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Climate change risks

on local government infrastructure

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Agenda

- Climate impacts
- How councils are planning
- NSW Government's response
- Training, tools and resources - OECC and LGNSW
- Examples of council action

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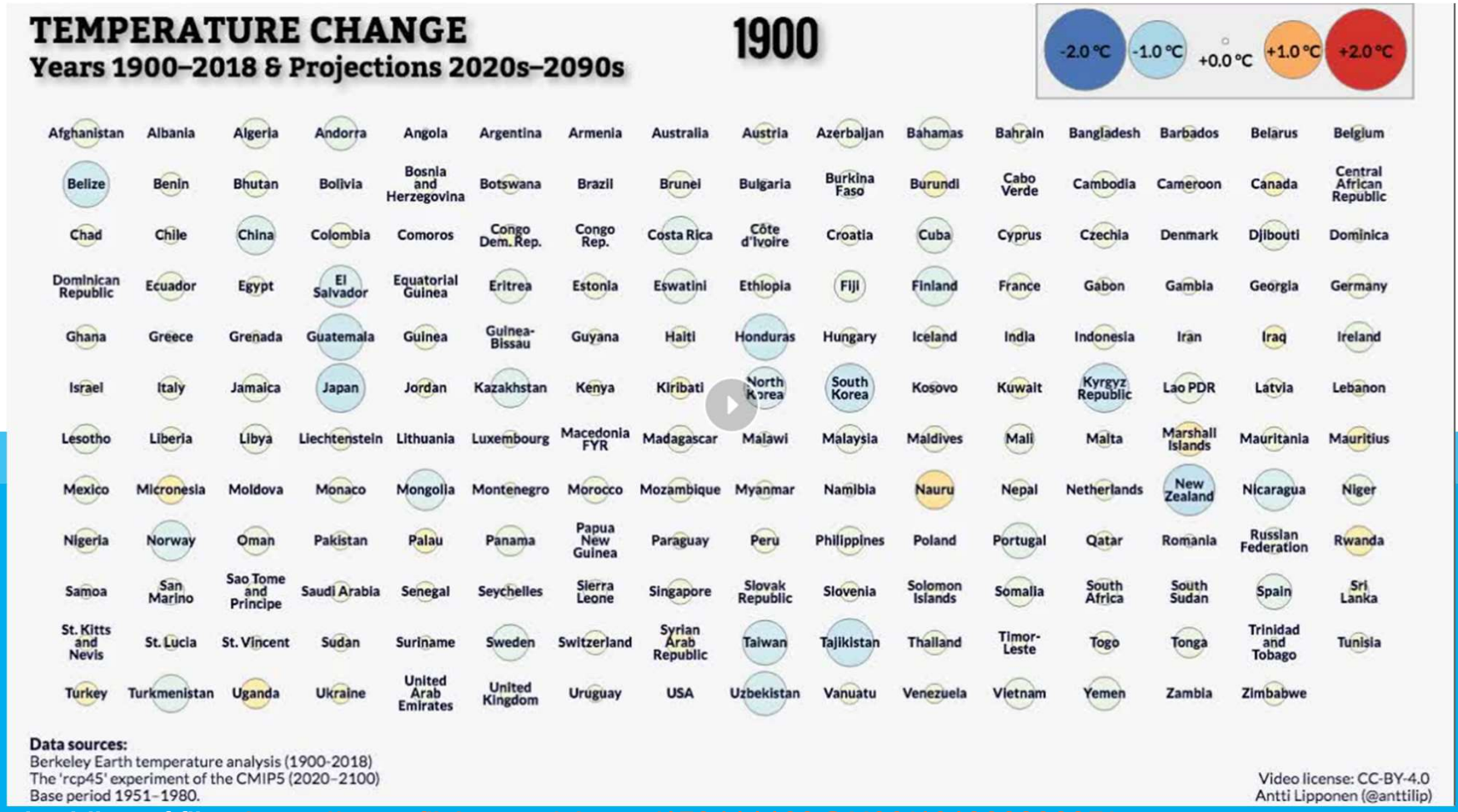

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Climate stats

- 2020 hottest year on record
- The last 7 years were the hottest 7 on record
- 4 Jan 2020 Penrith was the hottest place on Earth at 48.9^{0}C
- 2019 driest year on record, 40% less rain
- Multiple flood events in 2021/22

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Climate impacts to infrastructure

- Heat – electrical failure, usability, warping
- Drought – water supply, maintenance of assets
- Flood – erosion, water quality, loss and damage of assets, waste management
- Bushfire – loss and damage of assets, contamination

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How can councils address climate risks?

- Climate change risk assessments
- More detailed risk analysis e.g coastal management plans, XDI
- Climate resilient infrastructure – design, build and maintenance

