River Murray Operations: Outlooks & Risks

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Australian Government

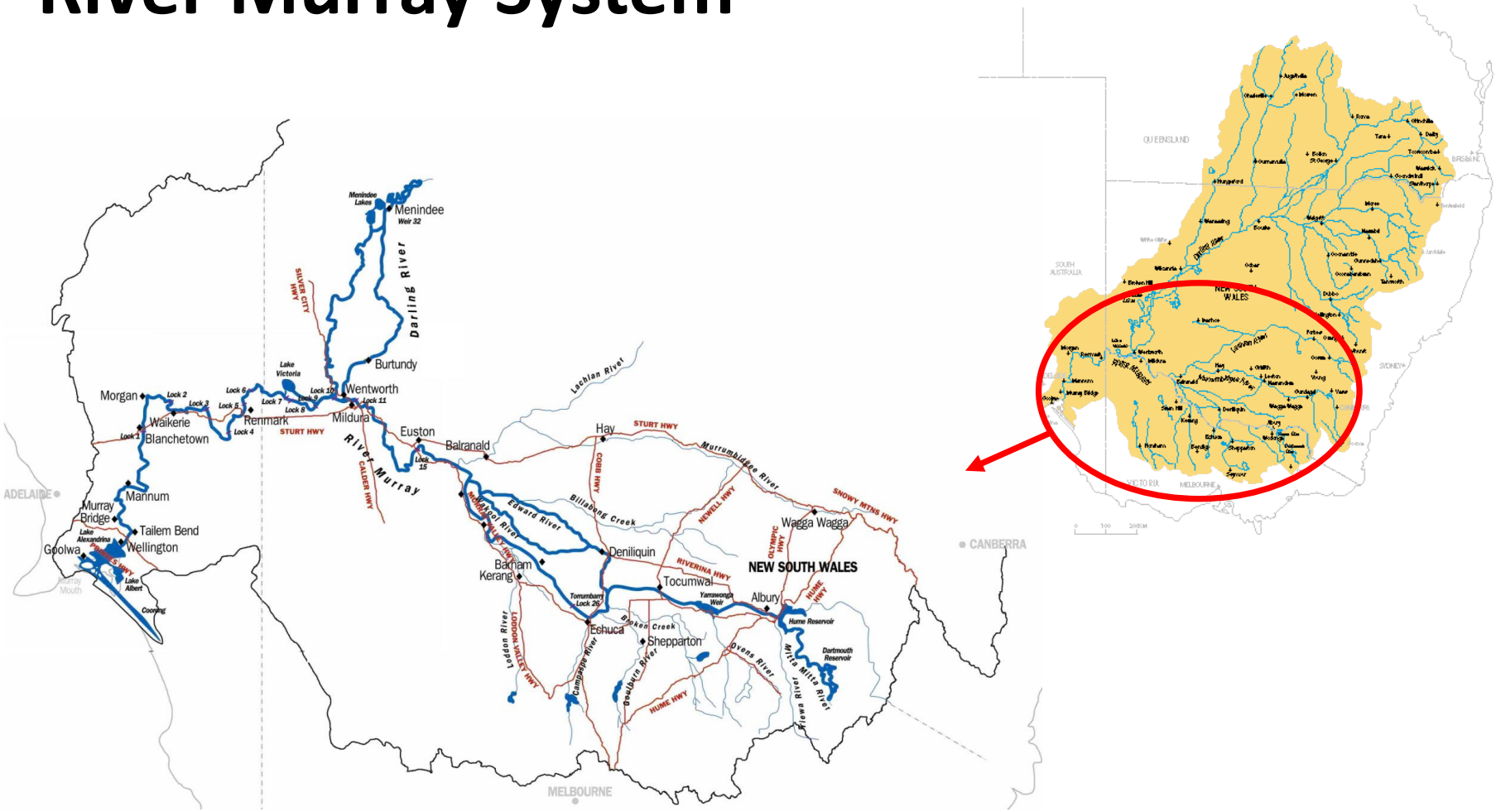
MURRAY–DARLING BASIN AUTHORITY

Presentation Overview

- Background
- Current Condition and Operations
- Climate Outlook
- Drivers of change & key risks

