

# Rivers of the Barossa

**Presented by Dr Doug Green**

Principal Hydroecologist

Water Science Unit

# Acknowledgement of Country

The Department for Environment and Water and its staff acknowledge Aboriginal people as the First Peoples and Nations of the area that we now know as South Australia, and that the people of each Nation obtain and maintain their spiritual and cultural identity from their lands and waters. Through the work of the department, we will continue to develop mutually beneficial partnerships to maintain and protect living culture, heritage, knowledge and connection, and deliver positive outcomes for First Nations peoples while caring for Country.

# Talking points

- Hydrology investigations
- Permanent pools
- Fish and bugs
- Environmental flows





# Hydrological investigations



- Sought to get a better understanding of dams across the landscape
- Not all dams are the same
- Built on modelling undertaken for the proposed Water Allocation Plan

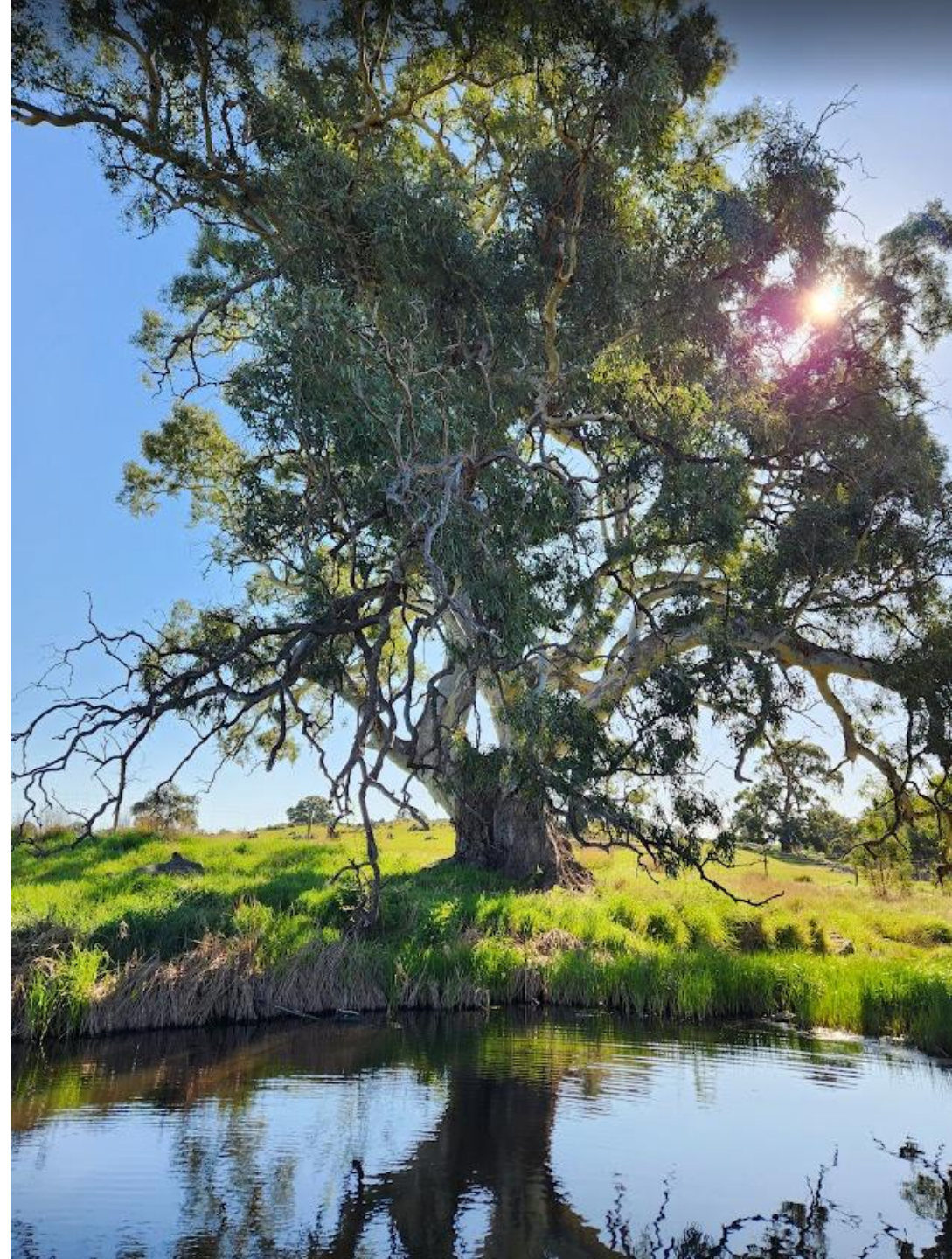
Dam Categories	Effective intercepted flow	Inflow to volume ratio	No. of dams	% of total	Flow intercepted (ML)	% of total
1. Large interception dams:	> 50 ML	< 0.75	6	4%	441	21%
- Over-sized dams located High-runoff areas						
2. High interception dams:	> 50 ML	0.75 - 2.0	9	6%	520	25%
- Over-sized dams located in Medium-runoff areas						
- Large dams located in High-runoff areas						
3. Medium interception dams:	> 50 ML	> 2.0	14	9%	565	27%
- Large dams located in Medium-runoff areas	25 - 50 ML	0.75 - 2.0				
- Medium dams located in High-runoff areas	10 - 25 ML	< 0.75				
4. Other (lower interception) dams			128	82%	593	28%
Total			157		2119	

Note: still undergoing review



# Permanent pools

- Rivers of the Barossa are **Seasonal Rivers**
- Over the summer months, the rivers retreat to a series of **permanent pools**
- Permanent pools are pools that are fed by groundwater year round
- **Critical refuge** habitat for aquatic plants and animals