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NSW Government response

Chris Weston
Senior Project Officer, Climate Preparedness

Office of Energy and Climate Change

Climate Change Adaptation in NSW

Presentation to the Statewide Mutual Conference

Chris Weston

Senior Project Officer, Climate Preparedness

26 August 2022

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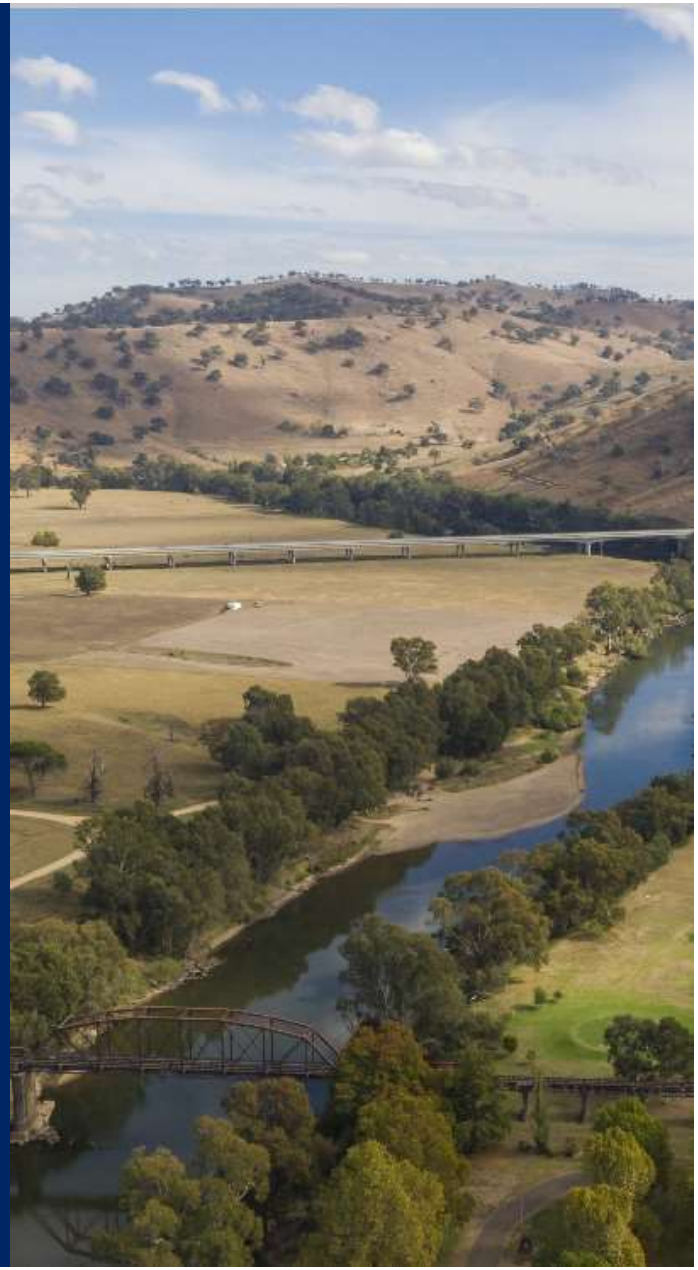


NSW GOVERNMENT

Acknowledgement of Country

The NSW Treasury acknowledges that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

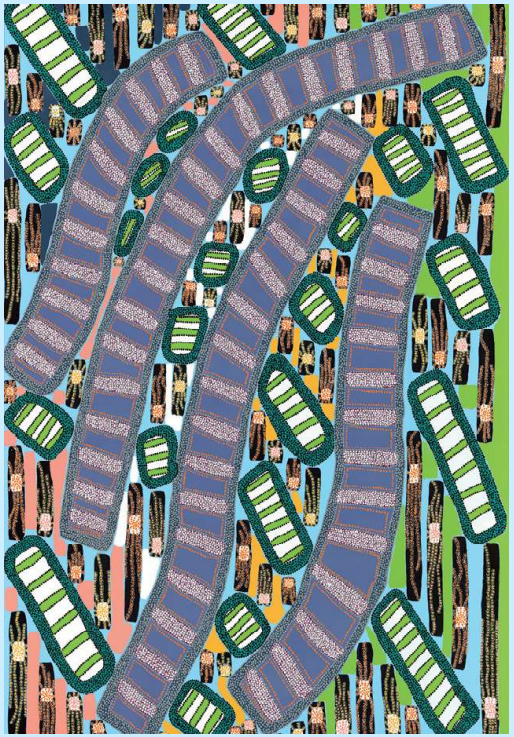
We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices , and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork: ‘Regeneration’ by Josie Rose



Office of Energy and Climate Change

Contents

1

NSW Climate Change Adaptation Strategy

Setting the foundations for strong adaptation outcomes

Office of Energy and Climate Change

Climate change impacts are happening now

FLOODS

- 2022 flood events in NSW and Queensland expected to be some of the most significant disasters economically in the recorded history of Australia - **ICA has recorded over $3.3 bn worth of claims to date**.
- The first 2022 flood Lismore flood was the largest flood event in the city since records began in 1887. More than 2,000 premises uninhabitable. To date, the **NSW and Australian Governments have already committed more than $2.5bn to help communities impacted by the 2022 floods.**

BUSHFIRES

- 2019–20 Black Summer Bushfires: 26 lives were lost in the fire front, 2,476 homes destroyed, **$899 m worth of infrastructure lost** and 5.5 m hectares of land burnt. 219 deaths from **smoke and bushfire smoke cost Sydney's economy $12–50 m/ day.**
- Billions of animals were killed, injured, or displaced **- the worst wildlife disaster in modern history**.
- Estimated revenue loss of $4.5 bn to the tourism sector. The **NSW Government has committed over $3 billion to the bushfire response, recovery and preparedness** efforts in NSW.

HEATWAVES

- **Major heatwaves have caused more deaths in Australia since 1890 than bushfires, cyclones, earthquakes, floods and severe storms combined**.
- In Sydney alone, an extra 1,484 heat-related deaths occurred due to climate change between 1991 and 2018.

DROUGHT

- **At the beginning of 2020, 100% of NSW was in drought**. Since 2017, many regions in NSW have faced the lowest rainfall and driest conditions in 120 years of records.
- **The drought is estimated to have cost the NSW economy $5.7 bn of Gross State Product in 2018–19**, with further estimated losses of **$6.3 billion in 2019–20**.

