Drought Management Planning in a Complex System – Learnings from Nyngan and Cobar

4 September 2019
Introduction – Who are we?

- **Mike Brearley**
  - Consulting engineer providing personalised engineering and management support services to local government across regional & rural NSW
  - Formerly Director and Water & Sewer Manager for Wingecarribee Shire Council
  - Civil Engineer with 40 years local government experience

- **Jacqui Hansen**
  - Consulting engineer specialising in Infrastructure Asset Management
  - Civil Engineer with 25 years local government experience
  - Member of the IPWEA NSW Asset Management Working Panel
Where is Nyngan & Cobar?

- Burrendong Dam
- Albert Priest Channel 70 km
- Bogan River Weir Pools
- Cobar Pipelines 130 km
Complexities

- 3 separate water utilities
- Mining customers
- Reliance on water from Burrendong Dam when no flow in Bogan River
- 50% water loss from APC offtake onwards
Local inflows to the system

- Long periods of low flow in Bogan River catchment
- Reliance on water from Burrendong Dam via Macquarie River and Albert Priest Channel
Let’s focus

- Burrendong Dam now 4.8%.
- Severe water restrictions in place.
- Already very high water tariffs
- Water cartage now in place for villages.
- Mining users allocations reduced.
  - recycling
  - investigating alternative water sources
  - sharing water allocations
  - impacts on local communities

Acknowledgement to Western Focus Media
What if it doesn’t rain?

- We are working together and planning......
A long history

- Drastic water shortages in early settlement
- Albert Priest Channel. Open earth channel. 20 m fall over 70 km (1942).
- Storages at Cobar (1963 & 2010)
- Extensive studies and options reports prepared
- Storage at Nyngan (2018) - one element of a water security solution
Limitations in the water transport system
What drought strategies did we evaluate?

- **Water conservation management**
  - Water restrictions
  - Drought Water Pricing
- **Make the best use of water available**
  - Temporary weir *
  - Fill the new storage prior to 30 June *
  - Review operation of weir pool
- **Eliminate water losses**
  - Pipeline options
- **Reduce water losses**
  - Renew failing infrastructure *
  - Leakage investigations and subsequent clay lining *

* Funding received for these strategies
What drought strategies did we evaluate?

- Additional Water Sources
  - Investigate groundwater sources *
- Additional Storages
  - Second storage at Nyngan *
- Emergency strategies
  - Empty Weir pools
  - Emergency supply pipeline for towns
  - Water cartage by road
  - Water cartage by rail

* Funding received for these strategies
Temporary weir
Fill the new storage

Where will the water come from to fill the storages?
Covered storages?
Repair failing infrastructure
Replace the syphon
Where is the channel leaking?

Acknowledgement to www.groundwaterimaging.com.au

Where can we get the best result from clay lining?
Find new water

Acknowledgement to Chris Jewell & Associates
Build new storages
Pipeline solutions?

- Pipelines greatly reduce transportation losses
- Complex evaluation of piping the Albert Priest Channel
- Can small local councils afford to carry the depreciation associated with new, high cost assets, even when they are “gifted”, and remain “fit for the future?”
Water cartage by rail?
Outcomes

- Emergency Drought Funding for
  - Temporary water allocation
  - Temporary weir
  - Reduce water leakage
  - Renew failing infrastructure
  - Additional storage
  - Groundwater investigations

Nyngan Observer
July 26 2019 - 3:30PM

$10.2 million drought Infrastructure package for Bogan Shire water security.

Local News

The current water storage in Nyngan. Photo: CONTRIBUTED

With water running dry, the Bogan Shire Council has received $10.2 million to improve water infrastructure in the shire.
What are the locals saying?

- Already very frugal with water
- Extremely grateful for the emergency drought funding
- Small councils cannot afford to depreciate expensive capital works
- Further increases to water tariffs cannot be tolerated
- Drought funding will certainly help Nyngan & Cobar, but by no means secure
Learnings

- **Work together, plan, fund – then Do**
- Close collaboration required between state, local government and stakeholders
- Complexities of 3 water utilities, mining customers, state government support
- Carrying the depreciation associated with new infrastructure is an issue for small Councils
- Already very high water charges – further increases work against local communities
Acknowledgements

This project has required the dedicated collaboration of many parties, including:

- Elected representatives from Nyngan & Cobar
- Local government officers from Nyngan and Cobar
- State and federal members of parliament
- State government officers from Department of Industry Water, Department of Premier & Cabinet, NSW Treasury
- Public Works Advisory
- RPS Group
- Chris Jewell & Associates