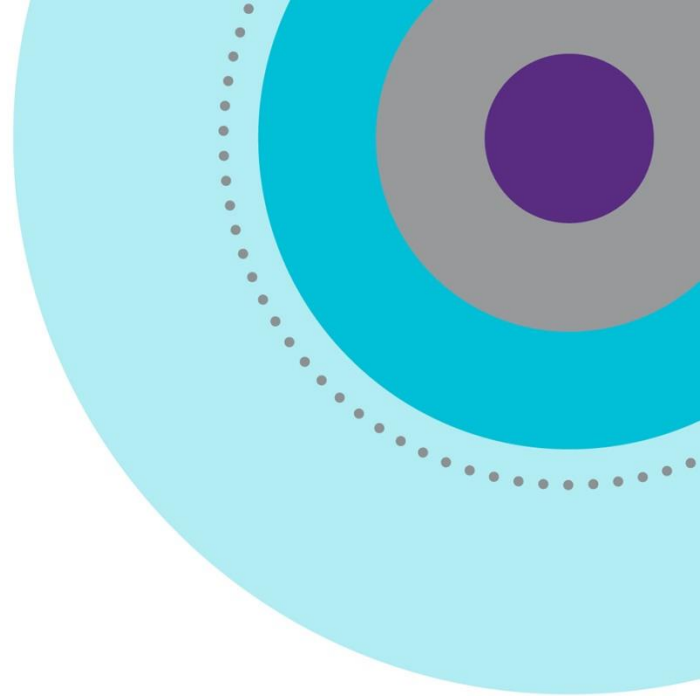
Peter Harmer

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[PLAY ANIMATION]

<https://www.youtube.com/watch?v=ZSuhB00bROk>



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Parliament House, Canberra
8th of November

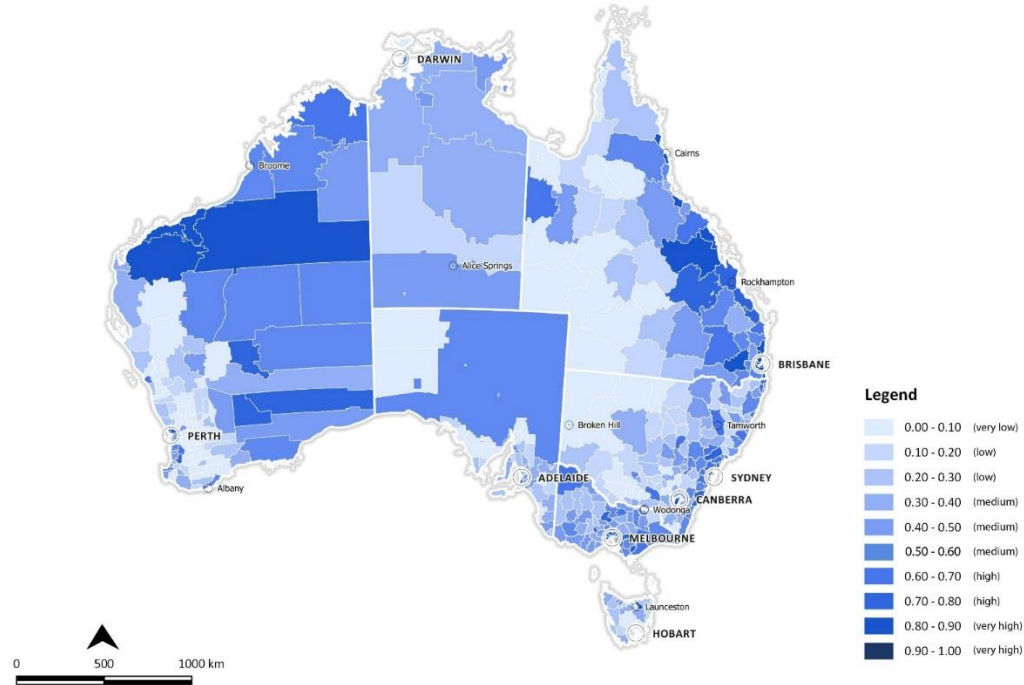
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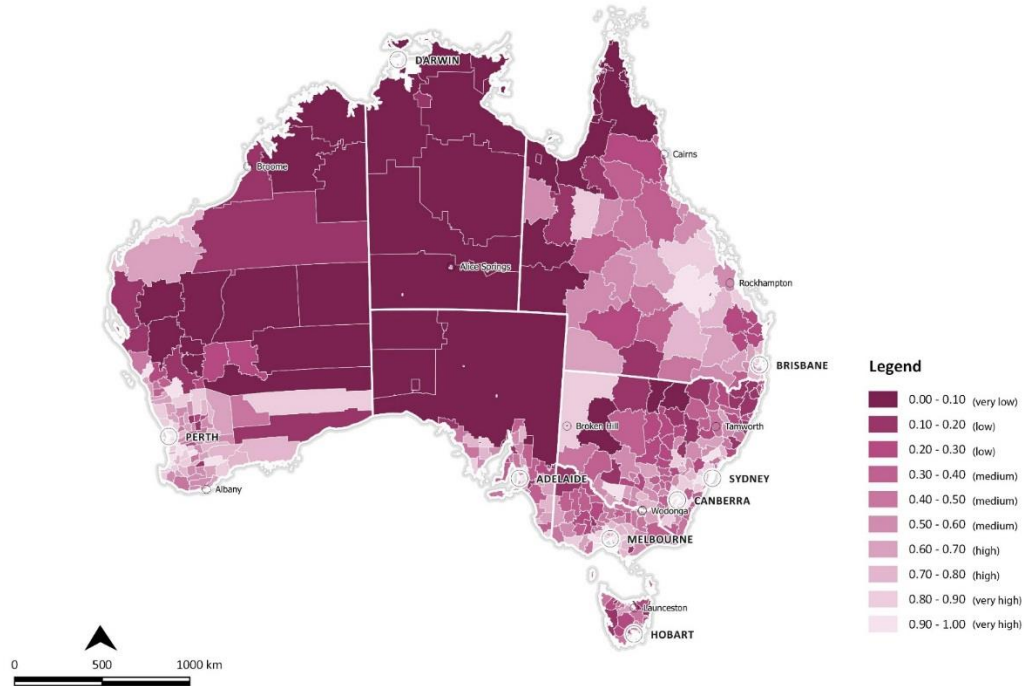
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- A number of recent studies have focused on a range of aspects related to natural perils including costs, funding arrangements, land use planning and policy implications.
- This study has focused on highlighting Local Government Areas which are at the greatest risk of various natural perils and how this intersects with GDP and local capacity to mitigate or respond to events.
- There is a report, interactive maps and data files.