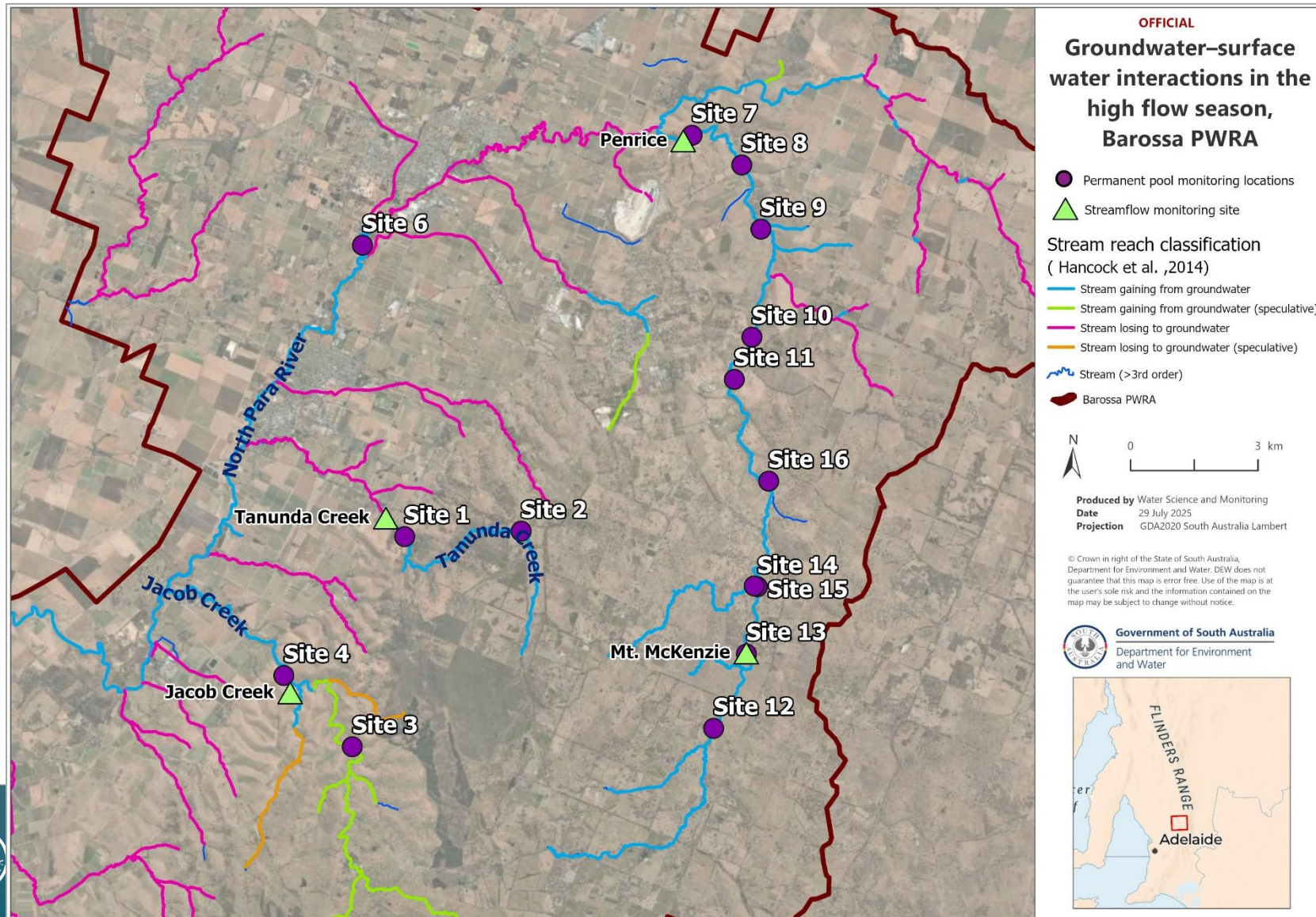
# Not so permanent?

- Dry of 2018 – 2020 saw pools drop to unprecedented low levels
- Permanent pools are not as permanent as we think?!
- Blind spot in the monitoring network



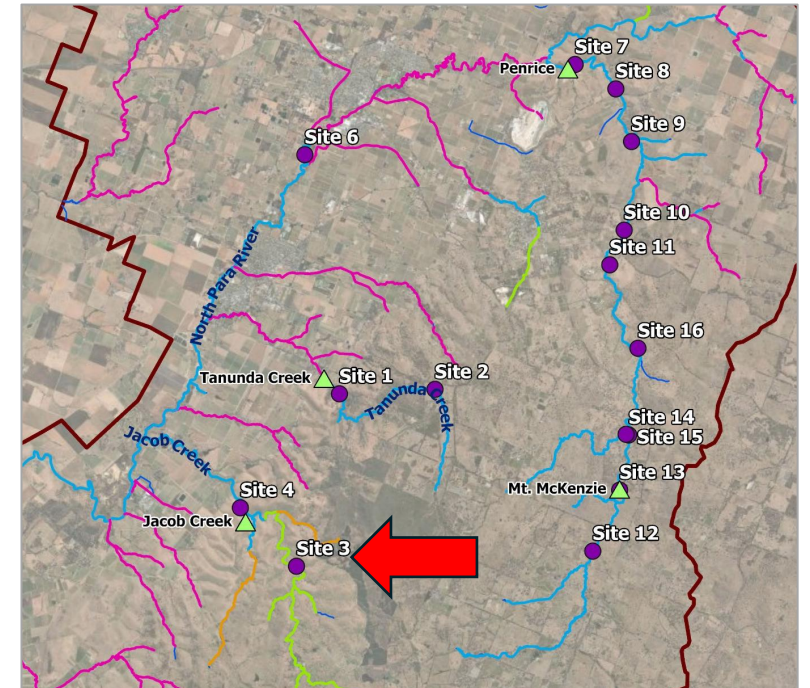
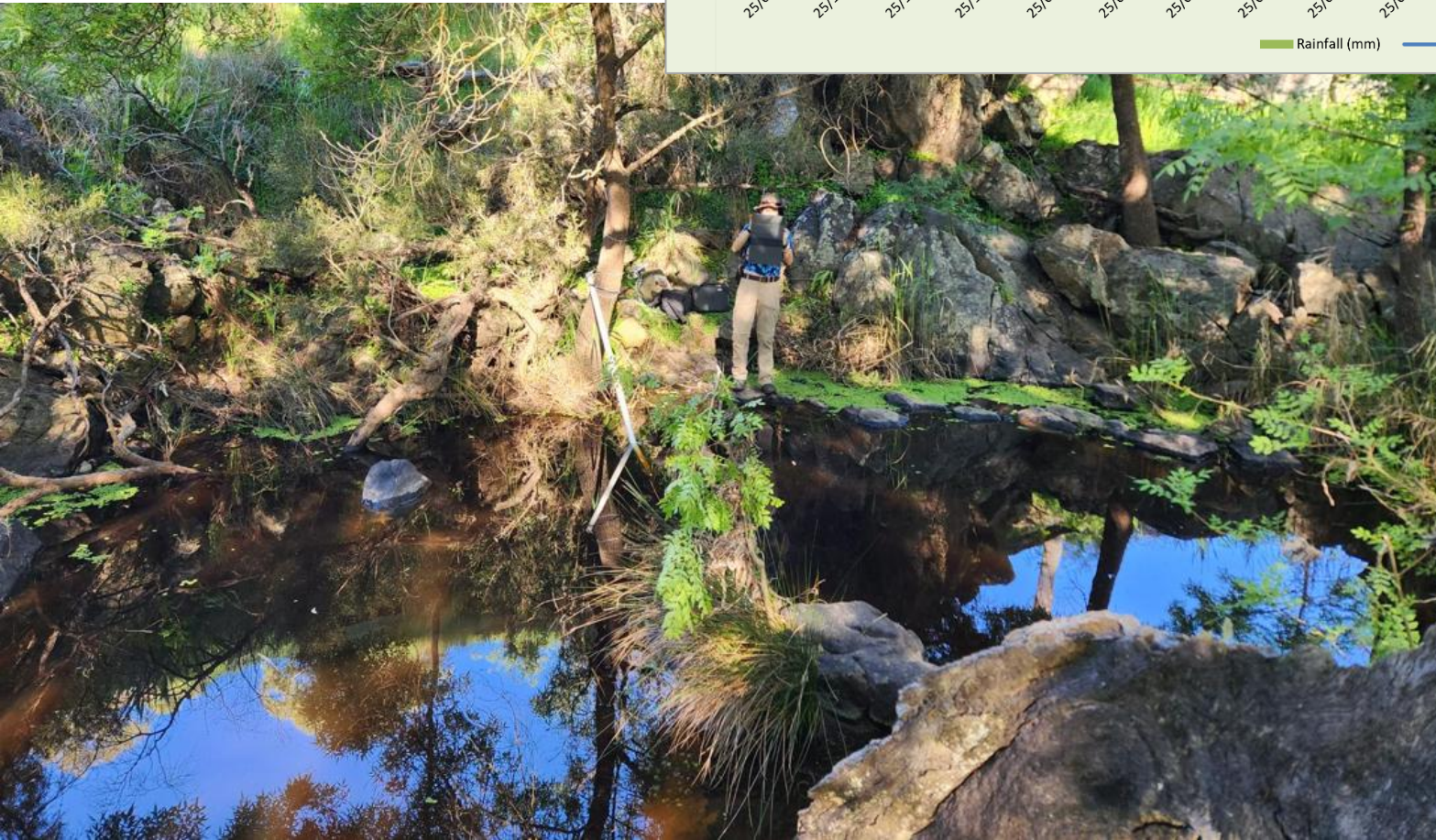
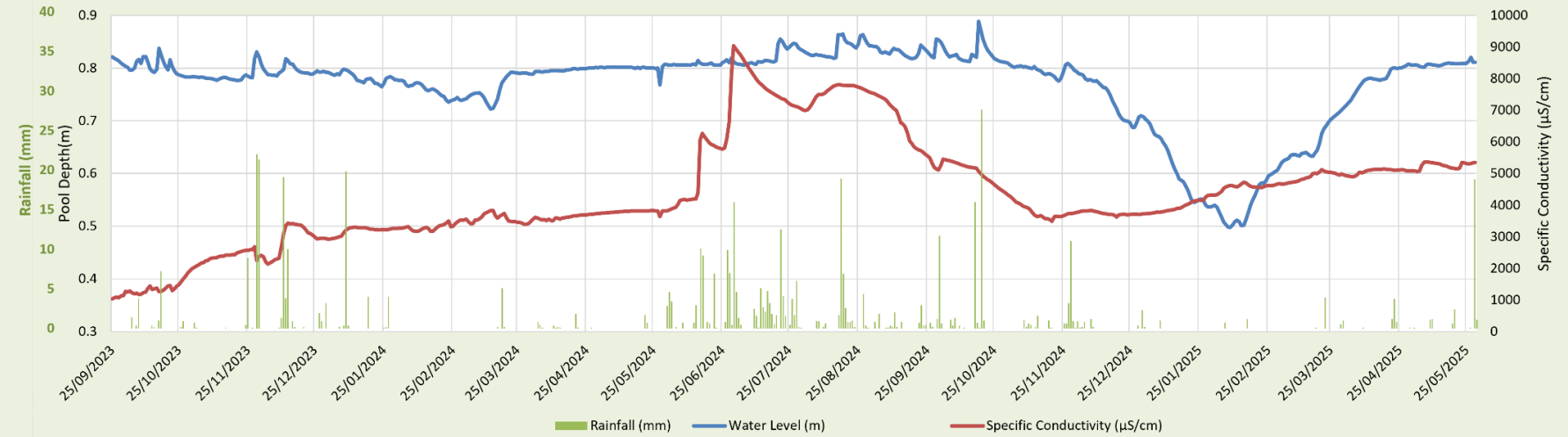


