

# Environmental & Cultural Flows project

Jennifer Munro – Northern & Yorke Landscape Board







A satellite map of the Barossa region in South Australia. The map shows a mix of green agricultural land and brown, arid terrain. Three locations are highlighted with red circles: Baroota Creek (top left), Crystal Brook Creek (top center), and Barossa (bottom right). Red arrows point from the left edge of the map towards the Baroota Creek and Crystal Brook Creek circles. Another red arrow points from the right edge of the map towards the Barossa circle.

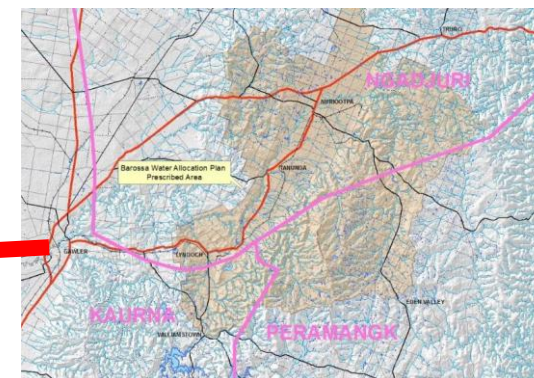
Man data is compiled from a variety of sources and hence its accuracy is variable.

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Compiled: 22-Apr-2025  
Generated at: <http://maps.env.sa.gov.au>  
Datum: Geocentric Datum of Australia, 2020  
Projection: Web Mercator (Auxiliary Sphere)