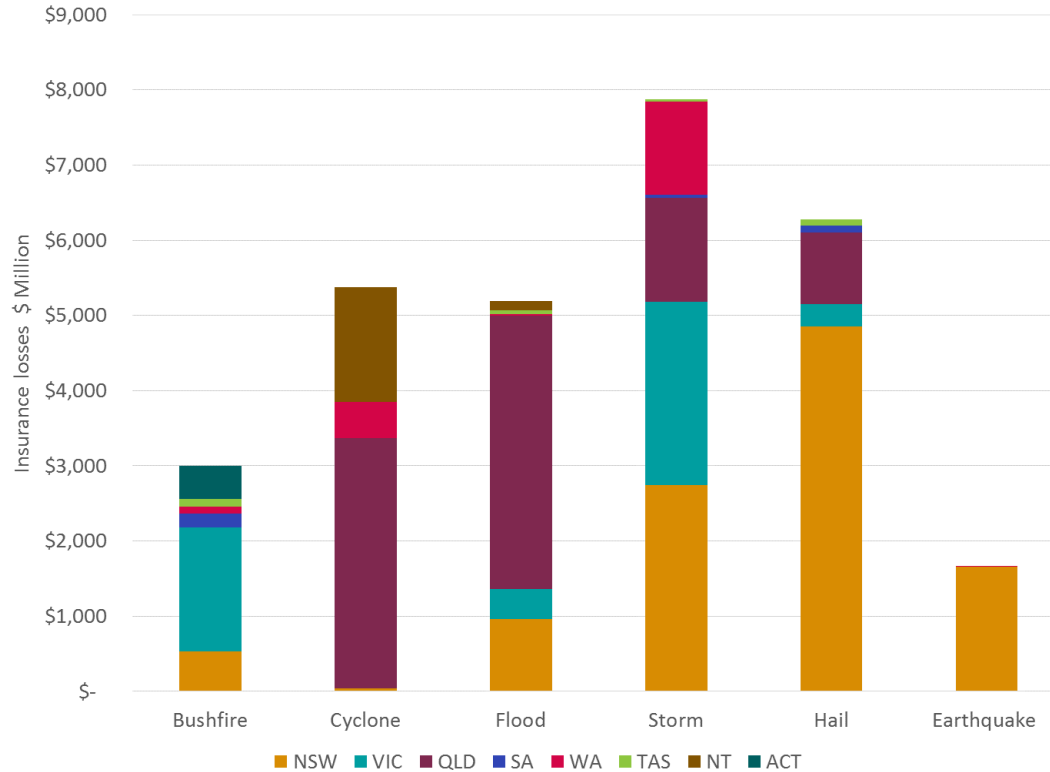
- Population
- Gross Domestic Product (\$ value of income produced)
- Economic Resources (Index score)

- Natural Perils (5 Point Scale: Low to Extreme)
 - Thunderstorm
 - Earthquake
 - Bushfire
 - Cyclone



