

Cyclone Marcia – February 2015

Cyclone Marcia (Marcia) formed on 18th February 2015 and intensified rapidly, crossing the coast near Shoalwater Bay, Qld. as a rare Category 5 cyclone. (USA Cat.4). Marcia remained a category 3 far inland on 20th February and after several hours of heavy rainfall, intensities increased with around 250mm of rain in 3 hours over the western slopes of the Calliope Range (*Official report*).

Multiple record flood height were observed along Bell, Callide, Grevillea, and Kroombit Creeks. Callide (Gated) and Kroombit Dams both observed floods of record with erosion to the toe of Kroombit Dam with 10000-year levels level observed. Environmental monitoring equipment was damaged with one gauging station and building (Stepanoffs) never located.

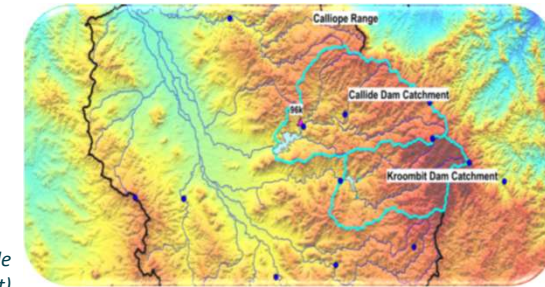
There was significant flood impacts to residential areas and infrastructure throughout Callide Valley.

Resources available

- Rainfall data – official
- Reservoir data - official
- Media coverage
- Papers
- Official review and submissions

Useful to

- Regulators
- Insurance
- Dam owners
- Utilities
- Disaster & emergency managers
- Boards



Catchment map and Callide creek post event (J Stuart)



Governance Questions

Do plans meet the intent of the legislation? Compliance doesn't mean safe

Have plans scenario tested floods significantly different from design floods?

Have we investigated any common law implications given Qld Govt. Changes?

Do downstream residents know their risk? How does engagement occur? How often?

Learnings Checklist

Category	Event	Learning/prevention activity	Question?
Common Law – Management of risk	The Queensland Government withdrew the requirement for dam owners to follow an Emergency Action Plan (EAP), in favour of a requirement to have a plan.	Any test of plan implementation moved to a post event circumstance. (Qld Govt) Compliance isn't a defence.	Do plans meet the intent of legislation?
Public safety	State Govt. review concluded that downstream residents have a right to know their risks, and how that risk is changing.	Legislation changes to ensure local disaster plan integration, and use of Emergency Alert SMS system. (Qld Govt)	Have we engaged with residents, and continue this at regular intervals?
Environmental monitoring	River height gauging sites, initially installed for low flow measuring, were not robust in line with flood warning and forecasting requirements.	Two gauging sites were destroyed, in one instance, the housing, monitoring equipment and weir were never found. (Sunwater)	Will monitoring equipment
Asset performance	Rainfall frequency was estimated by the official review at between 200-500 annual exceedance probability. Lake levels at Callide and Kroombit Dams reached or exceeded 1:5000-year levels	Testing of the validity of Average Variability Method (AVM) assumption that rainfall frequency was representative of flood frequency. (Sunwater)	Have scenarios significantly different from design floods been tested to provide assurance for asset performance?
Continuity planning	Issuing of fridge magnets by dam owner based on zoned inundation. Example was identified as best practice by UK Govt review (UK Govt)	Allowed the system to be time proofed with planning for length gaps between major flood events.	Will incident response function after a long period of no events?