# 15 new monitoring locations

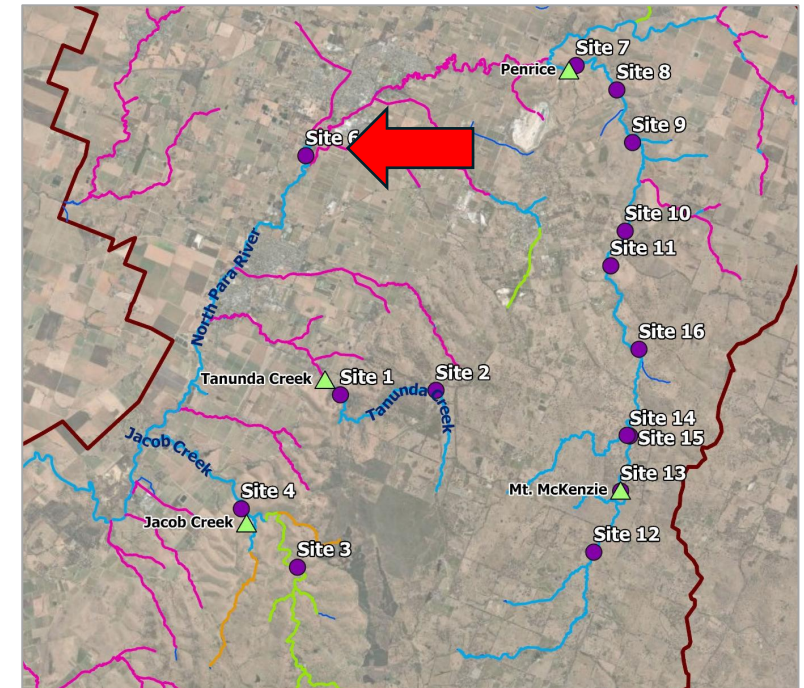
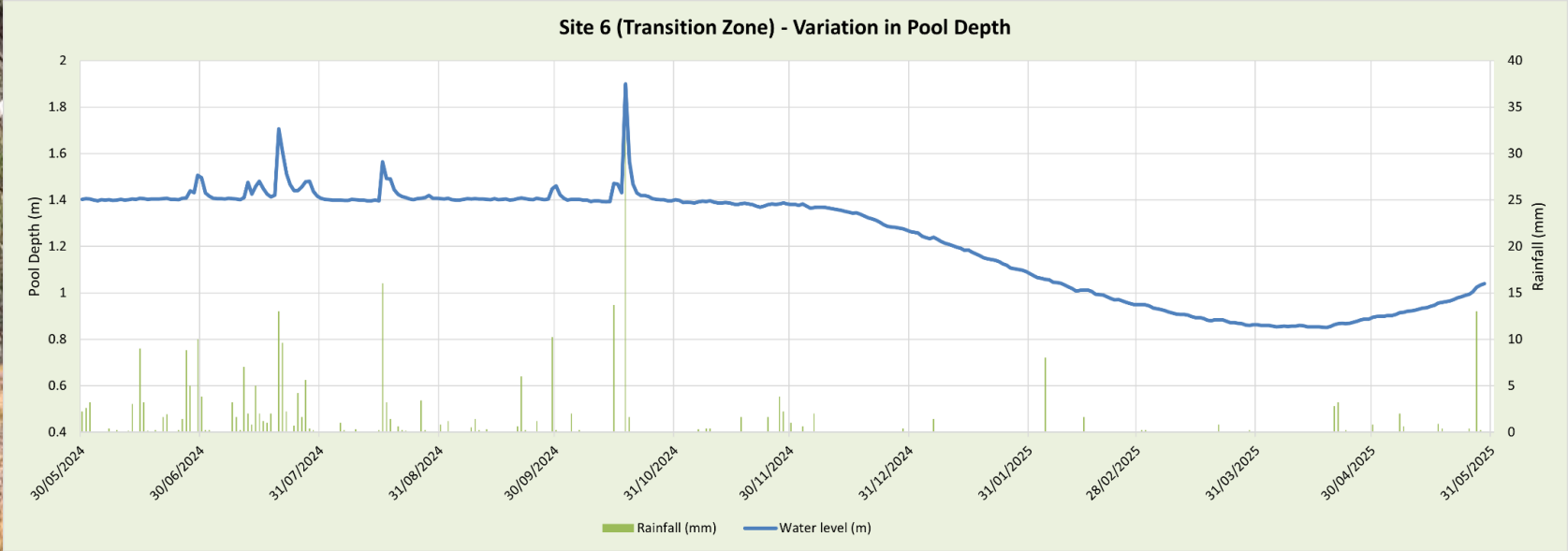