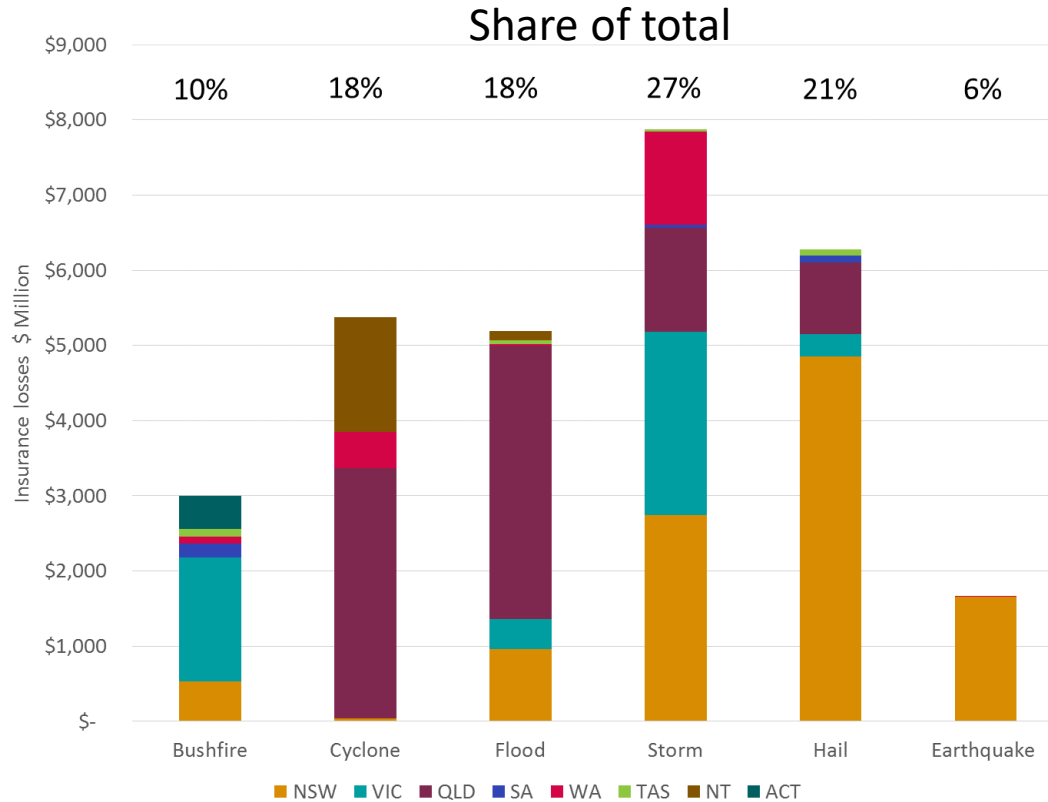


Insurance losses by natural peril 1970–2013



Source: Productivity Commission Natural Disaster Funding Arrangements Report (2014)

Insurance losses by natural Peril 1970–2013



Source: Productivity Commission Natural Disaster Funding Arrangements Report (2014)

When viewing the results

- Data is at the Local Government Level.
- This 'average outs' risk factors across a Local Government Area.
- For example, for flooding, properties along a waterway would likely have a higher risk rating than other parts of the LGA which are on higher ground.
- The risk ratings for the various natural perils are not comparable to each other.
- Technical terms don't align with everyday descriptions.

Spatial Analysis – Risk Level

		No Exposure	Low	Medium	High	Very High	Extreme
Cyclone	GDP (\$M)	73%	4%	3%	11%	6%	3%
	Population	76%	4%	2%	7%	7%	3%
Bushfire	GDP (\$M)	23%	52%	13%	8%	2%	0%
	Population	14%	59%	17%	7%	2%	0%
Flood	GDP (\$M)	26%	19%	27%	27%	1%	0%
	Population	22%	22%	31%	23%	2%	0%
Storm	GDP (\$M)	0%	0%	45%	28%	26%	1%
	Population	0%	0%	49%	25%	26%	0%
Earthquake	GDP (\$M)	1%	28%	18%	37%	14%	2%
	Population	0%	24%	19%	37%	17%	3%

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Spatial Analysis – Regions

Region	GDP (\$Million)	Population (000)	Cyclone	Flood	Storm	Bushfire	Earthquake
Sydney	\$377,974	4,921	No Exposure	High	Medium	Medium	Very High
Regional NSW	\$128,944	2,697	Low	Medium	Medium	Low	Medium
Melbourne	\$284,814	4,529	No Exposure	Medium	Medium	Medium	Very High
Regional Victoria	\$70,823	1,408	No Exposure	High	Medium	High	High
Brisbane	\$155,384	2,308	High	High	Medium	Medium	High
Regional QLD	\$144,886	2,470	Medium	Medium	Medium	Low	Medium
Adelaide	\$74,001	1,316	No Exposure	Low	Medium	High	Very High
Perth	\$154,616	2,039	Low	Medium	Low	Medium	Medium
Regional WA	\$121,696	552	Low	Low	Medium	High	High
Greater Hobart	\$14,215	221	No Exposure	Medium	Medium	Medium	Medium
Greater Darwin	\$7,494	142	Extreme	No Exposure	Extreme	Low	Medium
Canberra	\$34,866	390	No Exposure	No Exposure	Medium	Low	Very High