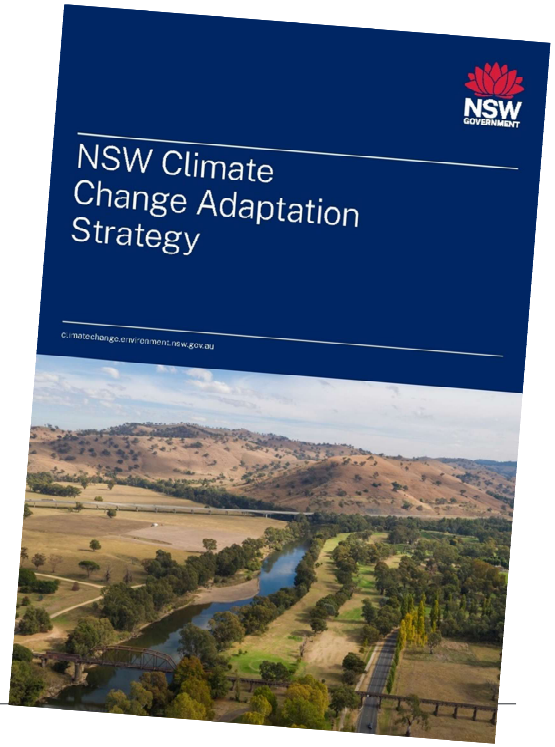
NSW has already warmed by

1.4 - 1.6°C

which is 1.4 times faster than the global average

NSW Climate Change Adaptation Strategy

- The strategy's purpose is to make NSW more resilient and adapted to climate change
- It sets out the NSW Government's strategic approach to adaptation over the short and long term
- It fills a key gap in climate change policy for NSW
- The strategy sets four priority areas:
  1. Develop robust and trusted metrics and information on climate change risk
  2. Complete climate change risk and opportunity assessments
  3. Develop and deliver adaptation plans
  4. Embed climate change adaptation in NSW Government decision making.
- 16 key actions sit under the four priority areas.
- Supported by $93.7m funding package over 8 years to be delivered by Treasury and Department of Planning and Environment in consultation with our stakeholders.



Upcoming Strategy Priority Actions

Priority 1
Develop robust and trusted metrics and information on climate change risk

- **#1** Establish metrics to measure progress toward climate resilience and adaptation for NSW
- **#3** Publish improved local level climate change projections
- **#7 –** Translate climate science into accessible information and resources

Priority 2
Complete climate change risk and opportunity assessments

- **#9** Publish NSW climate change opportunity and risk assessment

Priority 3
Develop and deliver adaptation action plans

- **#10** Publish NSW adaptation plan

Priority 4
Embed climate change adaptation in NSW Government decision-making

- **#11** Embed climate risk & adaptation into policy, guidance, processes
- **#13** Climate risk officers embedded in all government agencies
- **#14** All NSW Government agencies to assess climate risks in line with Climate Risk Ready
- **#15** Develop climate change risk thresholds and prioritisation framework to guide action plans

Descriptor

NSW climate change policy

NSW Climate Change Policy Framework								
ADAPTATION OBJECTIVE **NSW is more resilient to a changing climate**				MITIGATION OBJECTIVE Achieve net-zero emissions by 2050				
NSW Climate Change Adaptation Strategy				Net Zero Plan Stage 1: 2020-2030				
Metrics and climate change information	**Climate Change Opportunity and Risk Assessments**	**Adaptation Action Plans**	**Embed in NSW Government decision making**	Waste & Sustainable Materials Strategy	Electricity Infrastructure Roadmap	Electric Vehicles Strategy	Electricity Strategy	Hydrogen Strategy

2

Use case: monitoring climate risks to assets

The value of risk quantification to assessing and monitoring climate risks to assets

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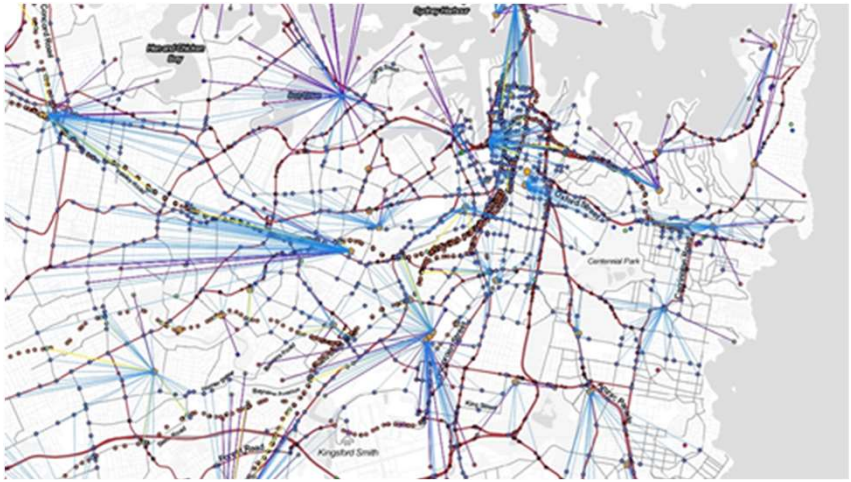
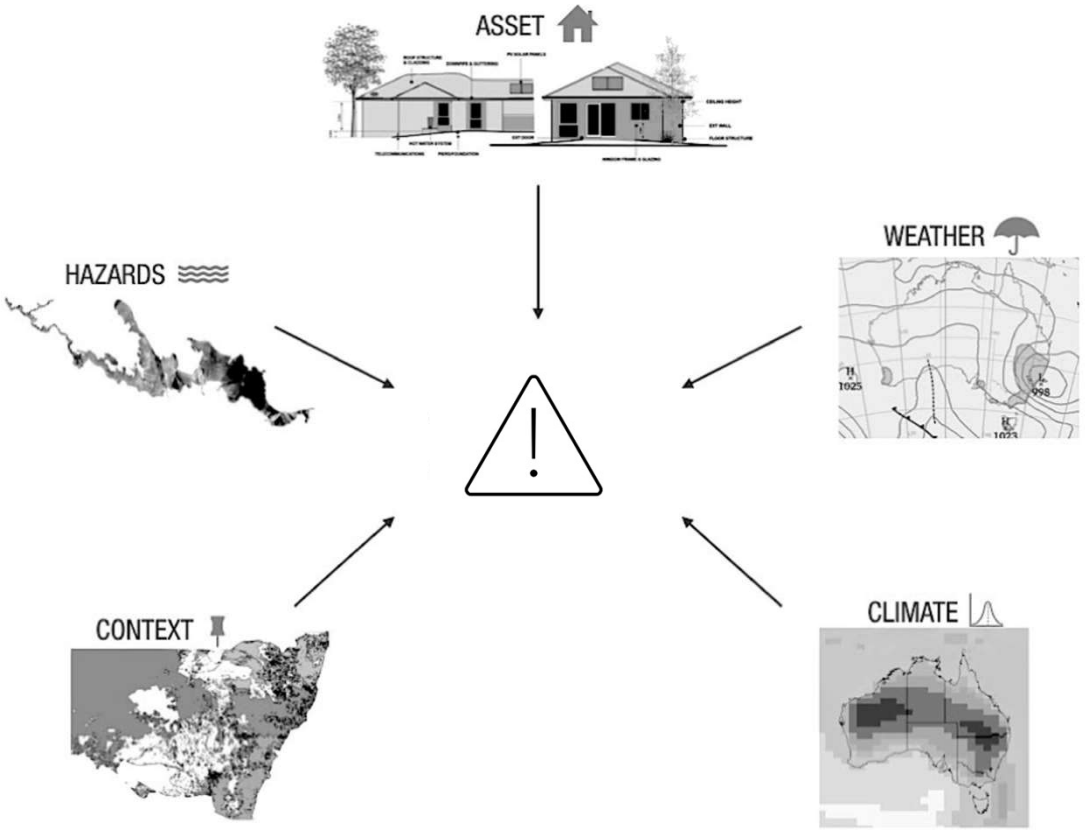
What is the Cross-Dependency Initiative?