Mildura Weir

River Murray System

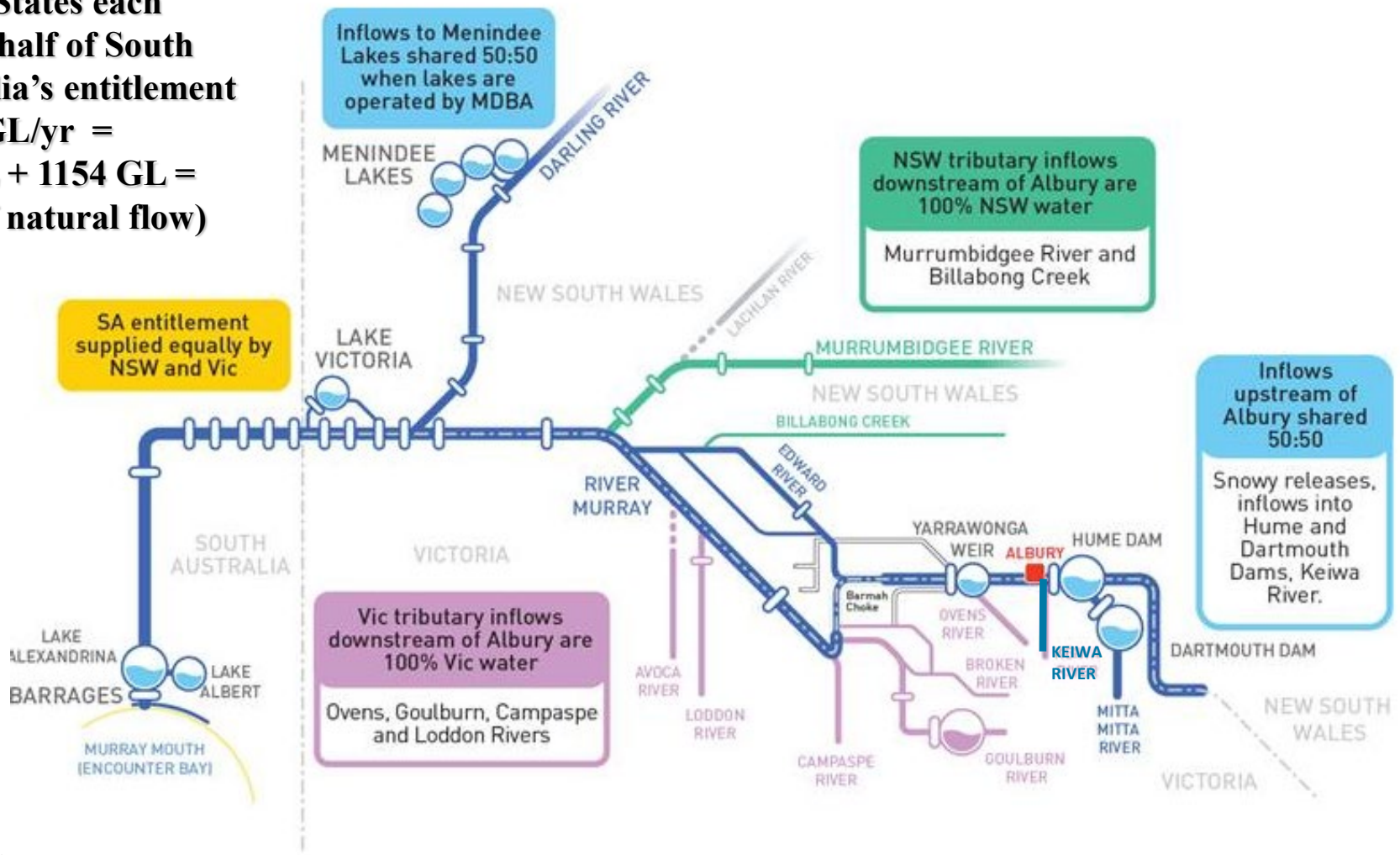


Role of the MDBA River Operations

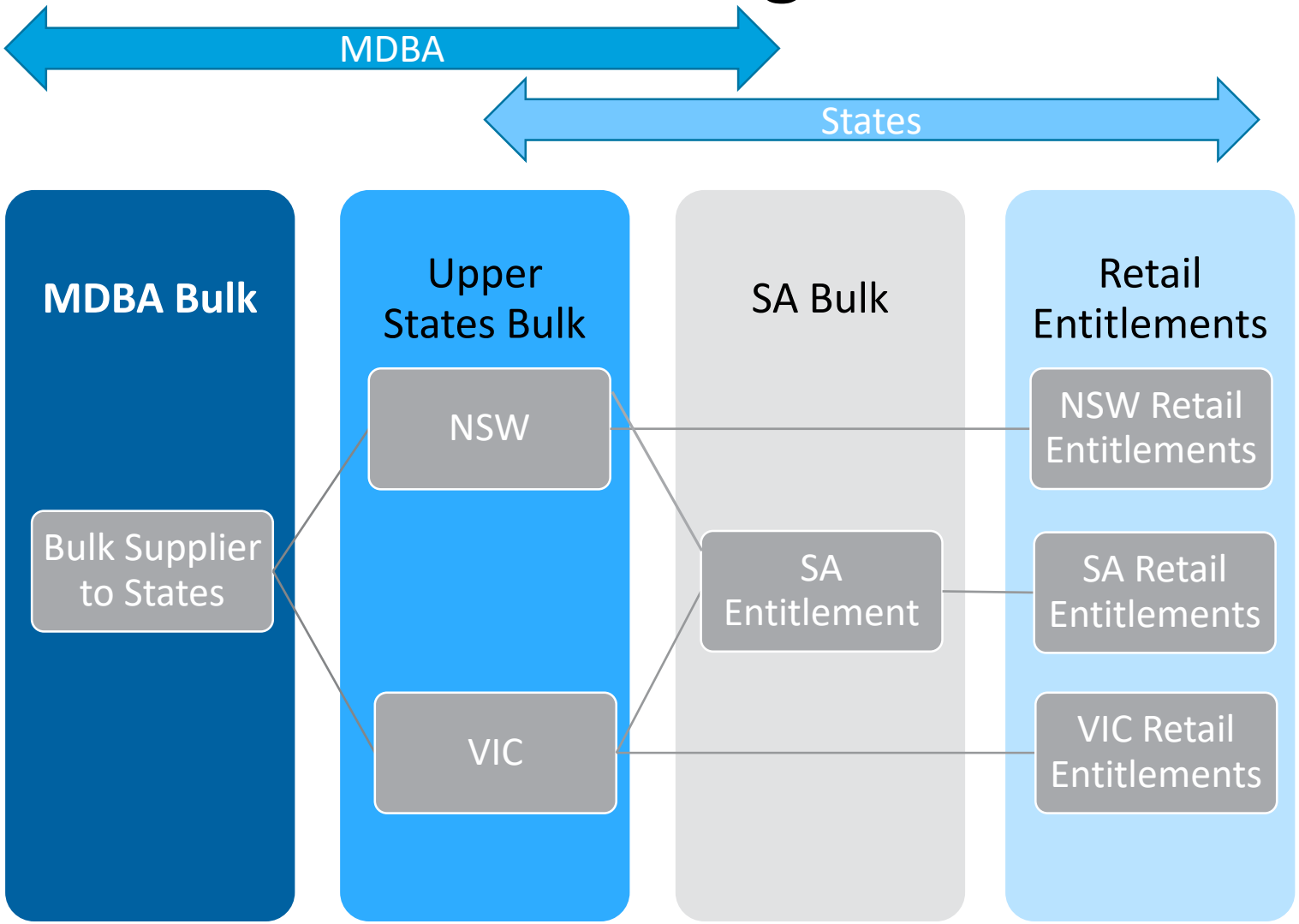
- Run the River Murray Systyem
  - Direct releases from storages and weirs to meet state water orders
  - Work very closely with State Governments and State Water Agencies
- Run the bulk water assessment => State Allocations
- Share the water:
  - Between States
  - Recipe set out in Agreement, includes Tiers 1, 2, 3
- MDBA Manage bulk water accounts
- Facilitate interstate trade
- Facilitate environmental watering with EWHs