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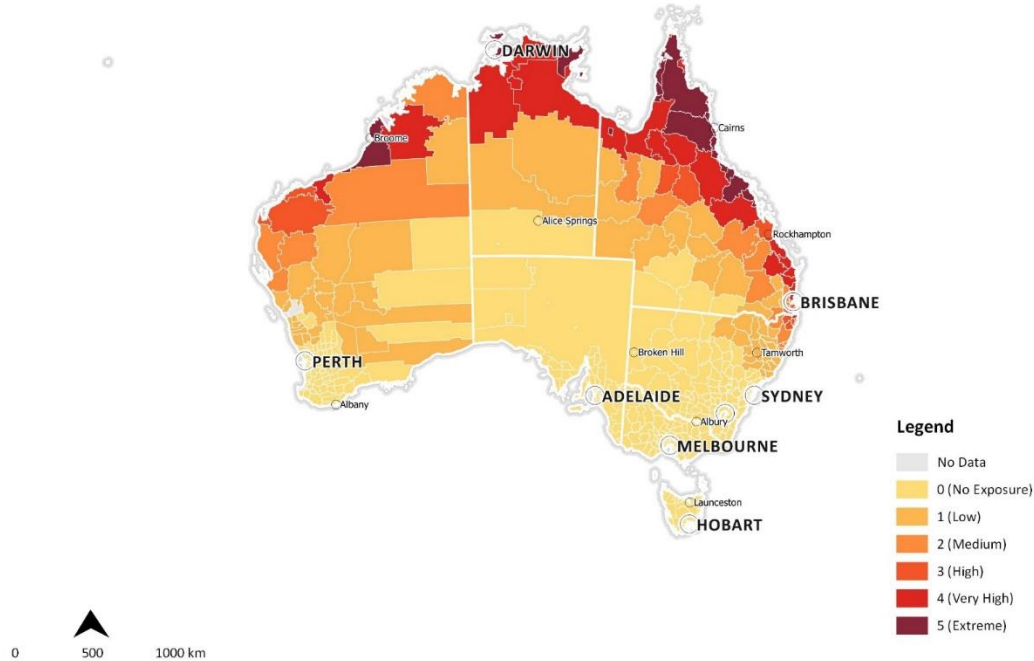
Tropical Cyclone Risk



