



Australian Government

Department of Climate Change, Energy,
the Environment and Water

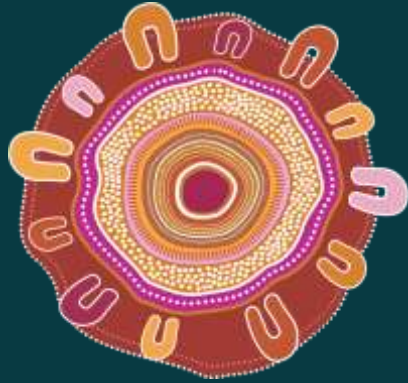
Climate change impacts on flooding: Implications of the 2024 update to Australian Rainfall and Runoff

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We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

Presentation Outline

1. How was the update done?
2. Key changes to the Climate Change Considerations chapter
3. What we heard from stakeholders about application of the guidance
4. Additional guidance / tools to support application

1. How was the Climate Change Considerations chapter of ARR updated?

- Book 1, Chapter 6 (Version 1) 2024

A partnership - DCCEE and Engineers Australia

Project Control Group
[Oversight and direction]
(engineering practitioners, Government, Industry)



User needs and input
(via open consultation)



Technical Working Group
[drafting update]
(industry and academia)
(Engineering and climate science)

Funded by National Emergency Management Agency, Disaster Risk Reduction Program

Project process



2. Key Changes to the Climate Change Considerations Chapter

- Book 1, Chapter 6 (Version 1) 2024

Summary of changes

- Paradigm shift in design approach
 - Climate change **may** be considered → **must** be considered
 - application of climate change factors to historical rainfall data
 - Variable rainfall adjustment per degree **global** warming
 - short-duration rainfall intensity triple previous guidance (15%/°C vs. 5%/°C)
 - Increases in long duration rainfall (>24 hr) – slightly higher (8%/°C vs. 5%/°C)
 - Applicable across all recurrence intervals all the way up to “probable maximum” events
 - provision of guidance for other factors that influence design flood estimates; (e.g. changes in rainfall losses, temporal patterns, and sea level rise).
 - Inclusion of worked examples (adaptative management)
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3. What we heard from stakeholders about application of the guidance

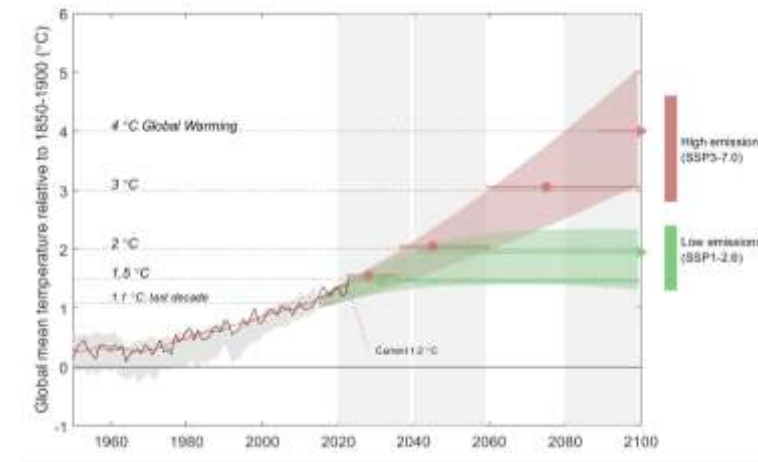
What we heard - jurisdictional workshops

- Need for more information / support to assist in application of the guidance:
 - Choosing appropriate climate scenarios
 - Simple tools to identify implications of guidance (for less-skilled practitioners)
 - Tips for adaptive design of flood resilient infrastructure
 - Incorporating sea level rise

4. Current work on additional guidance /
information to support application

Authoritative guidance - climate scenarios

- To provide governments, businesses and engineers with consistent climate information to support financial disclosure reporting and climate risk management
 - Education
 - types of greenhouse gas emission pathways, baseline, time horizon
 - Decision tree – choice of scenario for different applications
 - Infrastructure and critical infrastructure are included (medium emissions, high emissions – SSP2-4.5, SSP3-7.0)
 - Plausible climate futures
 - Qualitative by state
 - Quantitative – key metrics of interest, by climatic region
 - Australian datasets



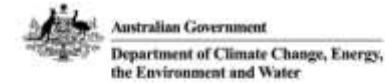
Simple ready-reckoner tools

- Assess potential implications of climate change on flood risk with updated guidance
- 2 use cases
 - Reinterpretation of existing flood studies as a proxy for future
 - First pass approximation to inform need for flood study
- Excel → transparent
 - Ready-reckoner based on rainfall (urban)
 - Ready-reckoner based on streamflow (peri-urban, rural)
- Output example

Under a moderate emissions scenario, a 1% AEP flood (1 in 100) in 2030 will be equivalent to a historical 1 in 200 flood
- Tested with selected users → feedback being considered.

Sea level rise implications

- May 2025 workshop
 - understanding sea level rise science needs to support adaptation and engineering in Australia
 - need for a nationally consistent approach to sea level rise across all actors and levels of government
- What are we doing next?
 - Update to coastal engineering guidelines
 - EA led
 - 2026 start.



Sea level rise science for adaptation and engineering needs

Workshop report | June 2025



Thankyou!

Contact:

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Simple ready-reckoner tools - interface

Climate scenario or degrees of warming	SSP3-7.0
Year (NA is using degrees of warming)	Long-term (2081-2100)
Projection uncertainty	median
Degrees of warming (relative to 1961-1990: approximate ARR baseline period)	3.3
IFD rate of change	Central (median)
Critical storm duration (duration used for calculating AEP analogues)	6 hour
Interpret results for Annual Exceedance Probability (AEP) of:	1 in 10

Under historical conditions, the AEP of a rainfall depth of 71 mm is 1 in 10.

Under the selected scenario, a 1 in 10 rainfall depth will be 98 mm (a change of 38%), which is equivalent to a rainfall AEP of 1 in 46.3 under historical conditions.