River Murray Water Sharing

Upper States each supply half of South Australia's entitlement (1850 GL/yr = 696 GL + 1154 GL = 13% of natural flow)

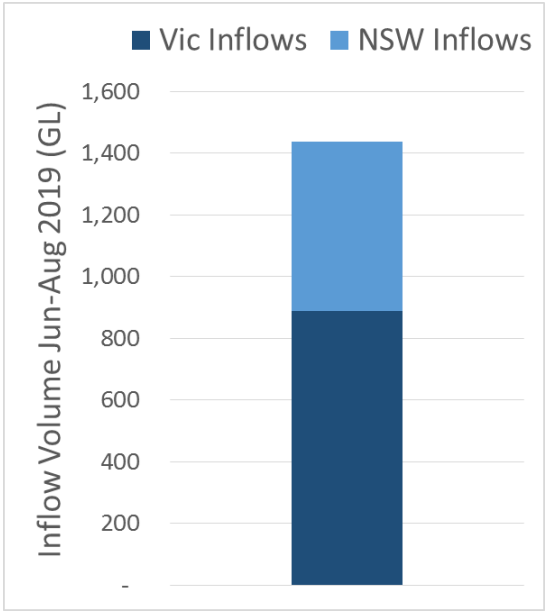


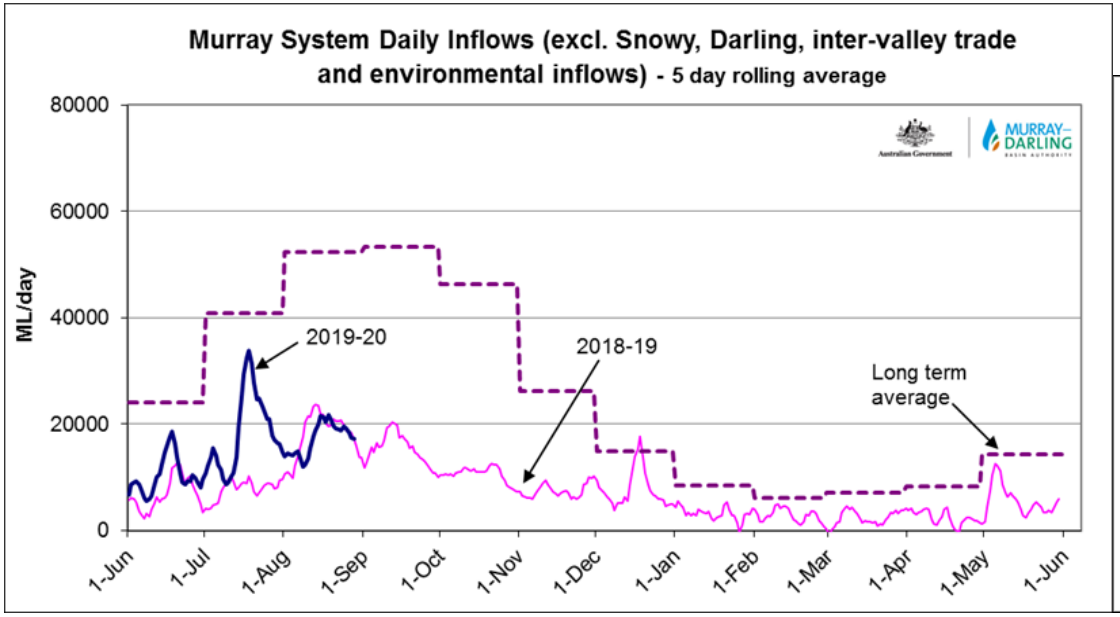
Levels of water sharing