Site 3 (Mid Upper Jacob) - Variation in Pool Depth and Specific Conductivity

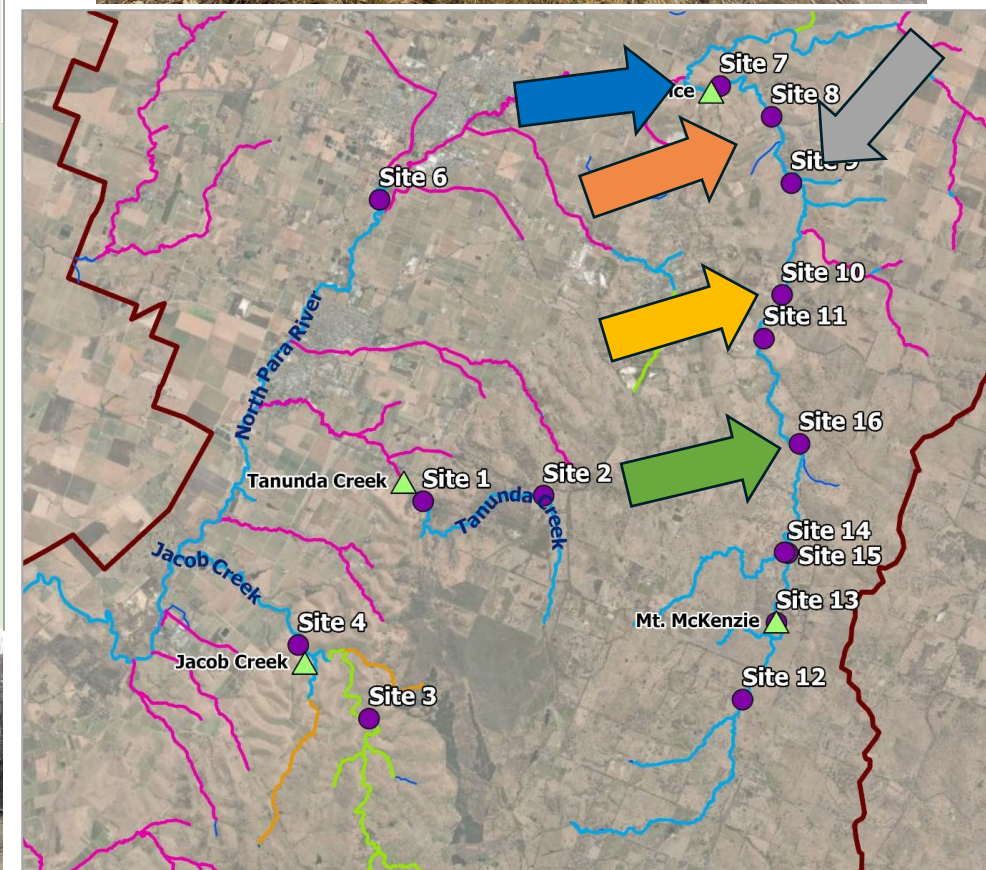
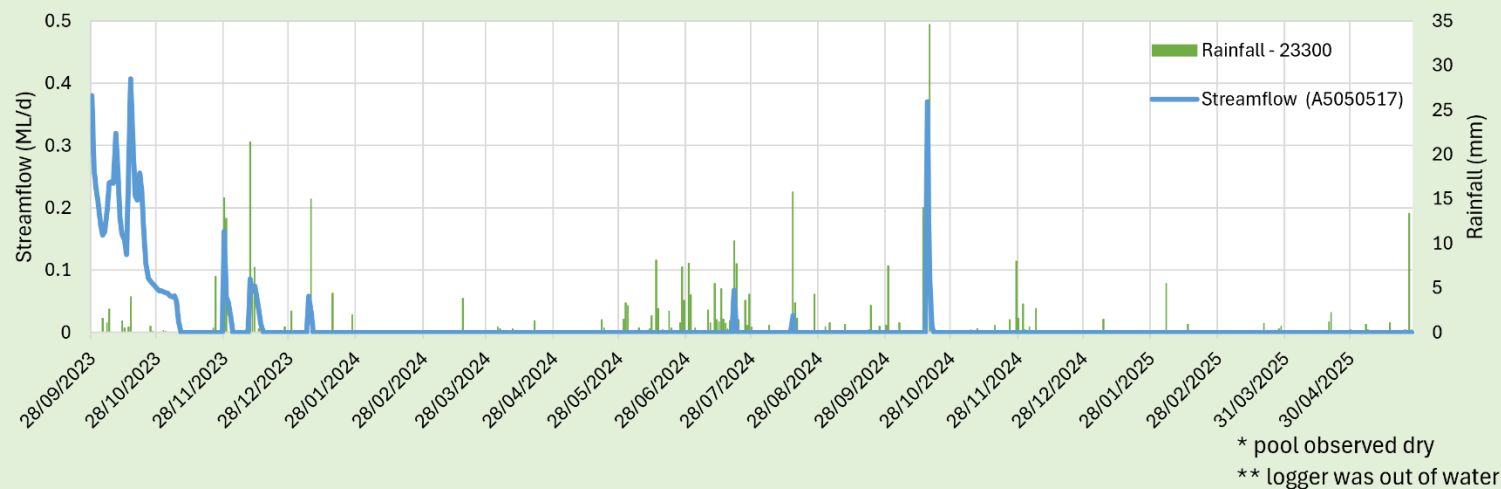
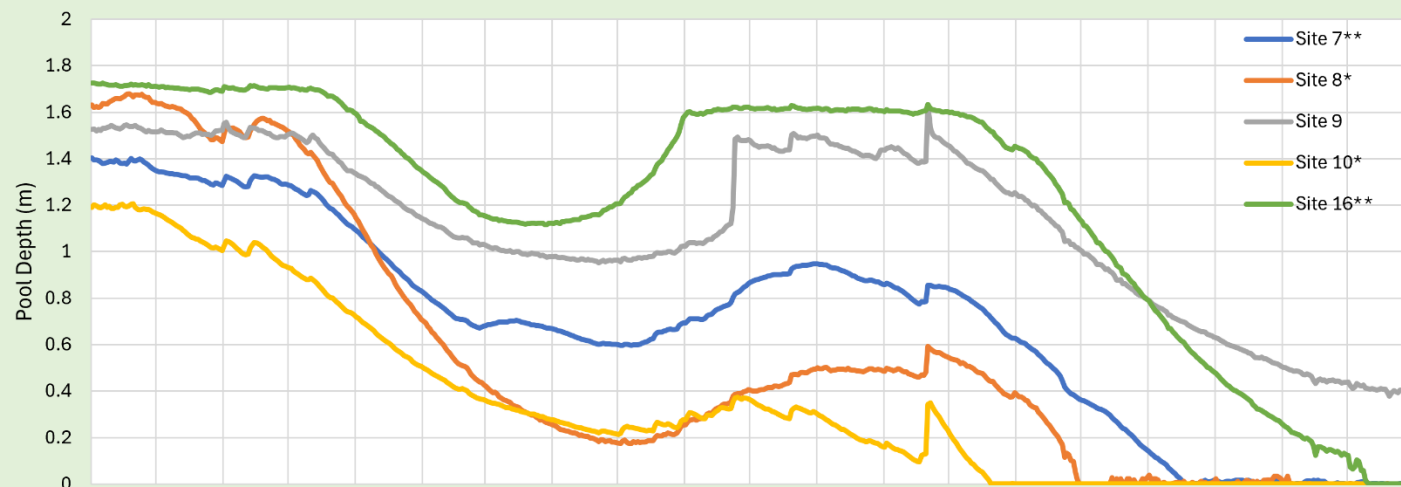