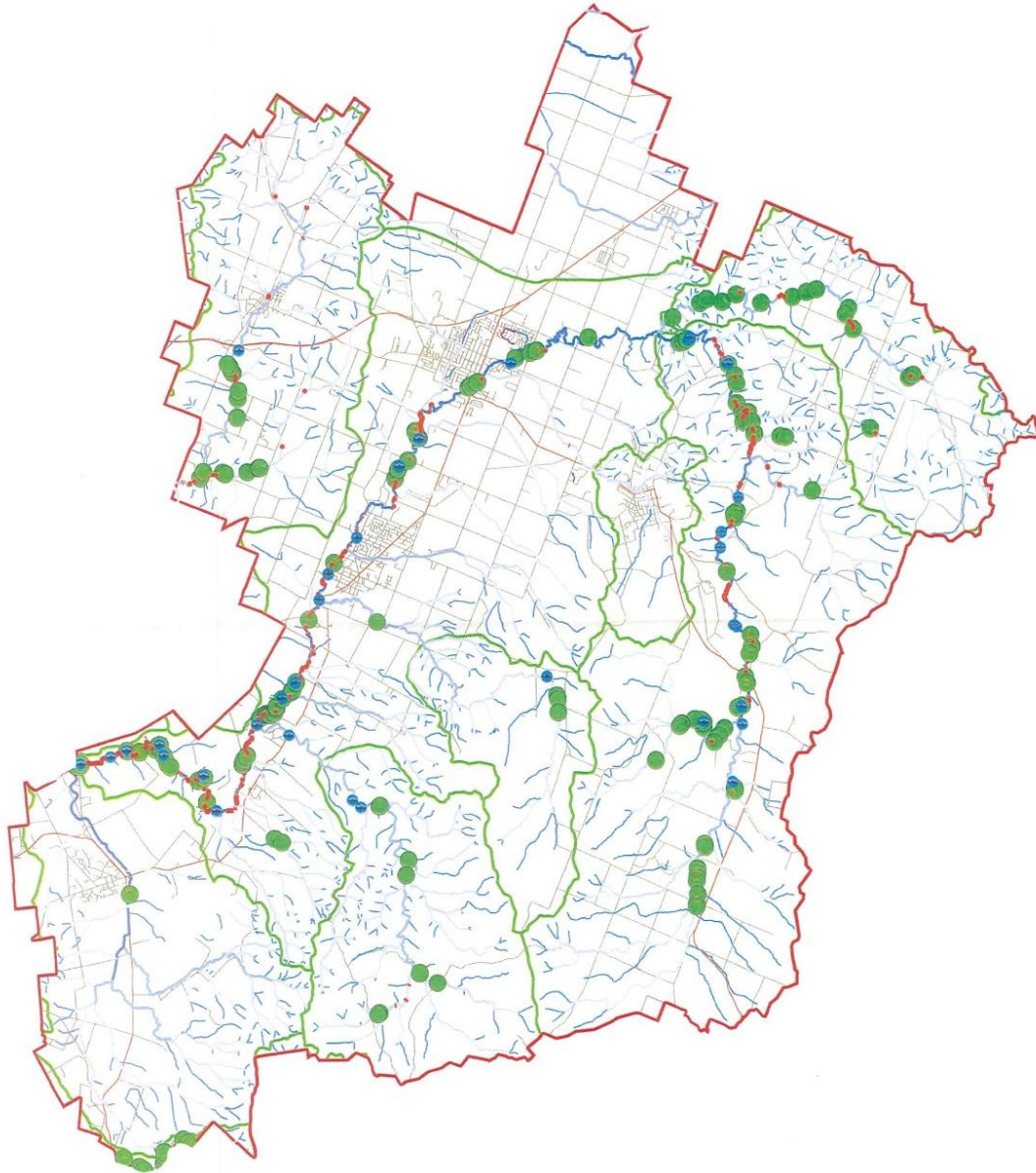


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