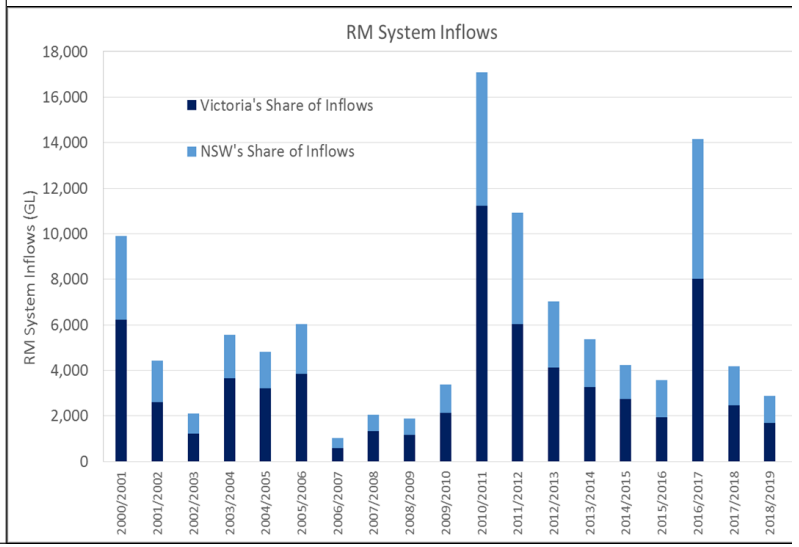


RM System Inflows to date

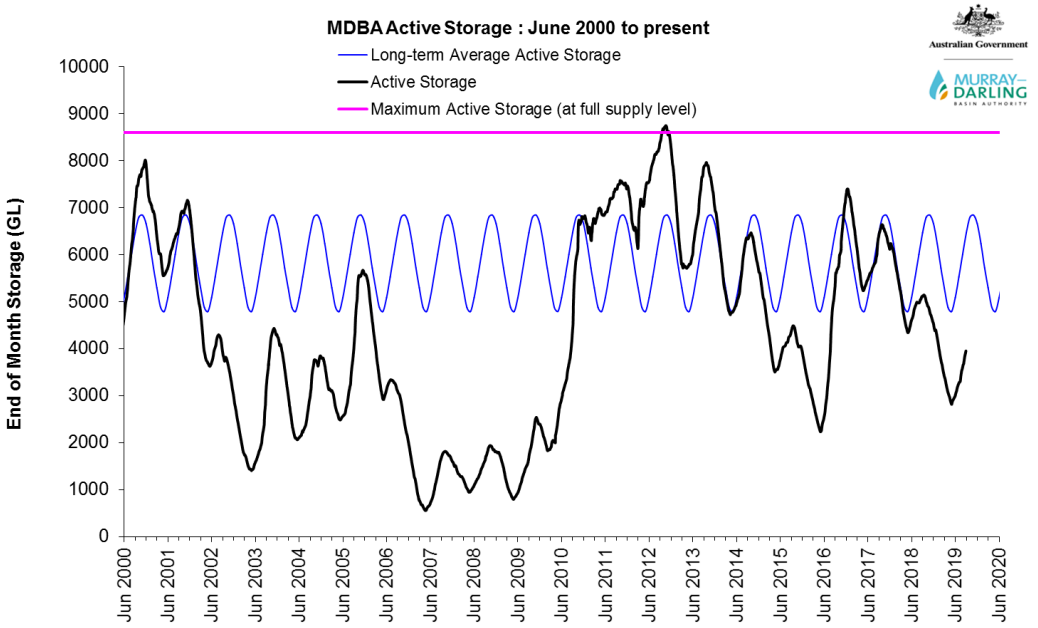
- Inflows for August: 85% AEP (~dry)
- Inflows for June to August: 77% AEP (~mod)
- Inflow volume: 1,436 GL
- (Median: 2,664 GL. Jun-Aug 2018: 1,060 GL)