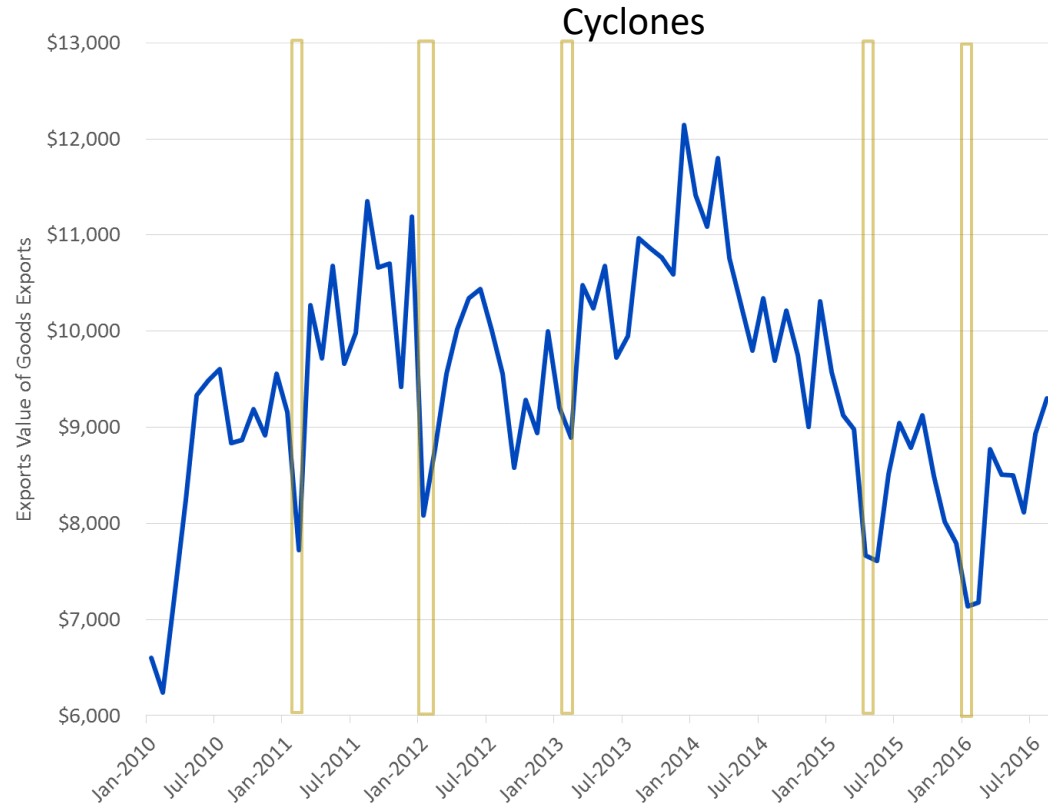
CYCLONE
Risk Score by LGA

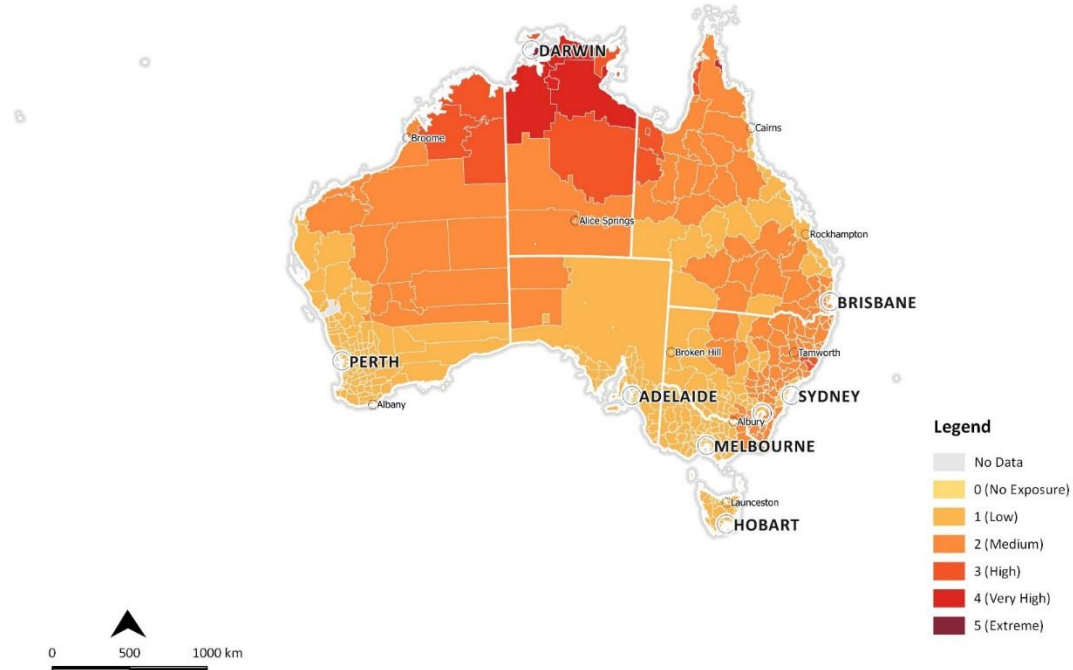
20% of Australia's GDP is at High to Extreme Risk of disruption from Cyclones.

GDP in this area is increasing at 3.4% per year.

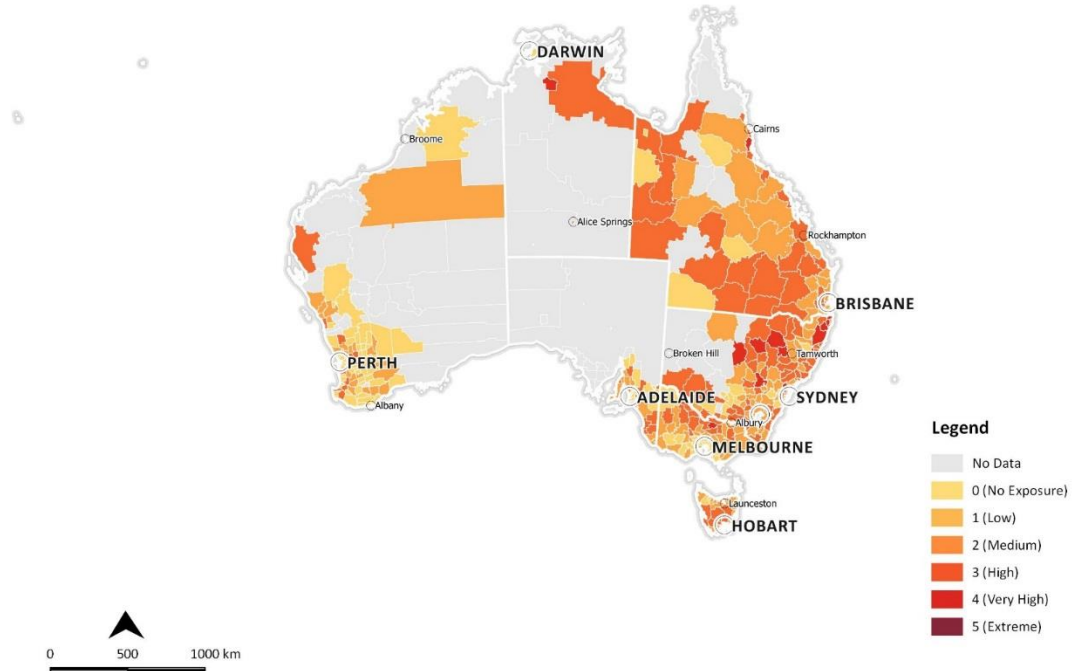


Western Australian Exports (\$M)