Pool Depth Variation with Streamflow and Rainfall



# Ecology

- Waterbug BioBlitz

- Community sampling for waterbugs across the Barossa Valley
- Started in 2021, most recently in 2025
- Waiting on data from 2025 sampling to complete trend and condition assessments
- Preliminary results
  - General decline in flow dependent species
  - Increase in tolerant species
  - Notable reduction in sensitive species, especially in locations where typically found





# Ecology

- Fish sampling
  - Sampling undertaken by Aquasave
  - Sampling done in 2018, 2022, 2023, 2024 and 2025
  - Species composition remains relatively consistent through time
  - Large changes in population numbers across different species
  - Mountain Galaxias population remains as high risk



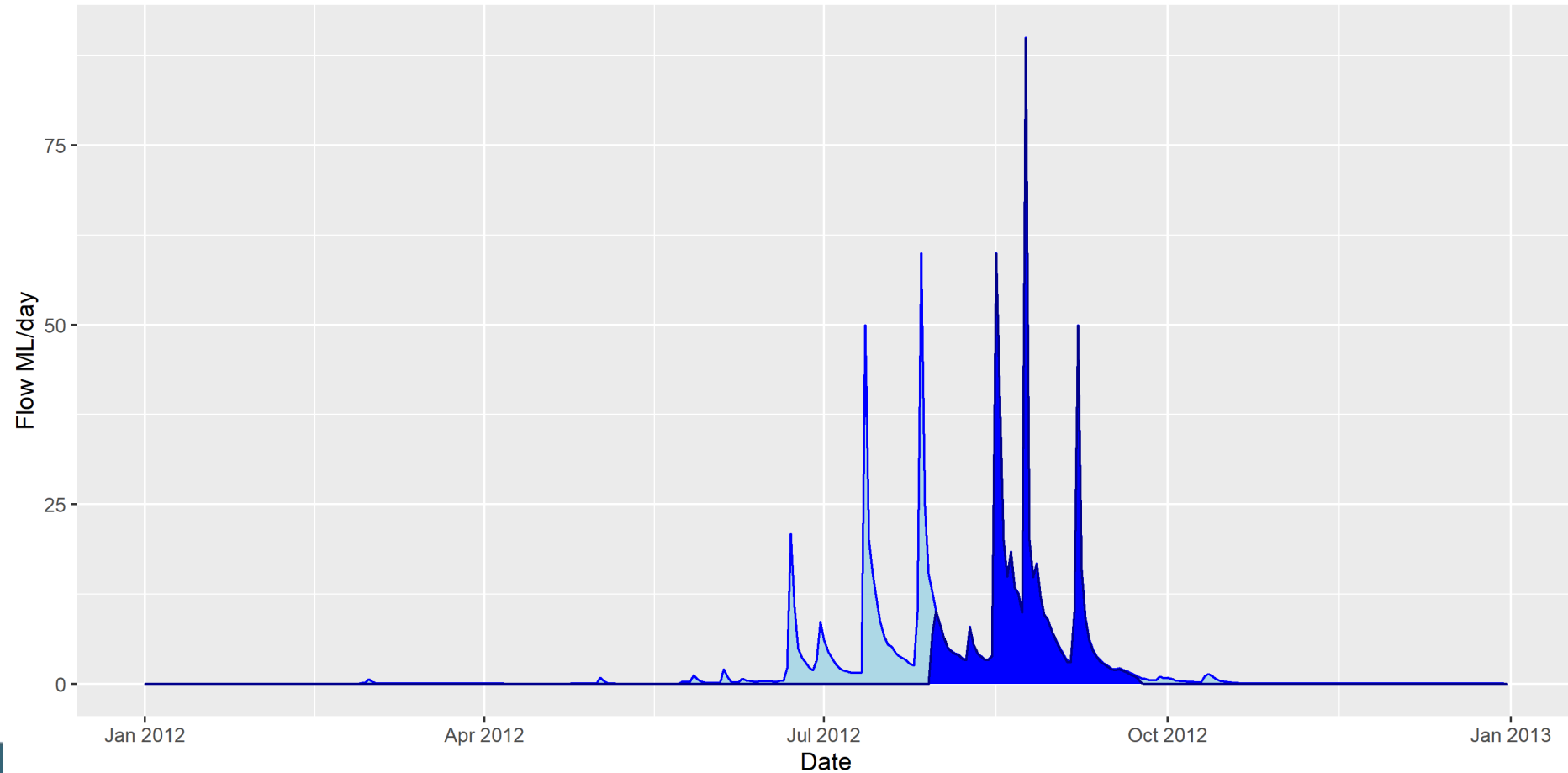
# Environmental flows

- Environmental flows (eFlows) are flows of water provided for environmental benefit
- Timing, duration and volume all critical to maximise the benefit, minimise the impact
- Barossa ECF project has a specific focus on how eFlows could be provided from a distributed network of dams, rather than a single large source