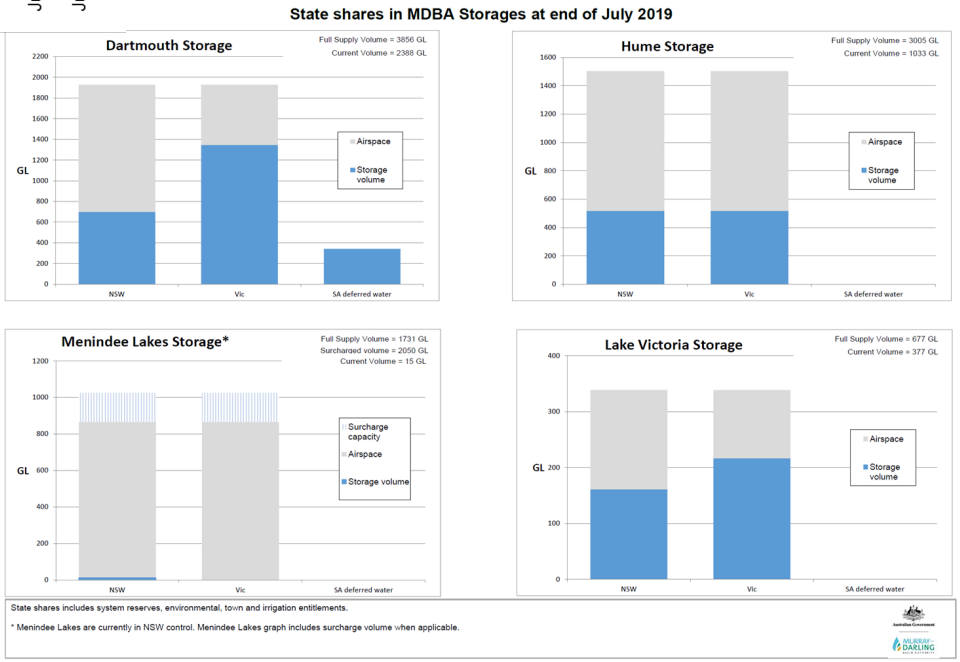


RM System Storage Level



- Active storage @ **29 Aug** = 3,953 GL
  - 55% in Dartmouth
  - 31% in Hume
  - 12% in Lake Victoria
- LT average @ end Aug = 6,468 GL

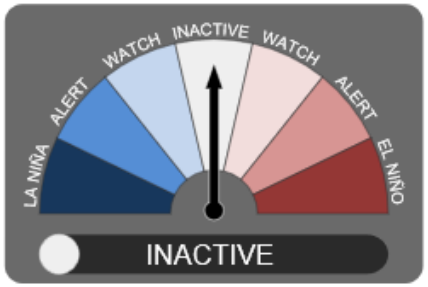
- **Start Sep** 2019
  - Dartmouth = 2,285 GL (59%)
  - Hume = 1,300 GL (43%)
  - Lake Victoria = 560 GL (83%)
  - Menindee (not part of shared resource, currently at critical levels < 1%)



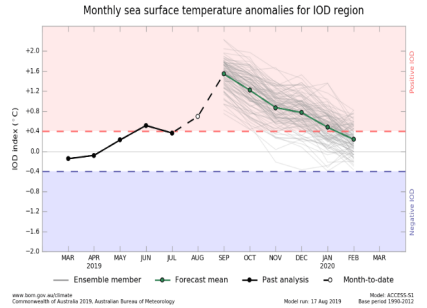
Recent Operational Activities

- July:
  - published 2019-20 AOO on website
  - Transferred 164 GL from Dartmouth to Hume
  - Transferred 59 GL from Hume to Lake Victoria
- August:
  - Transferred 162 GL from Dartmouth to Hume
  - Transferred 14 GL from Hume to Lake Victoria
- September:
  - Barmah-Millewa ‘spring pulse’ – Target to 15,000 ML/day

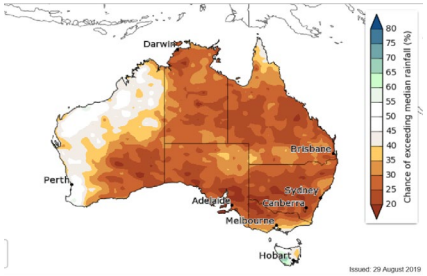
Climate Outlook



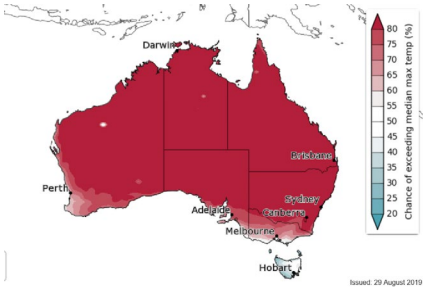
- ENSO neutral – not main driver for current climate outlook