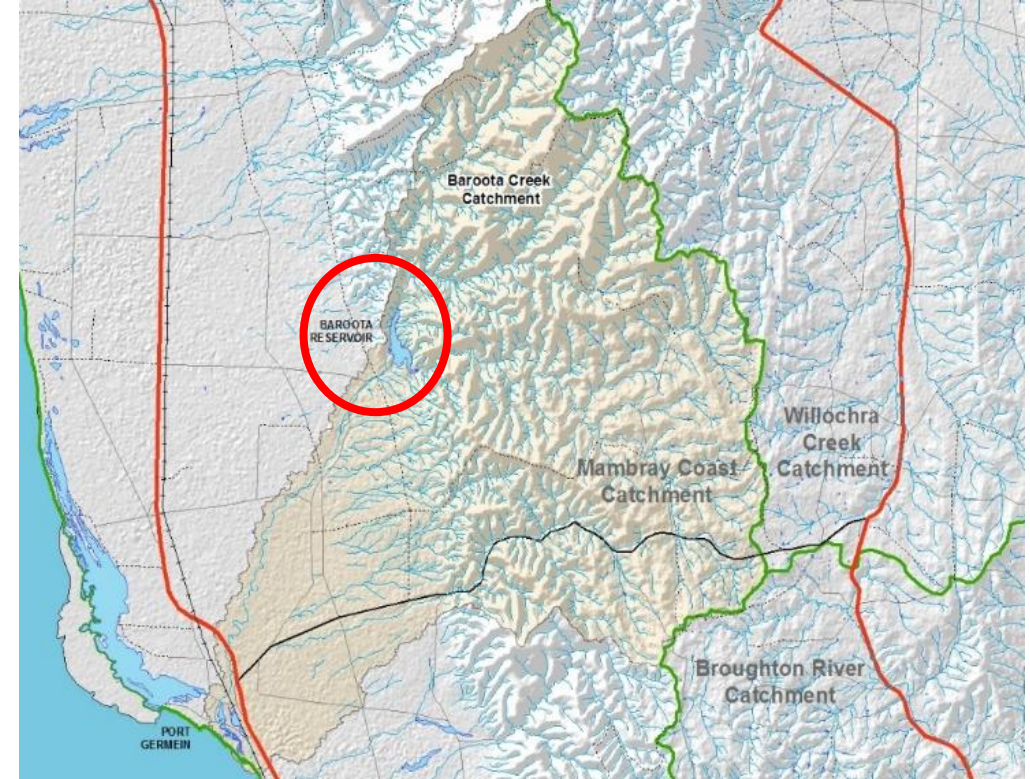
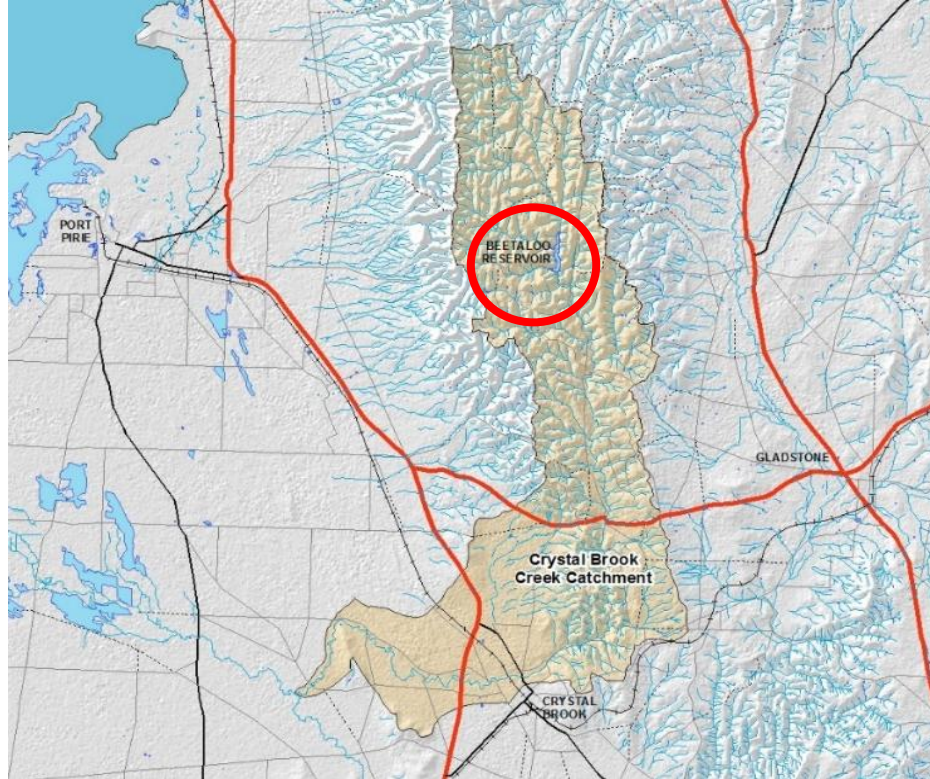