- Software to support risk analysis and adaptation
- Developed and improved over many years
- Supports decision-making by producing quantified information about risks and costs
- Supports collaboration to address risk in place



Adapt Water	2013
Adapt Roads	2016
XDI Sydney	2017
XDI NSW	2020

High quality data improves risk analysis



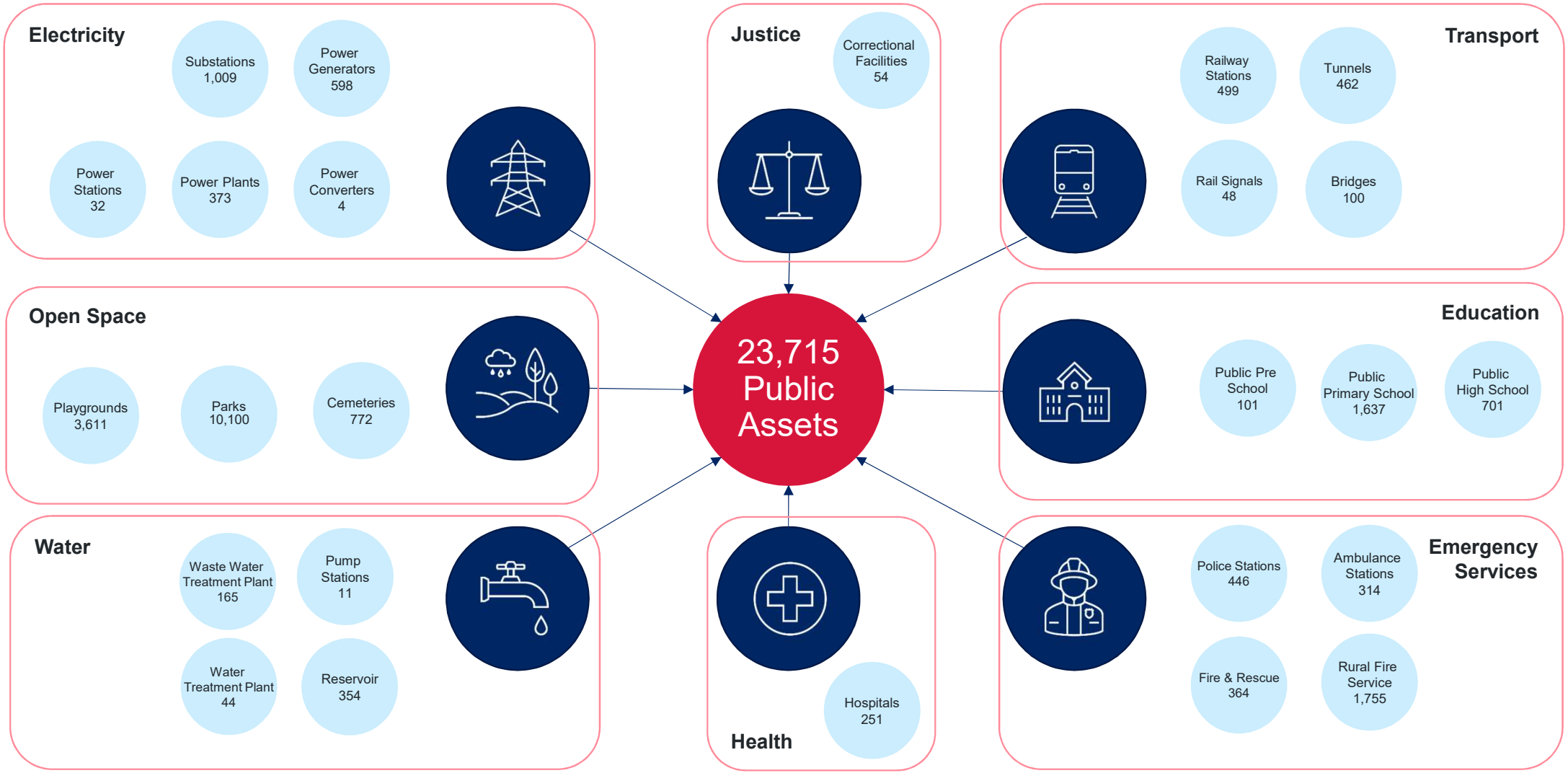
$ Average Annual Loss

Value at Risk

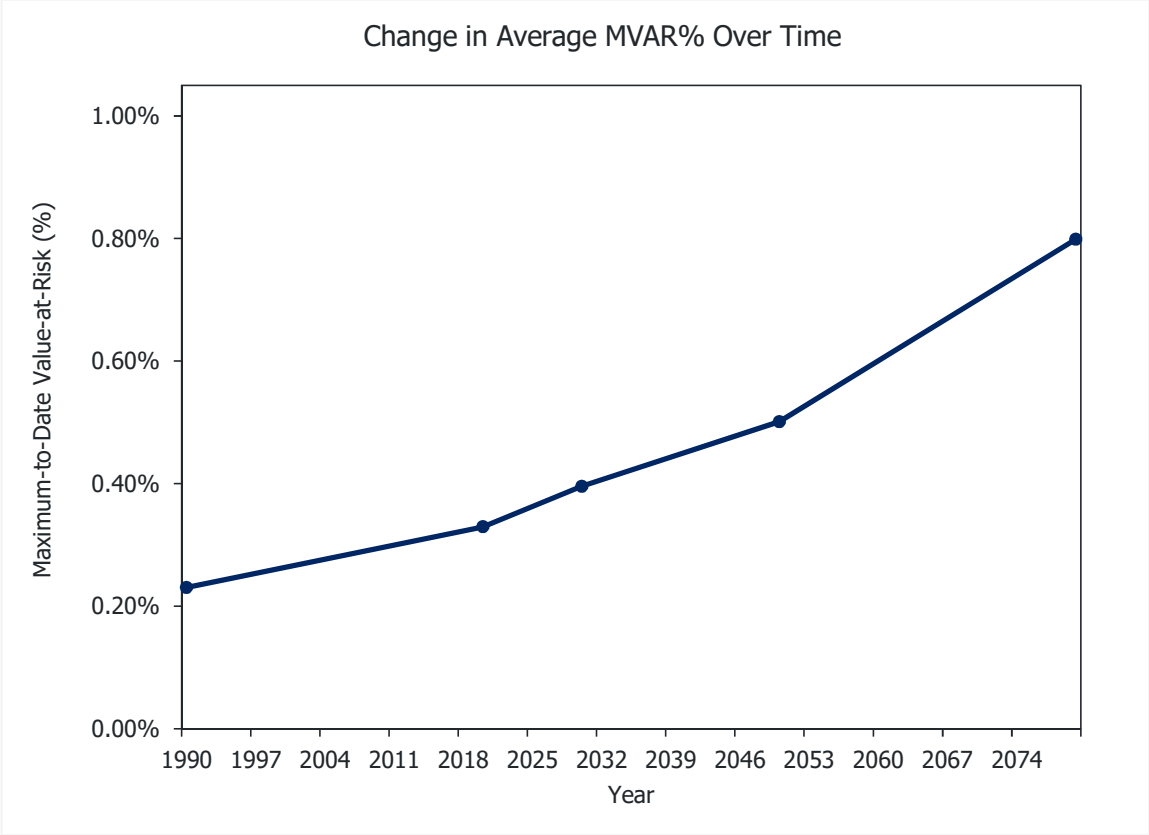