- Indian Ocean Dipole: strongly positive – main driver for dry conditions now and next three months across NSW and NE Victoria

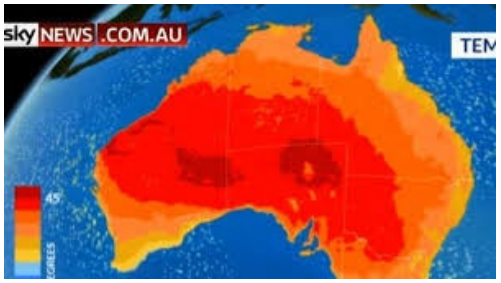


- 3 mth Rainfall Outlook - greater chance of drier than average



- 3 mth Temperature Outlook – greater chance of warm



Drivers for change

- Water trade and carry over
- New and substantial E-water portfolio
- Changing inflow patterns and record temperatures
- Changing agricultural practices and distribution

Demand trends and capacity risks

- Large changes evident and evolving
  - New crop types
  - Movement of demands
  - Trade volumes – driving or servicing demands
- Concern is growing across all levels of government
- Number of areas of work
  - analysis of past years to understand drivers and effectiveness of mitigation measures
  - detailed modelling to understand risk of shortfall (ie risk of not being able to supply demands and frequency of years)
  - impacts on Barmah Choke bank stability, lower Goulburn River and environmental character of the river
  - potential impact on third parties (MD agreement, state shares, losses, trade rules etc.)
  - impacts on the delivery of environmental water

Delivery Shortfall

- If demands cannot be fully met due to capacity constraints = a delivery shortfall
- Two main issues:
  - A pre-Christmas issue -> need to transfer large volumes from Hume to Lake Victoria, which may limit the delivery of spring and early summer demands
  - A post-Christmas issue -> hot and dry conditions driving high demands lower in the system
- The risk rapidly increases when unlikely or unusual sets of circumstances occur at the same time -> This is never fully predictable
- To date the risks have been **well managed** to avoid restrictions on all but one occasion (March 2002), but the drivers have significantly changed since this event

Case Study Analysis

Looked at high risk years since 2002 in summary the analysis demonstrates that:

- No large scale system shortfalls have occurred to date.
- the frequency of difficult years is increasing with the measures used to reduce shortfall risk now becoming normal operating practice during the summer months.
- high allocation years are likely to be difficult years to deliver all demands (the risk of drought is effectively opposite to the risk of a shortfall).
- application of mitigation measures comes at a cost, the main one being the erosion of river channels, but also the potential impact on state water shares.
- delivery of held environmental water entitlements have been impacted.
- issues at the Barmah Choke are complex.