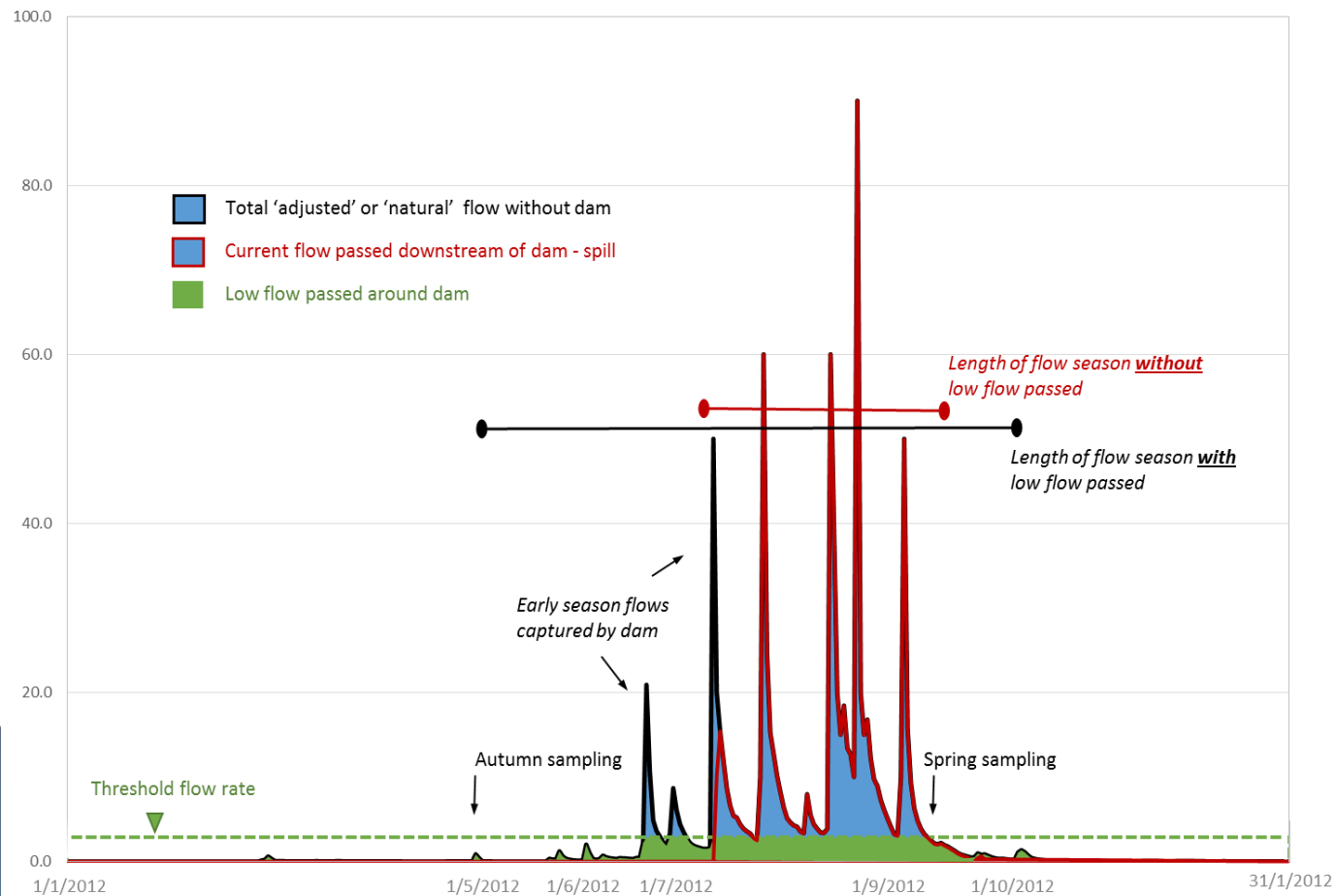




# Concept of low flows

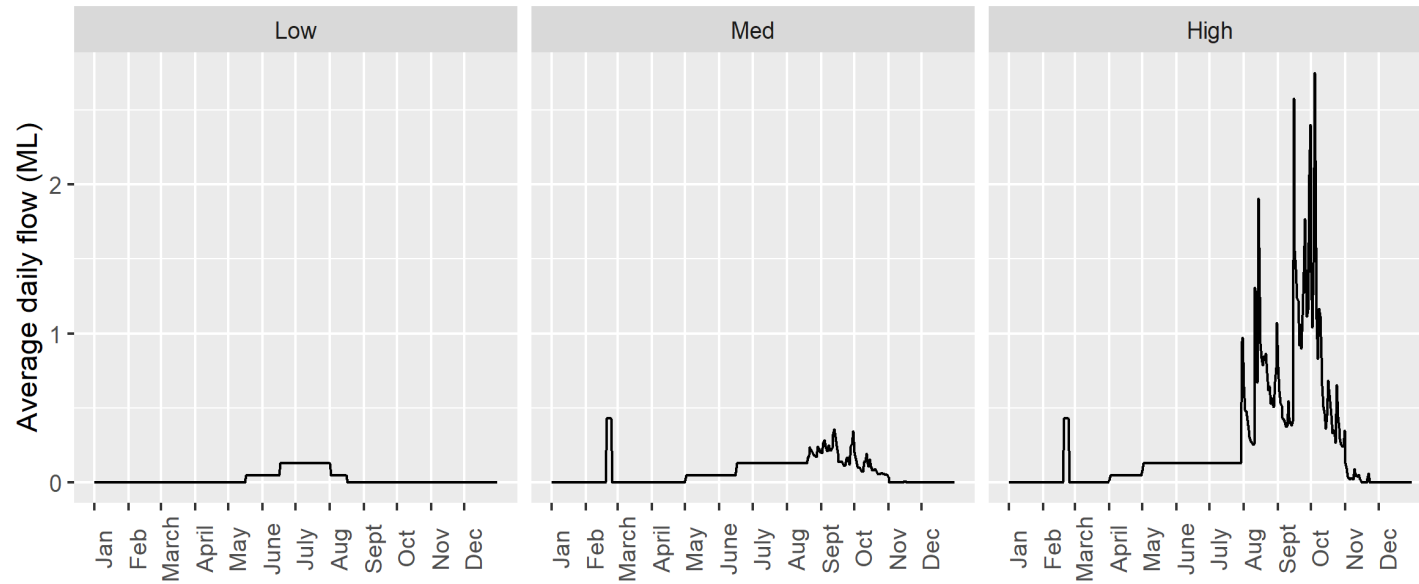