# Barossa permanent pools



# Baroota & Crystal Brook Creeks & Reservoirs



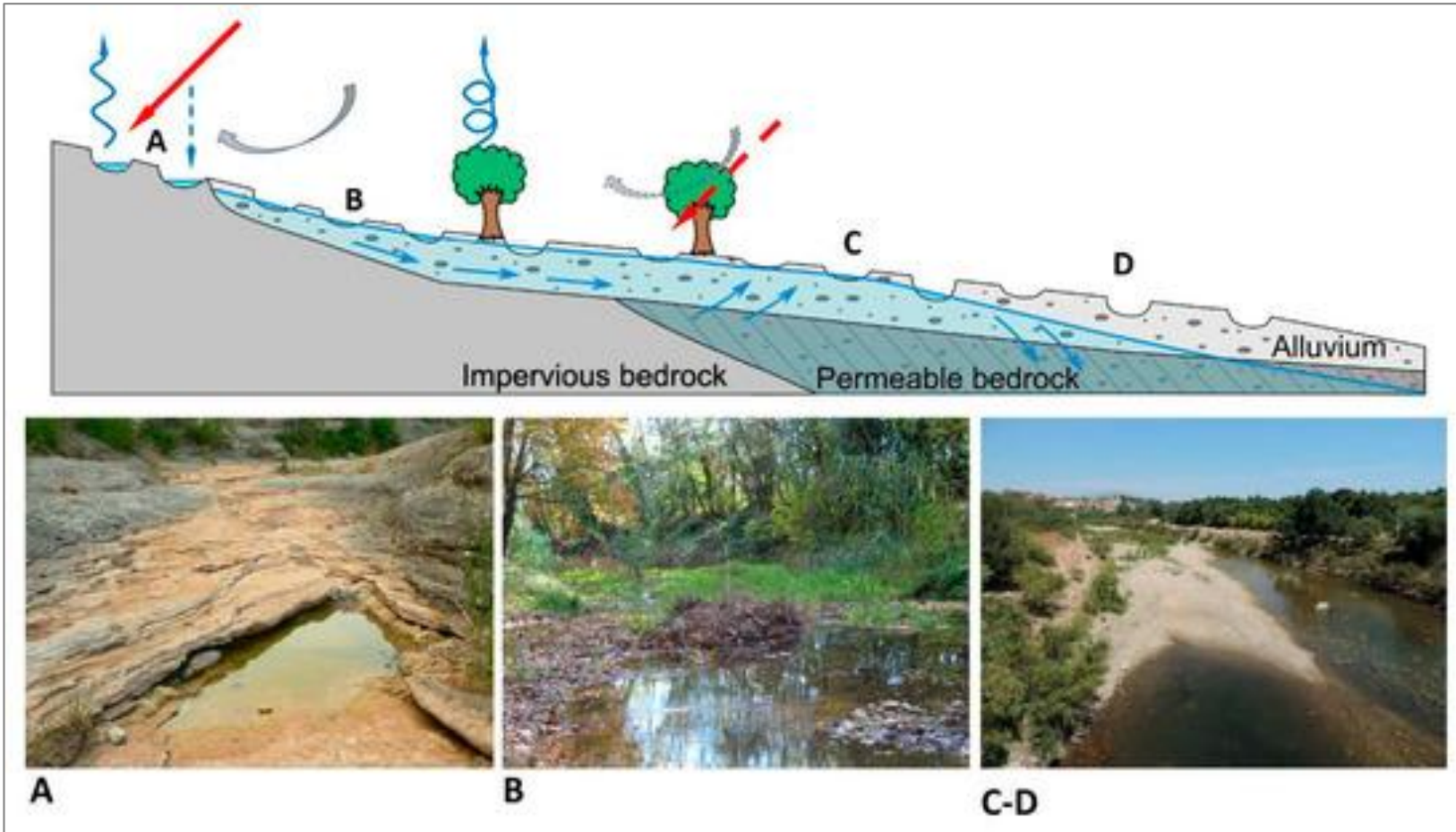
Thanks to SA Water



# Project Outcomes

1. Identification of the **current riparian health** of each catchment determined through **monitoring activities - achieved**
2. Identification of the **flow characteristics** (e.g. volume, season) needed to meet **environmental requirements and cultural obligations** in all three catchments - **achieved**
3. Development and implementation of **environmental water release programs** to address **riparian health and cultural values – achieved in 2/3**
4. Delivery of **increased flows** in all three catchments to improve **riparian health and cultural values – achieved in 2/3**

# Barossa permanent pools



Schematic of isolated pools and their relationships with groundwater.