The Barmah Choke Erosion

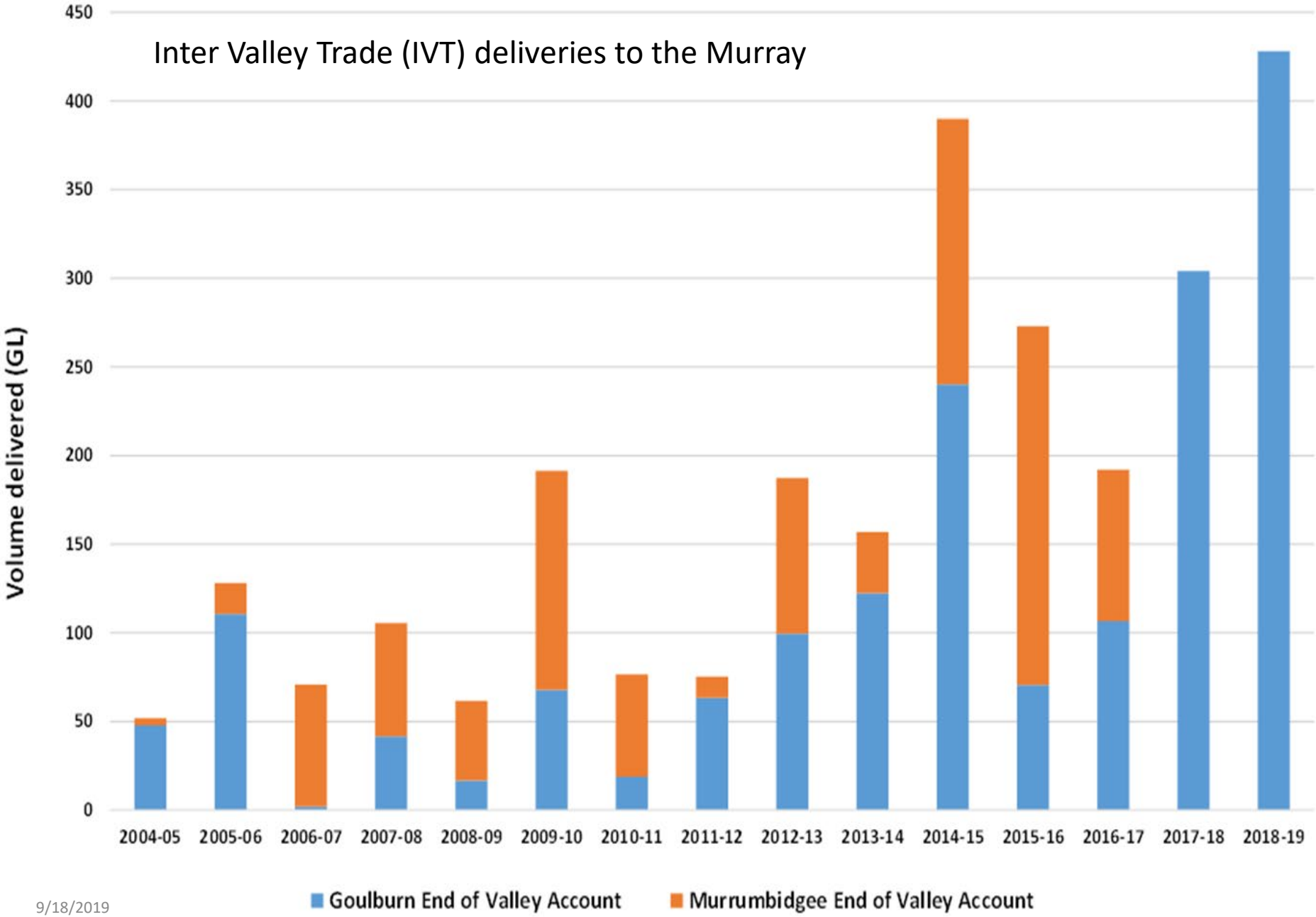
- Trade restriction in place
  - Has been since 2007 (enforced 2014)
- Slowly losing transfer capacity
- So what is going on
  - Use patterns and timing of water use and inflows have had the outcome of more concentrated delivery patterns
  - Interactions are complex – geomorphic & hydrologic
- Major focus over the next period, however no simple answers
  - Lifting constraints - separates environmental and consumptive demand
  - Bypass options – very expensive – may move the problem to the next reach

	Capacity downstream of Yarrawonga (ML/day)
1980's	~11,500
2003	~10,300
Currently	~ 9,500

Lower Goulburn River Erosion

- Trade has moved and is moving water out of the GMID into the Murray
  - Inter Valley Trade (IVT) Account
- Large volumes of water moving from the Goulburn to the Murray to service this demand
- Major focus for the Victorian government and the MDBA
- Again no simple answers
  - Review of trade rules and IVT releases
  - removing constraints may help

Inter Valley Trade (IVT) deliveries to the Murray



Where to next

- Whole of river solution required
- Modelling work
  - The main focus of the project - updated crop areas to 2019
  - Early results indicate that water availability is a much bigger problem than capacity
- Major focus on the Barmah Choke Issue – drivers and options
- Channel Sharing Discussion (NSW & VIC) – Mid 2019
  - Interim channel sharing arrangements to be discussed by upper states, the hope is to have these in place prior to the 2019/20 irrigation season
- Independent Panel - Report back to Ministerial Council – Dec 2019 and June 2020
- Communication Products - needs a comprehensive engagement strategy
  - Develop communication products to explain the shortfall risk and what the MDBA and partner governments does to manage the issues
- RM Operations – Working closely with the State agencies

Thank you.

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