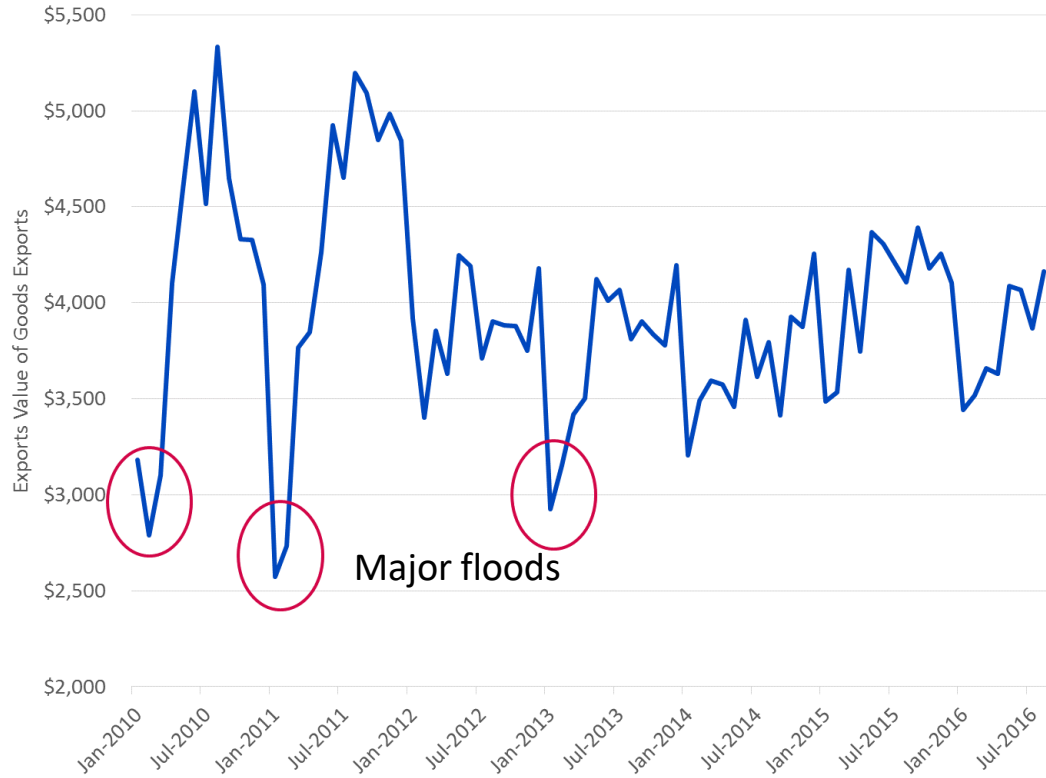




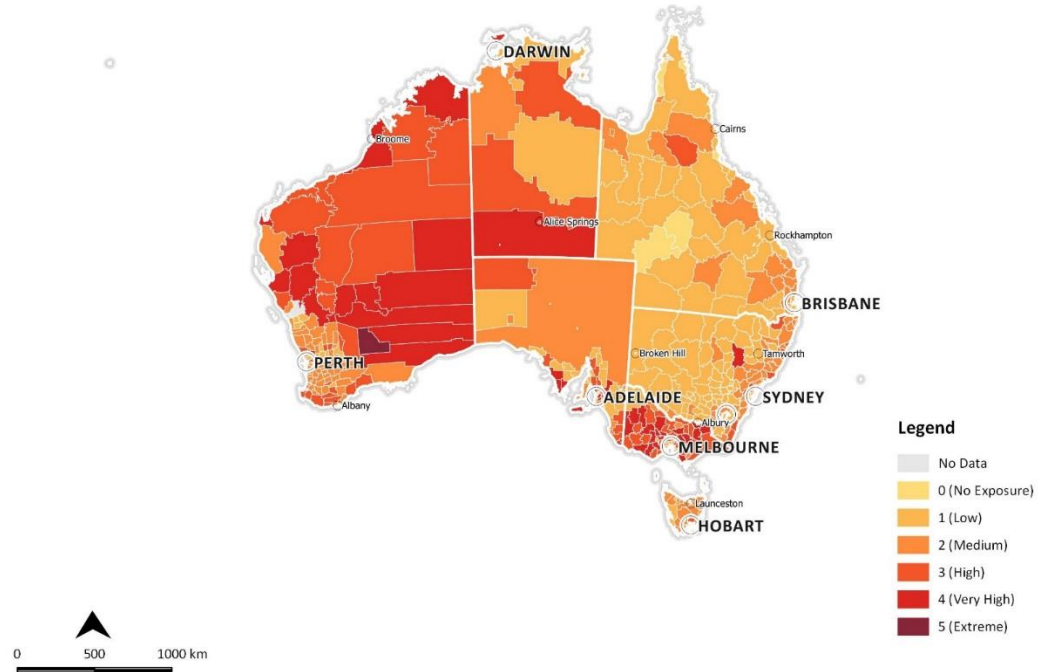
FLOOD
Risk Score by LGA



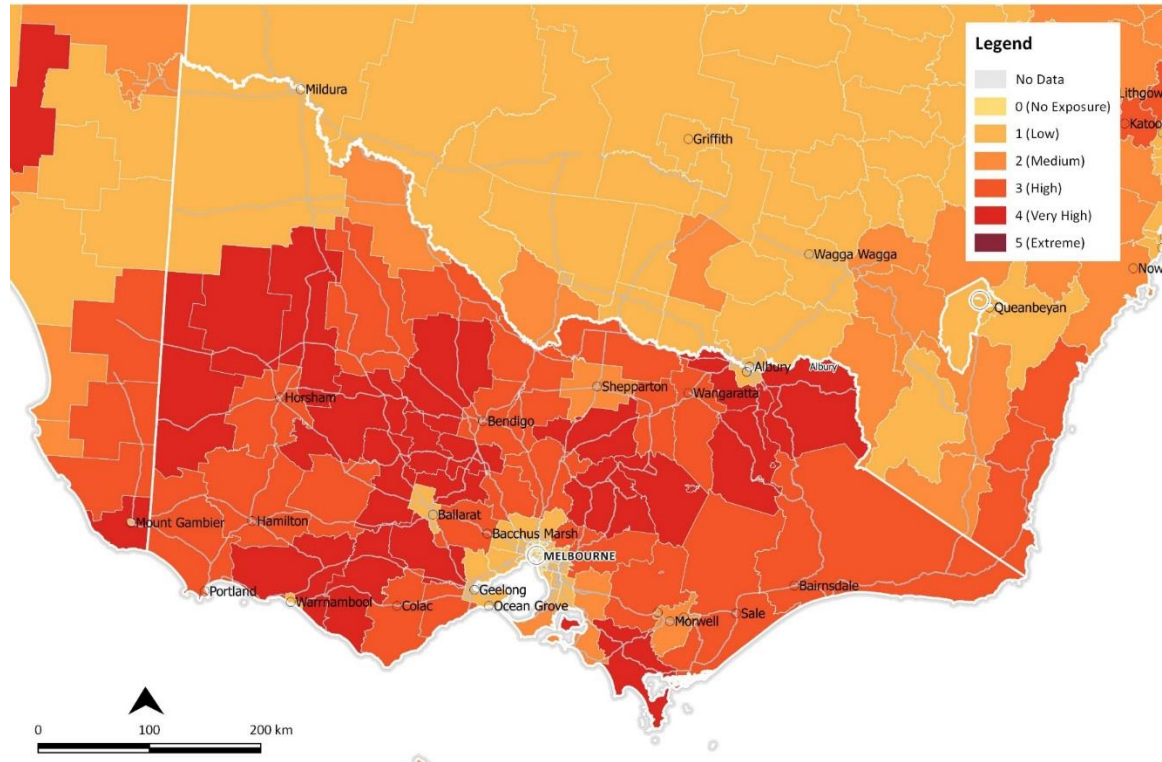
Queensland Exports (\$M)



BUSHFIRE
Risk Score by LGA



BUSHFIRE
Risk score by LGA



High GDP LGA

LGA	State	2014-15 GDP	Share of GDP	Tropical Cyclone	Flood	Storm	Bushfire	Earthquake
Brisbane	QLD	115,421	7.1%	High	High	Medium	Low	High
Sydney	NSW	112,681	6.9%	No Exposure	No Exposure	Low	No Exposure	High
Melbourne	VIC	84,629	5.2%	No Exposure	High	Low	No Exposure	High
Gold Coast	QLD	30,798	1.9%	No Exposure	Low	Low	Low	Very High
Parramatta	NSW	16,336	1.0%	No Exposure	Low	Low	Low	Medium
East Pilbara	WA	16,294	1.0%	Very High	Medium	Medium	Low	Medium
Ashburton	WA	15,063	0.9%	No Exposure	No Exposure	Low	Low	High
Ryde	NSW	14,765	0.9%	No Exposure	No Exposure	Low	No Exposure	High
Blacktown	NSW	13,833	0.9%	No Exposure	Medium	Low	Low	High
Newcastle	NSW	12,698	0.8%	Medium	Medium	Medium	High	High
Roebourne	WA	12,223	0.8%	High	Low	Medium	High	High
Logan	QLD	10,953	0.7%	Very High	Medium	Low	Medium	High