# Low flow Bypasses

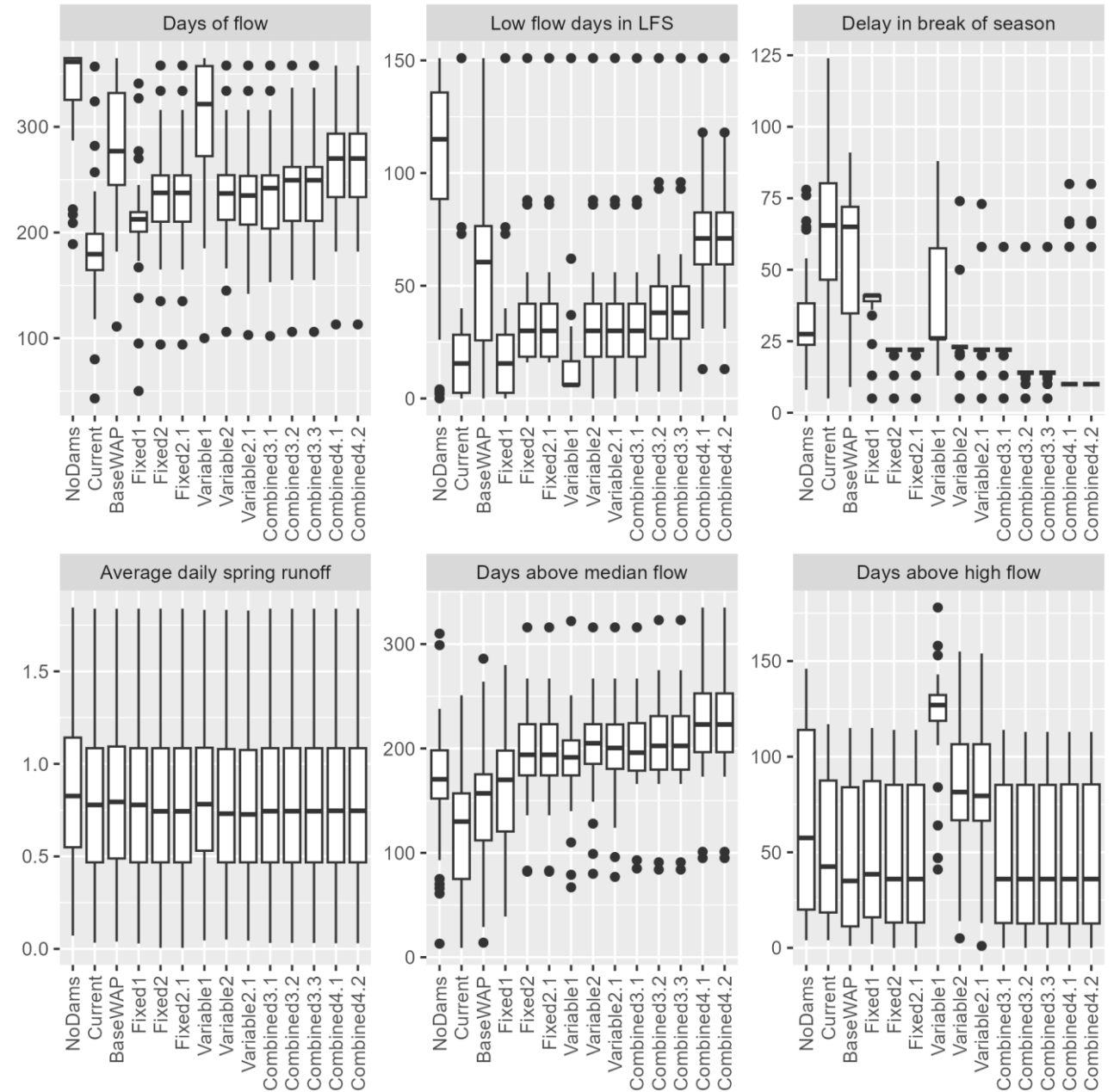
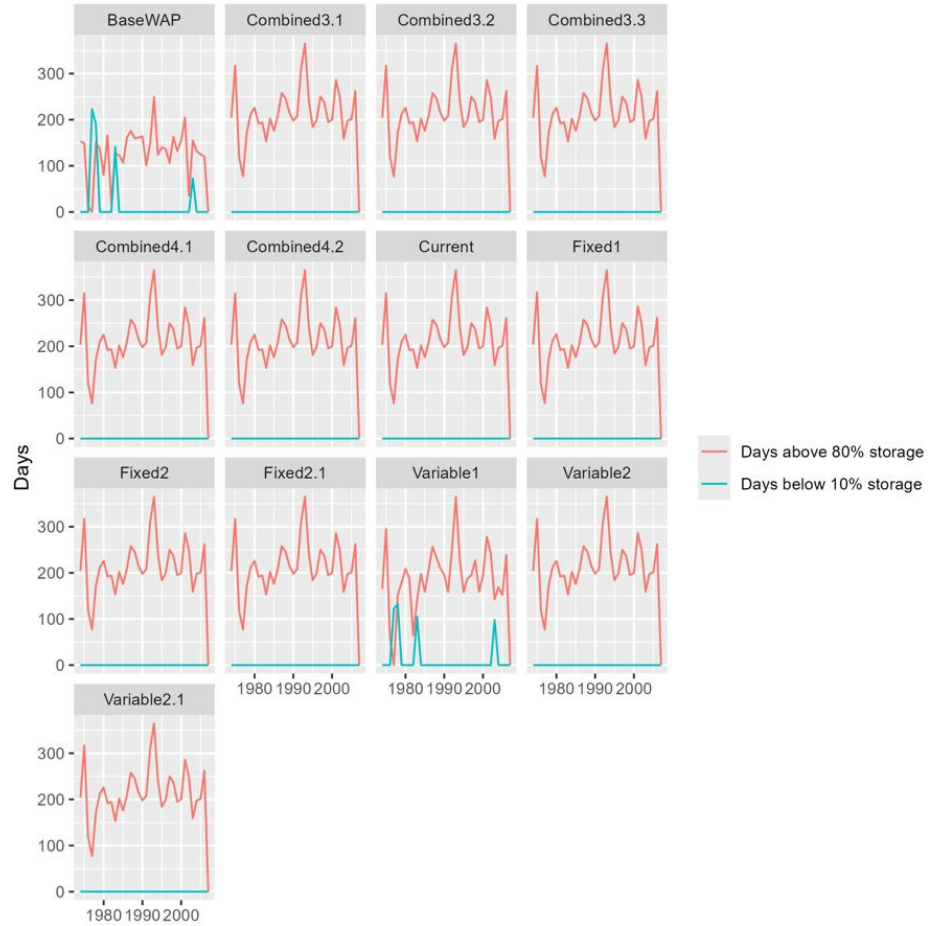