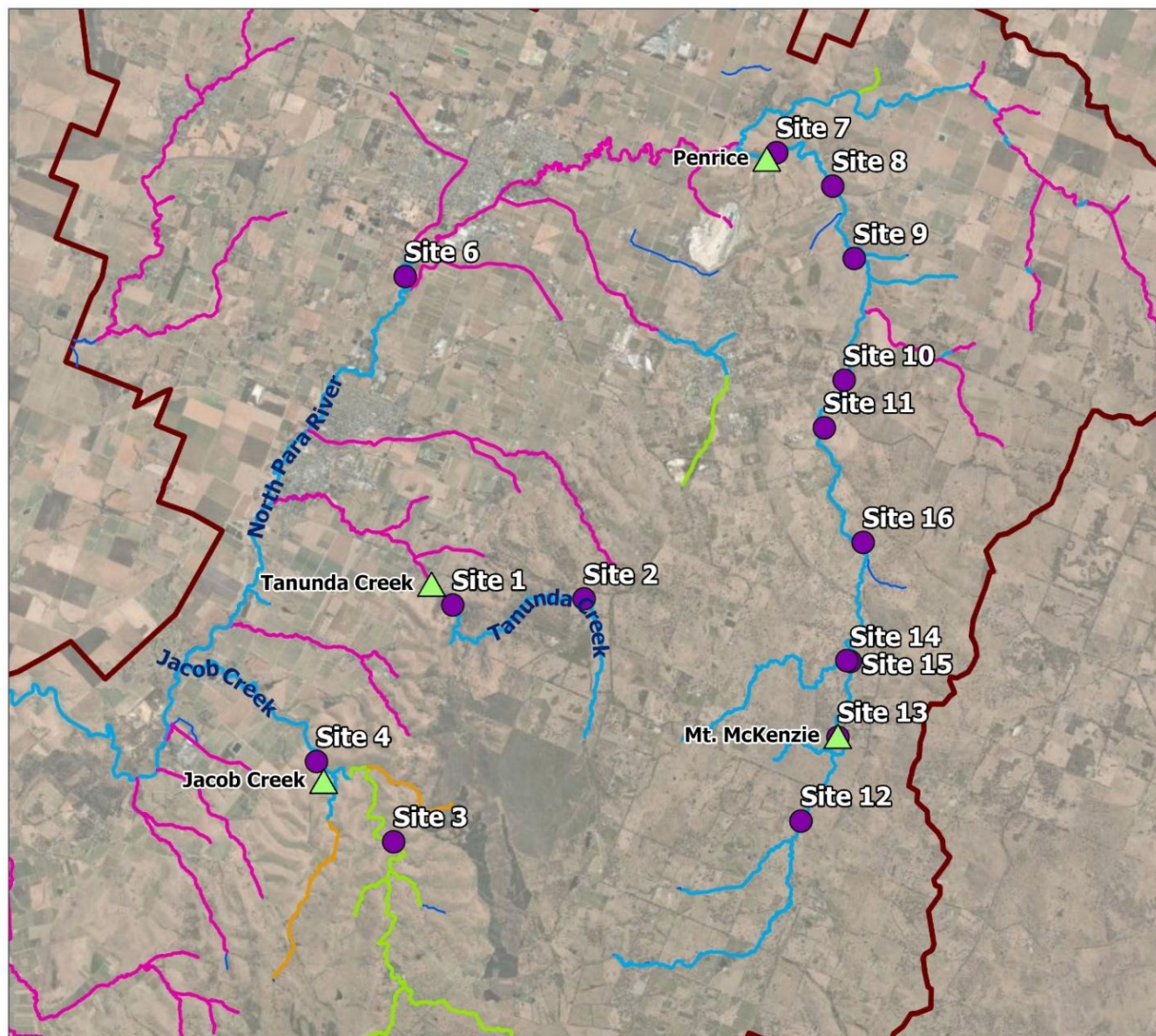
(A): "perched" pools.

(B): "through-flow" pools.

(C): "groundwater gaining" pools.

(D) "groundwater losing" pools.





**OFFICIAL**  
Groundwater-surface  
water interactions in the  
high flow season,  
Barossa PWSA

- Permanent pool monitoring locations
- ▲ Streamflow monitoring site
- Stream reach classification  
(Hancock et al., 2014)
- Stream gaining from groundwater
- Stream gaining from groundwater (speculative)
- Stream losing to groundwater
- Stream losing to groundwater (speculative)
- Stream (>3rd order)
- Barossa PWSA



Produced by Water Science and Monitoring  
Date 29 July 2025  
Projection GDA2020 South Australia Lambert