- The high GDP LGAs include a mix of mining areas and knowledge intensive CBDs.
- CBD impacts do impact economic activity:
 - The Melbourne CBD 450,000 workers are at risk of flood. Flooding have impacted on the transport network a number of recent occasions causing economic disruptions.
 - The half a million workers in the Sydney CBD have also experienced transport disruptions caused by fierce storms in recent years.

LGA	State	Index of Economic Resources	Population	Cyclone	Flood	Storm	Bushfire	Earthquake
Moree Plains	NSW	1	14,053	Low	High	Medium	Low	Low
Fairfield	NSW	2	204,442	No Exposure	High	Low	Low	High
Wellington	NSW	1	9,073	No Exposure	High	Medium	Low	High
Hepburn	VIC	4	14,794	No Exposure	Low	Low	Very High	Medium
Central Goldfields	VIC	1	12,575	No Exposure	High	Low	Very High	Medium
Hindmarsh	VIC	3	5,494	No Exposure	High	Low	Very High	Low
Latrobe	VIC	1	73,548	No Exposure	Medium	Low	Medium	Extreme
Bundaberg	QLD	4	94,380	Very High	High	Low	Medium	High
Bunbury	WA	3	34,467	No Exposure	High	Low	Low	Low
East Pilbara	WA	2	12,197	Medium	Medium	Medium	High	High
Wellington	NSW	1	9,073	No Exposure	High	Medium	Low	High

- The Royal Commission into Victoria's Bushfires used the expression '***shared responsibility***' to describe how the community can deal with natural peril risks.
- It recommends that Government improve **protective infrastructure, emergency management and advisory roles**.
- In turn, communities, individuals and business need to take greater **responsibility for their own safety** and to act on advice and other cues given to them.

- Better information will equip individuals with the knowledge to **understand the risks and options** available to them.
- Help individuals make more **informed location decisions** in terms of their current and future location.
- Ensure their **insurance coverage is appropriate** for their risk of exposure to natural perils.
- Understand the risks faced by **their community**.
- Develop a **household emergency plans** in order to be prepared to respond to natural perils.

- Understand the natural peril risks in their location and **assess insurance policies and emergency procedures.**
- Risk of **reduction in income.**
- Consider if their **workforce is in high risk locations** and the resulting implications for their operations.
- Understand the **risk to their supply chain.** Major suppliers or customers are located in a high risk areas are implications.

Implications for governments

- Governments **overinvest in post-disaster reconstruction** and **underinvest in mitigation** that would limit the impact of in the first place.
- Disaster costs have become a growing, **unfunded liability** for government.
- The economy and **taxation revenue are at greater risk** of disruption from natural perils.
- Protective infrastructure investments, appropriate land use planning, built form and building design is critical to helping **mitigate the risk of natural perils**.

<http://www.sgsep.com.au/maps/2016/IAG/>

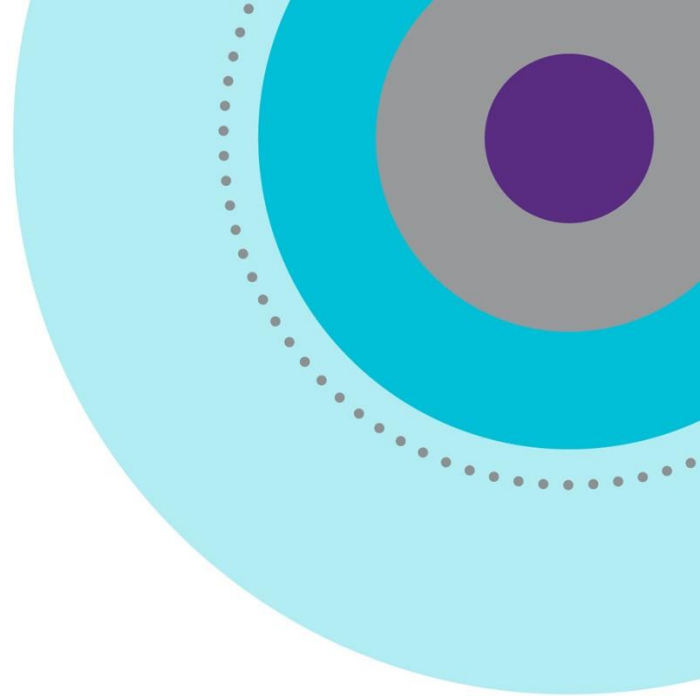
Q&A

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We make your world a safer place