Probability of Failure

Probability of Dependency Failure

First pass assessment of risks



Comparable metrics that equate to costs



$1,160,000,000 per year *

Opportunity to the NSW Government for adaptation in 2020 in direct risk and damage cost

*Assumes 0.33% average Value at Risk for $350 billion of NSW Government assets.

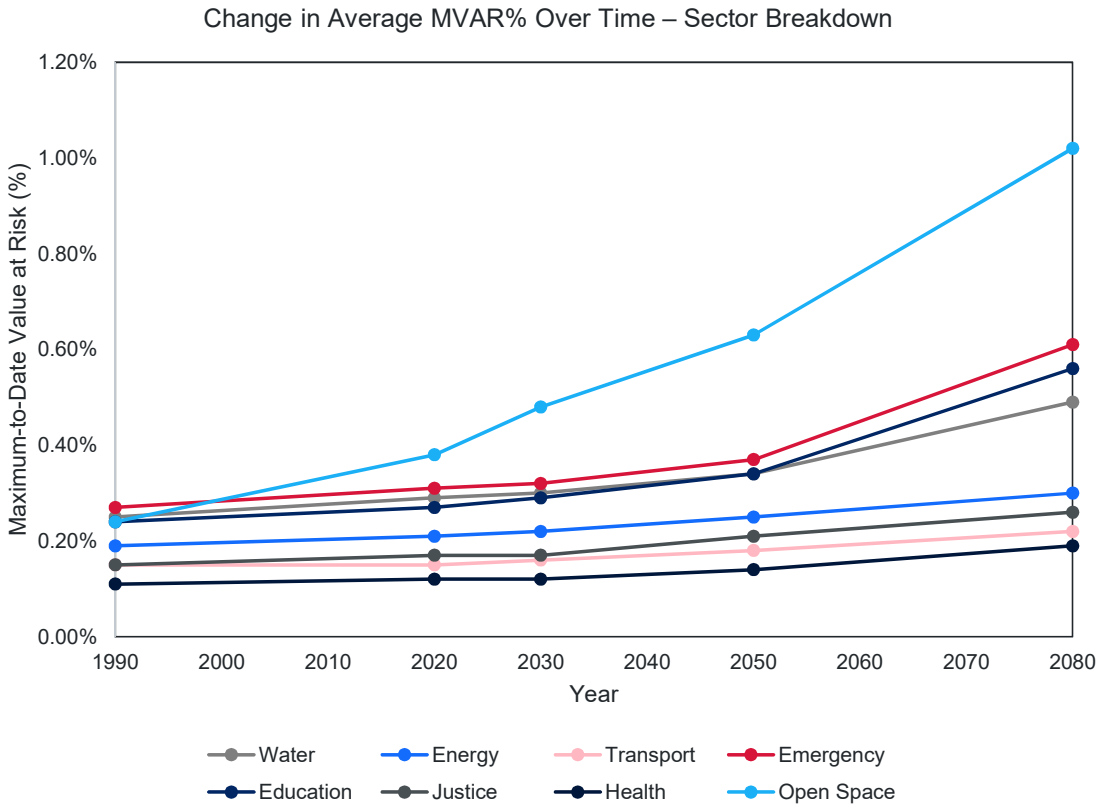
Does not consider secondary or tertiary impacts.