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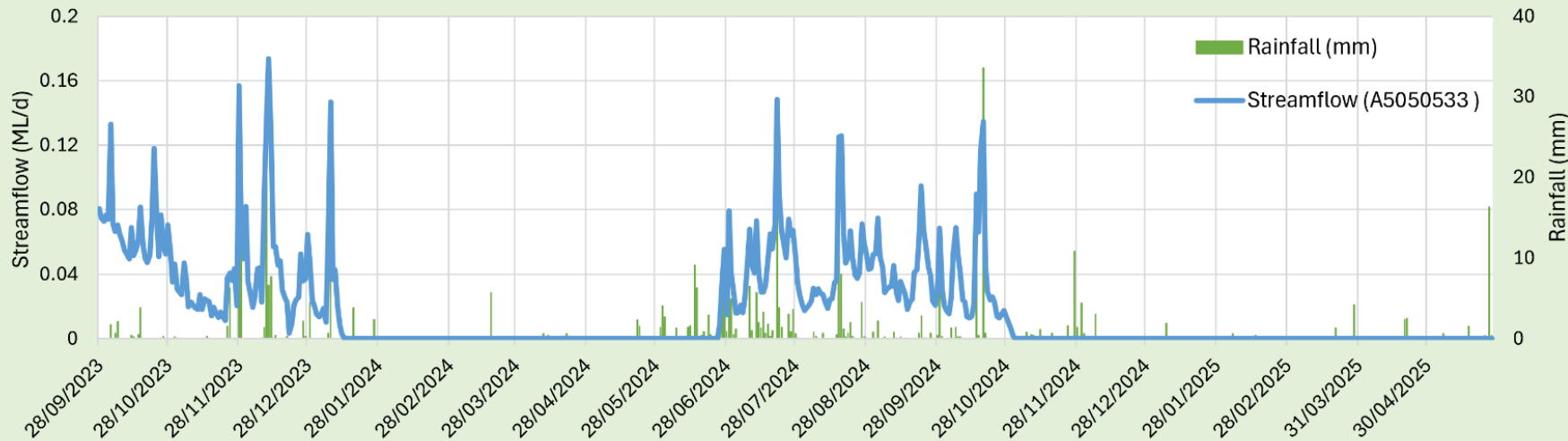
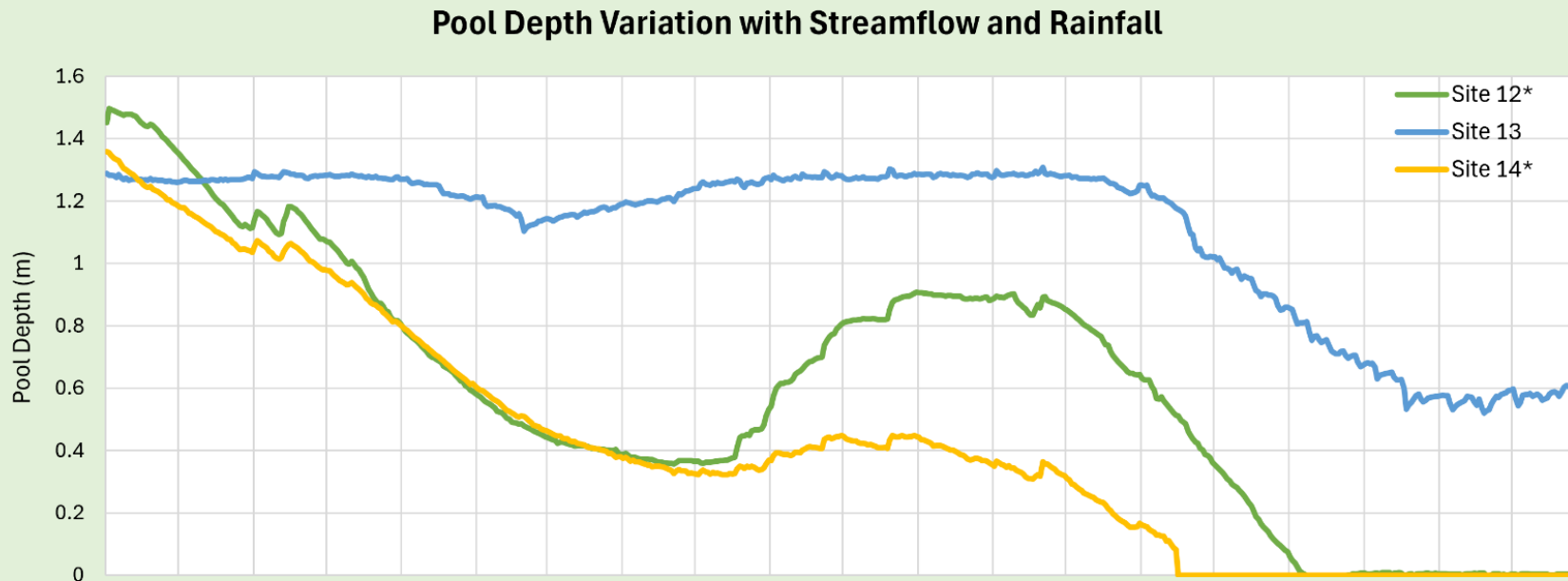
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# Barossa permanent pools – flow loggers