# eFlow releases

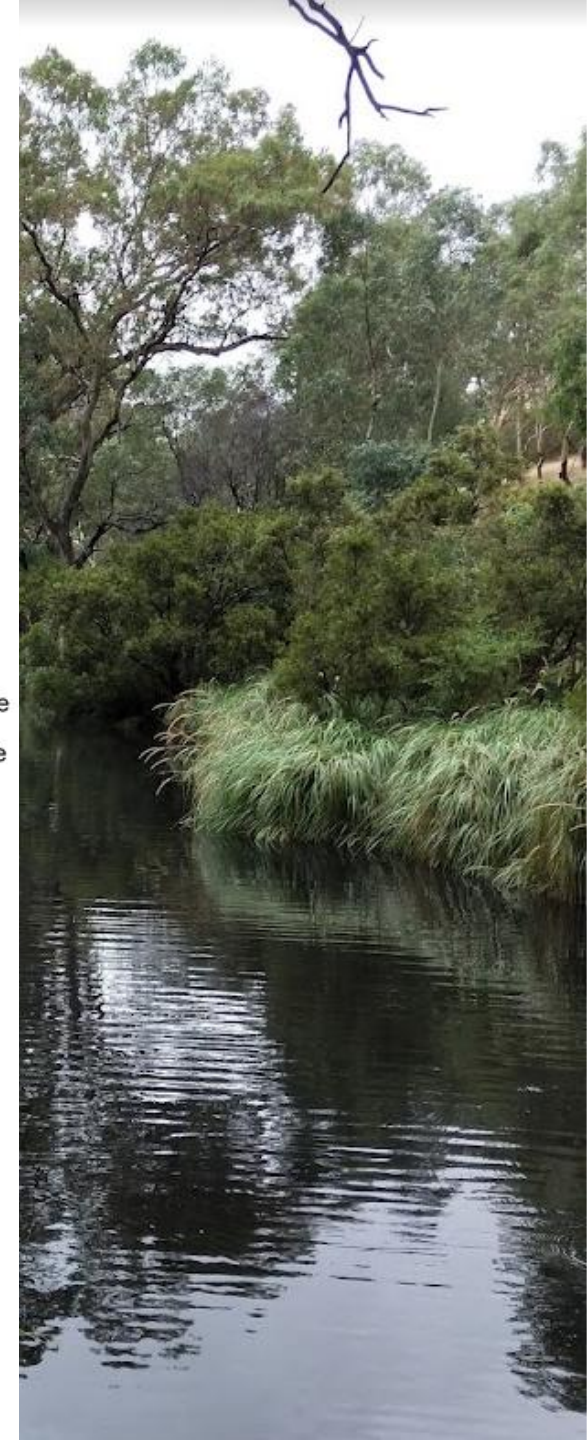
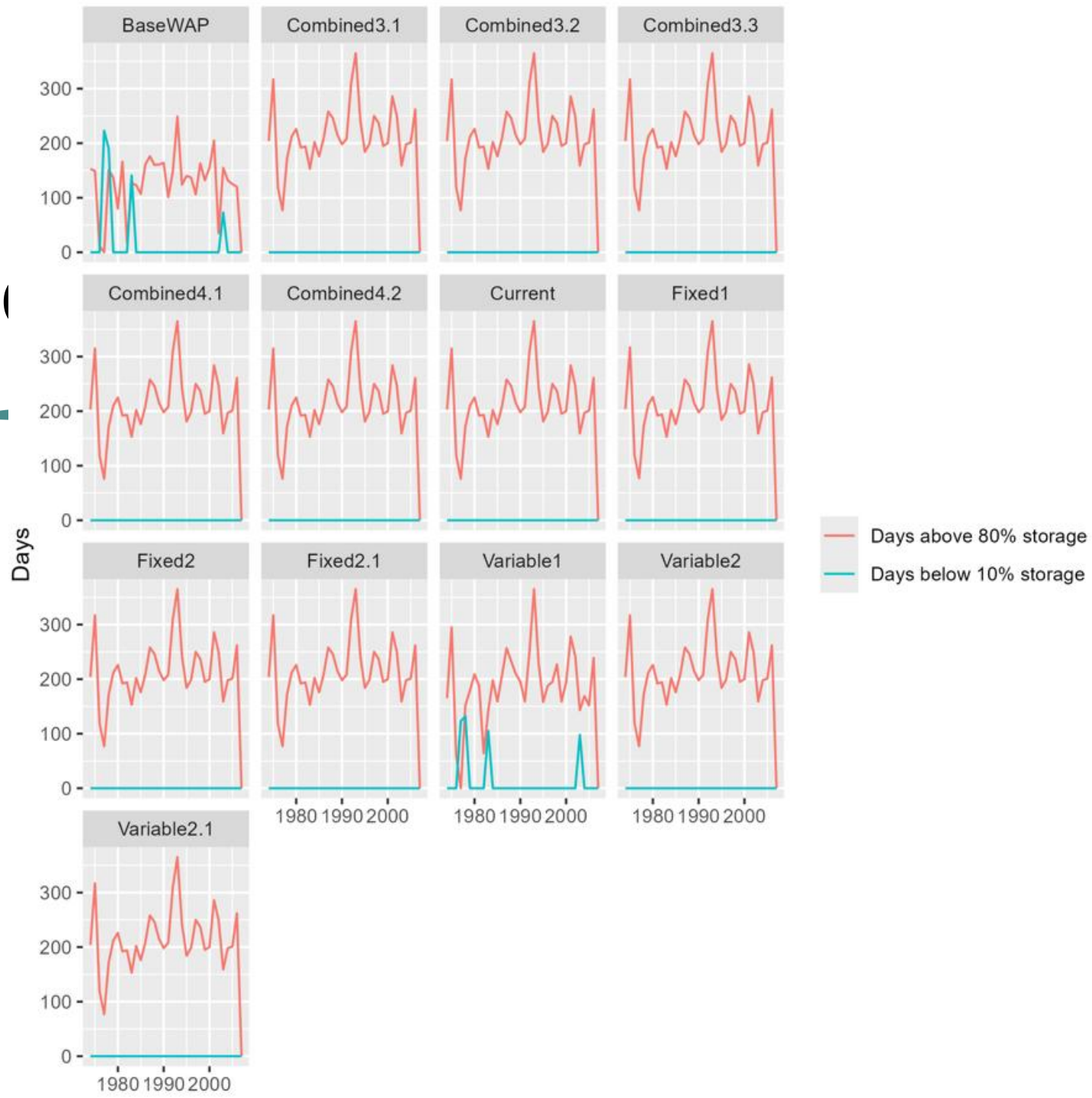


# eFlow releases





# Question





**Government of South Australia**

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Department for Environment  
and Water