RCP 8.5 warming scenario.

Year	Annual Average Loss	% high risk properties
2020	$1.16 billion	5%
2030	$1.4 billion	6%
2050	$1.75 billion	9%
2080	$2.8 billion	14%

Figure. Change in average maximum VAR to Government assets

What sectors are most exposed?



Average VAR is broken down by sector to identify which sectors may be more exposed than others

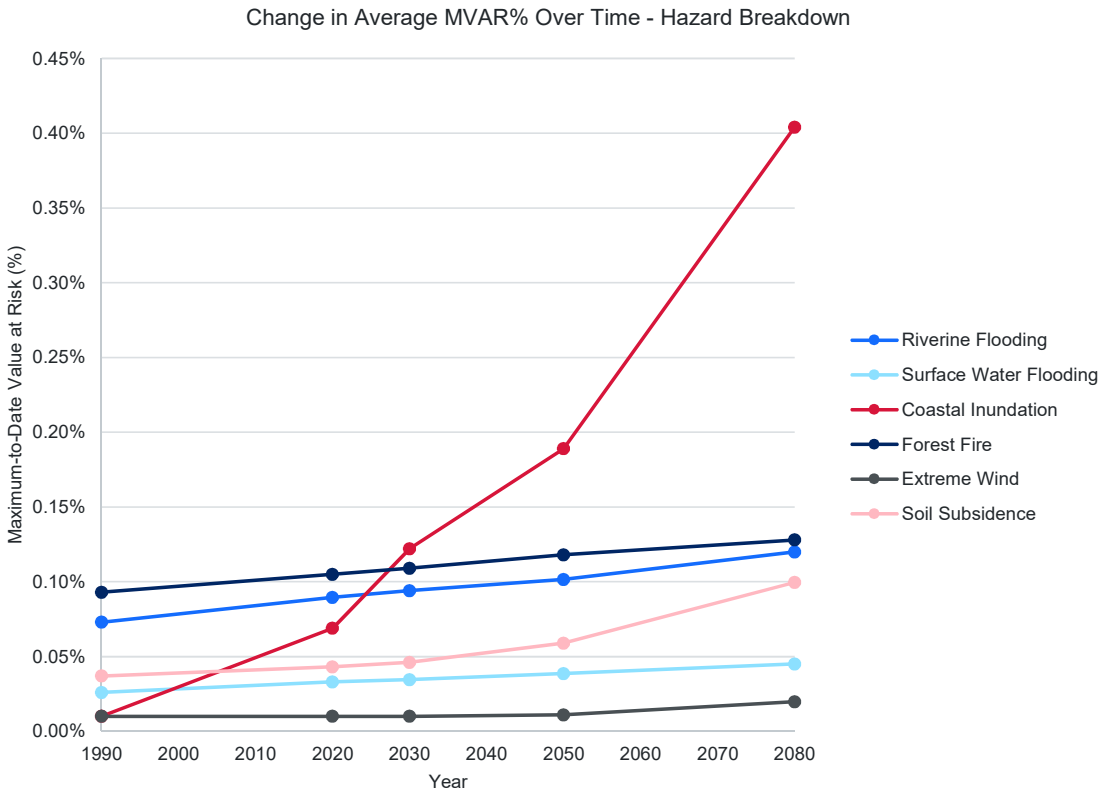
Help inform prioritisation and risk tolerances

*Incomplete asset data for some sectors may underrepresent exposure of some sectors

*RCP 8.5 warming scenario.

Figure. Change in Average MVAR% Over Time – Sector Breakdown

What hazards are driving the risks?



Average VAR is broken down by hazards driving the VAR to identify which how hazards can change

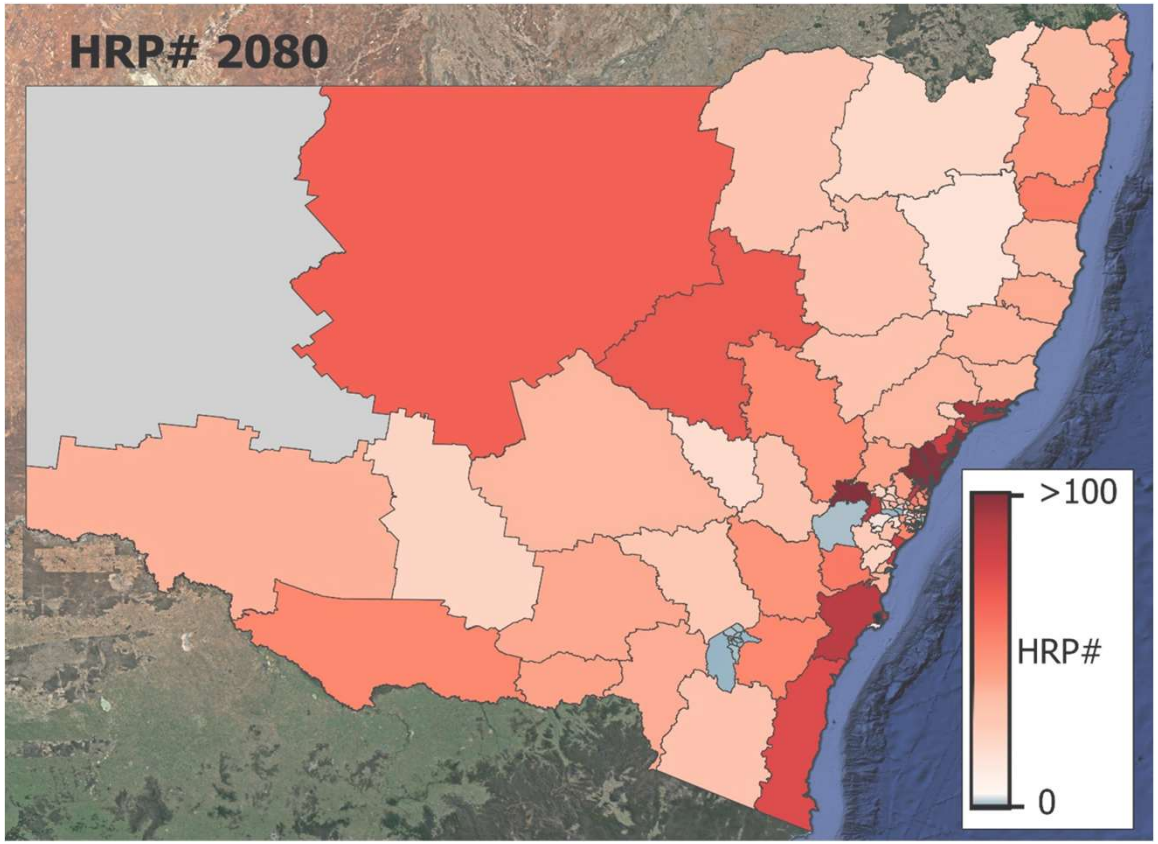
Help inform policy priorities and investment into better information

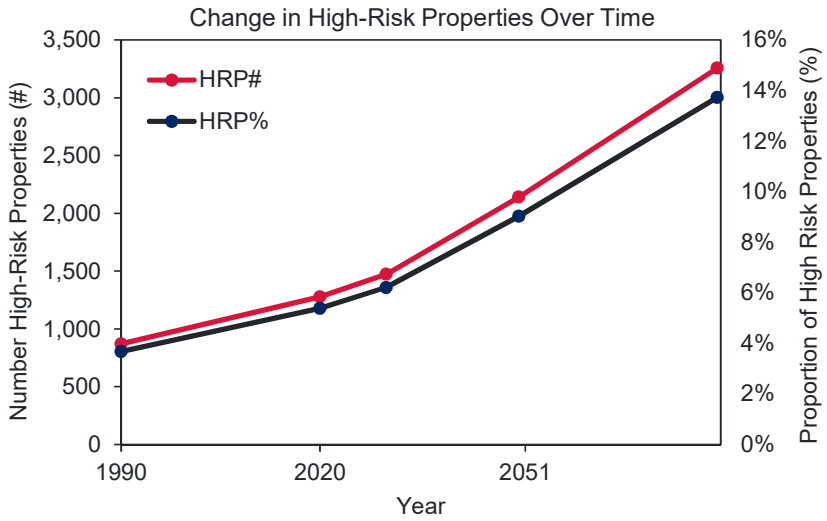
*Some natural hazard data is more difficult to model than others

*RCP 8.5 warming scenario.

Figure. Change in Average MVAR% Over Time - Hazard Breakdown

Finding where to start





High risk properties = VAR > 1%

Considered commercially uninsurable

Understand where to prioritise efforts

Figure. Map of number of high risk properties

3

Priorities and resources for local governments

Improving adaptation outcomes for NSW

Office of Energy and Climate Change

Priorities for the XDI NSW project

We can estimate cost saving opportunities now for climate risks

We can analyse lots of asset information to inform where to start

High quality hazard and asset information produces high-quality insights

Resources to support local government

Climate Risk Assessment Guidance*

Climate Risk Ready Training*

Climate projection and hazard data*

XDI NSW access

Climate Change Toolkit* (coming soon)

Adaptation Planning Guidance* (coming soon)

** Accessible via the AdaptNSW website*

Resources to support local government

Adaptation Scorecard
(*due end 2022*)

- Scorecards will be provided to all council who complete an upcoming preparedness survey.
- Scorecards will provide a benchmark of climate risk management and adaptation practice for each council.
- They will help councils understand what steps to take next to improve.

Thank you

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Training, tools and resources

- Climate change risk assessment module
- Case studies
- Climate Action Professional Officers Group (CAPOG)

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Council case studies

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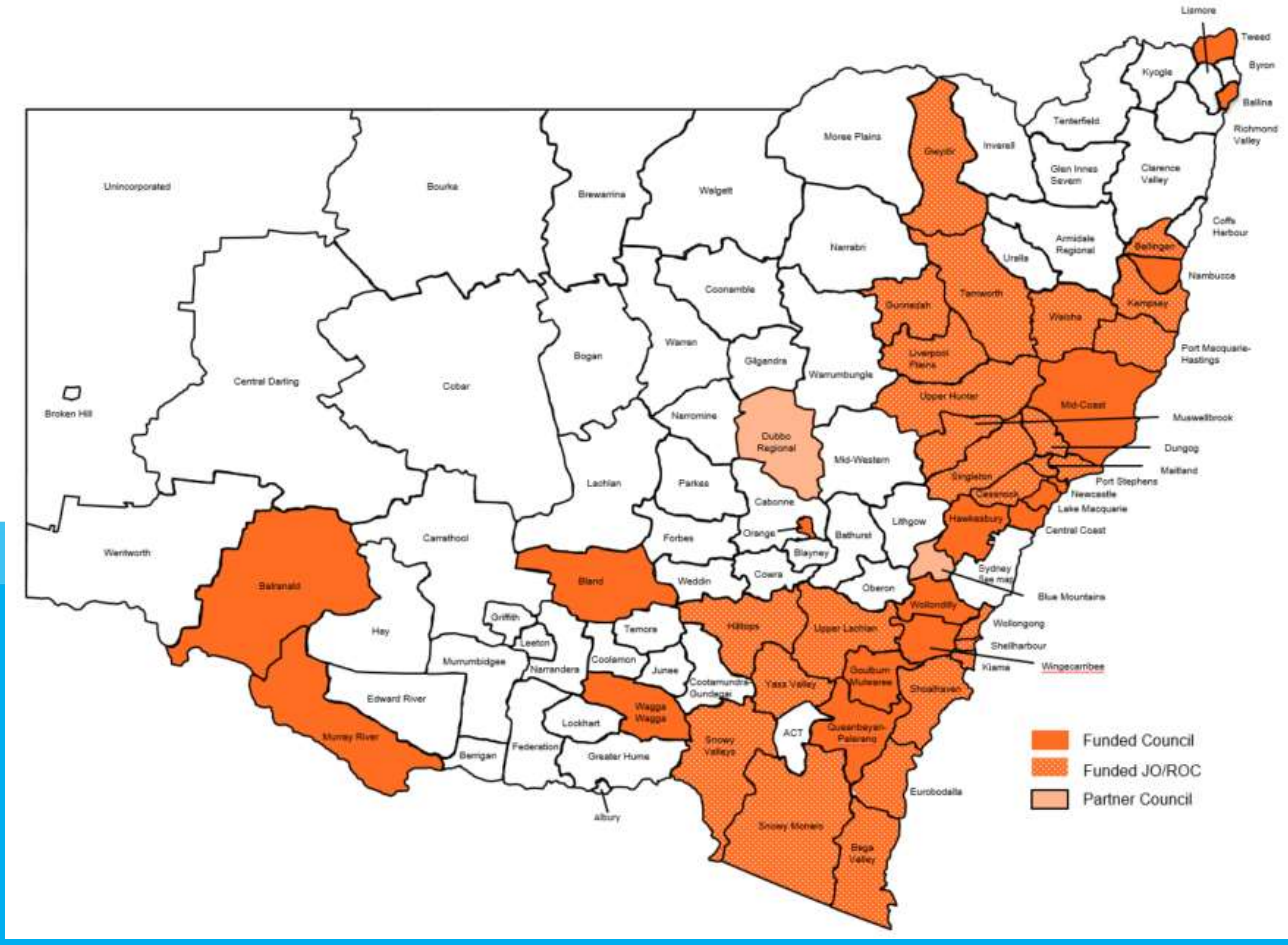

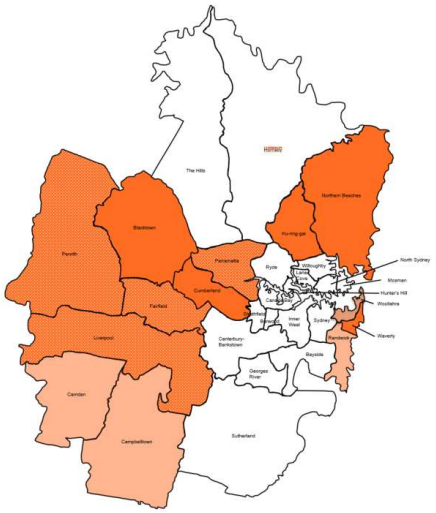

Increasing Resilience to Climate Change projects

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Heat

City of Newcastle - Beresfield adaptive placemaking

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Heat

Cumberland City and Goulburn Mulwarree Councils

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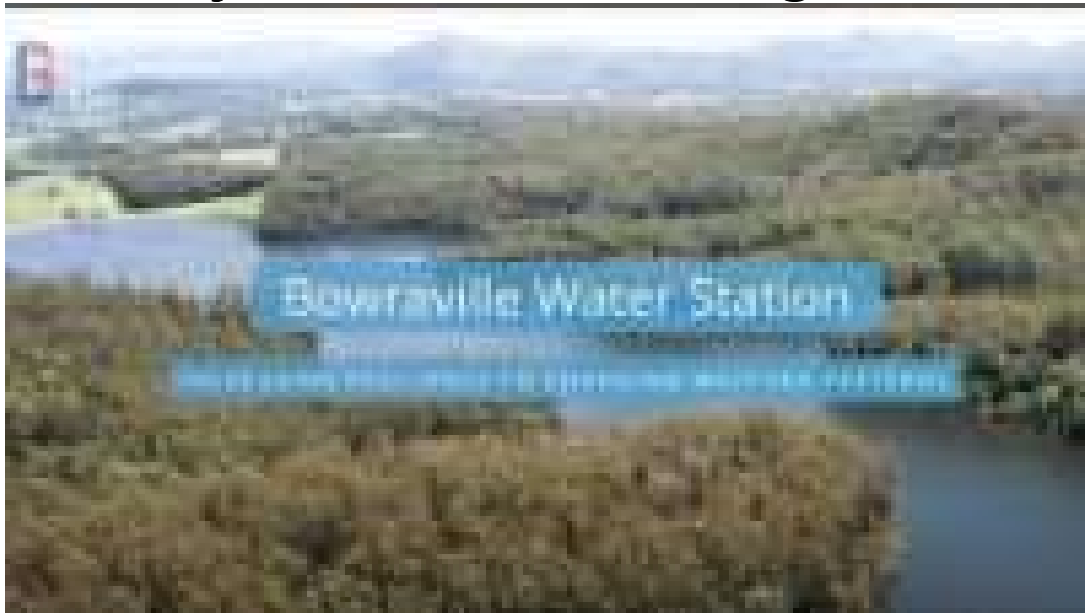
Drought

Nambucca Valley Council - Filling the tanks



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Flood

Lake Macquarie Council – tidal gates

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Bushfire

- Ku-ring-gai Council – Sim table

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