**Thanks to all landholders  
& Dept. for Environment  
and Water**

# Barossa permanent pools – flow loggers

Variation in pool depth  
at Site 12, 13 and 14 in  
Upper Flaxman Valley



\* logger was out of water



# Barossa fish surveys – Nature Glenelg Trust





# Water releases – Baroota & Beetaloo Reservoirs



## Thanks to all landholders

- Co-ordinated with SA Water
- Support the health and resilience of river red gum trees
- Support First Nations flow objectives
- August – September 2024
- **Baroota Reservoir** (6,140ML)
  - ~600ML flow ~5km over 12 days
  - Reservoir capacity used ~10 %
- **Beetaloo Reservoir** (3,180ML)
  - ~700 ML flow ~20km over 48 days
  - Reservoir capacity used ~25 %



# Water release 2024 – Baroota Reservoir to Baroota Creek



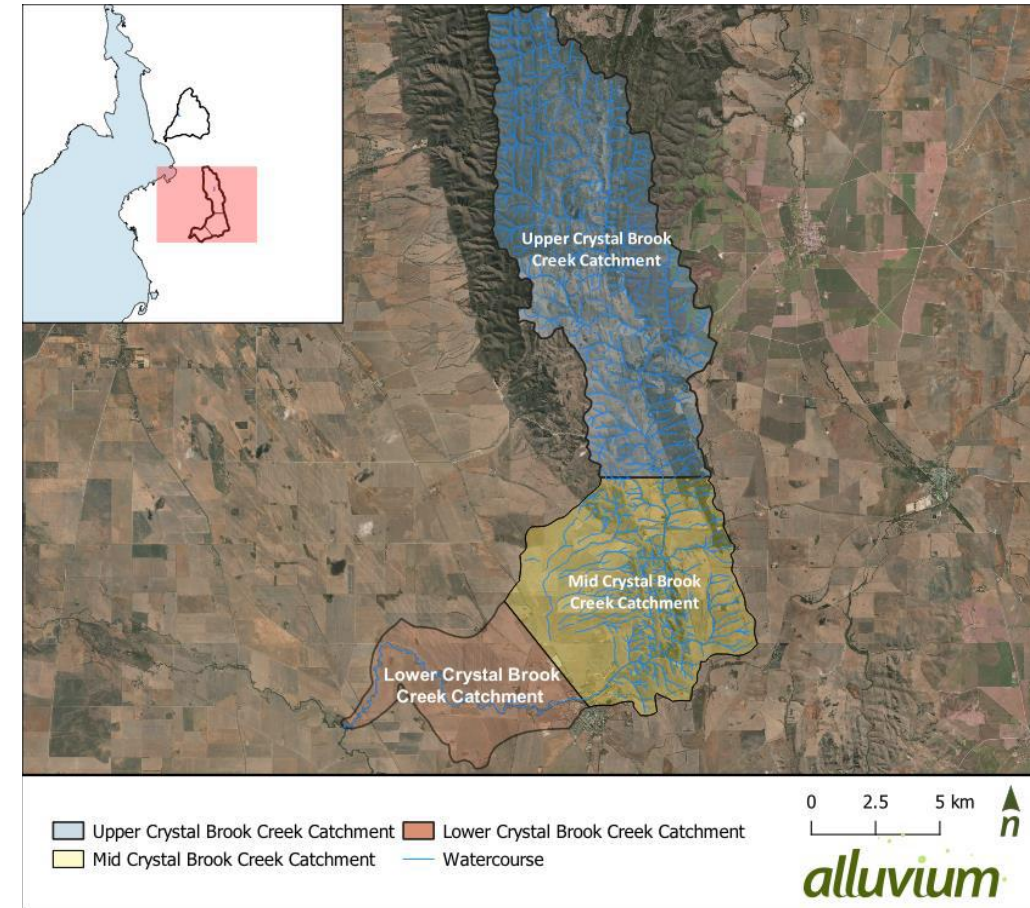
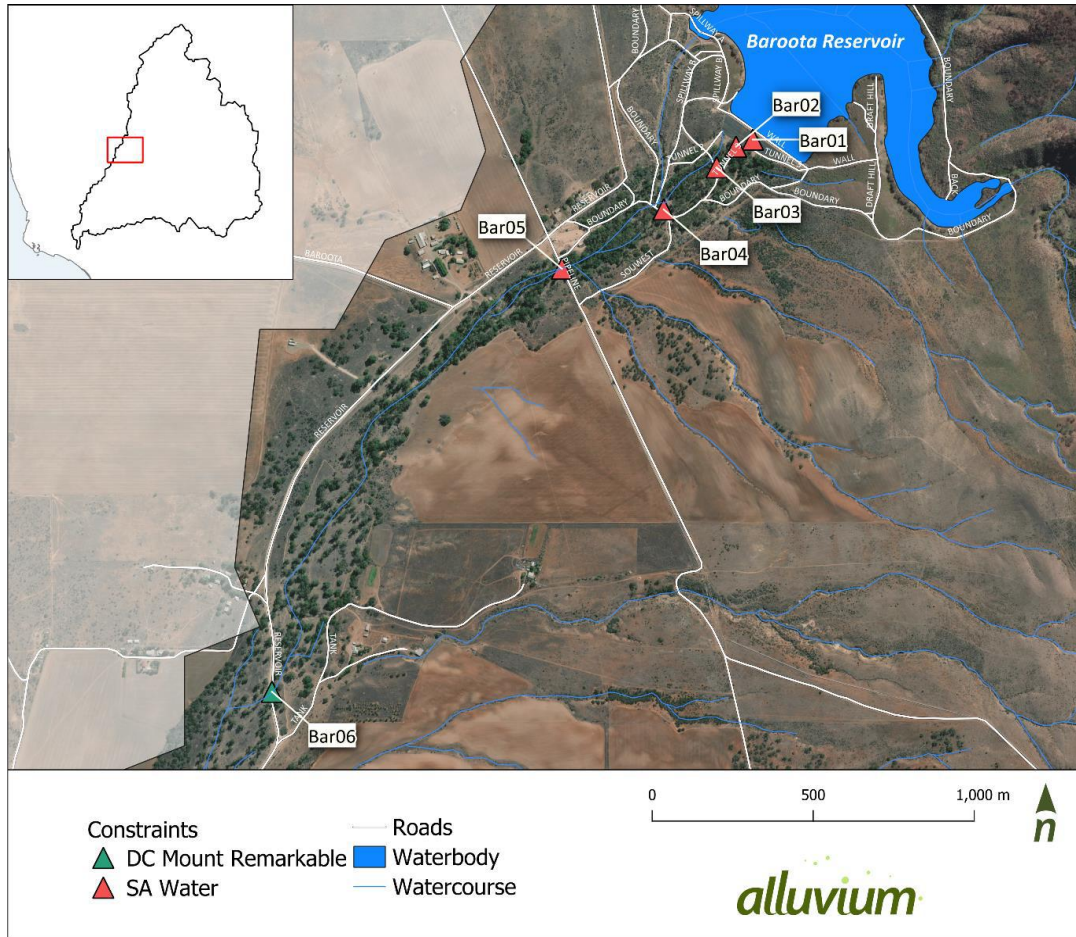


# Water release 2024 – Beetaloo Reservoir to Crystal Brook Creek

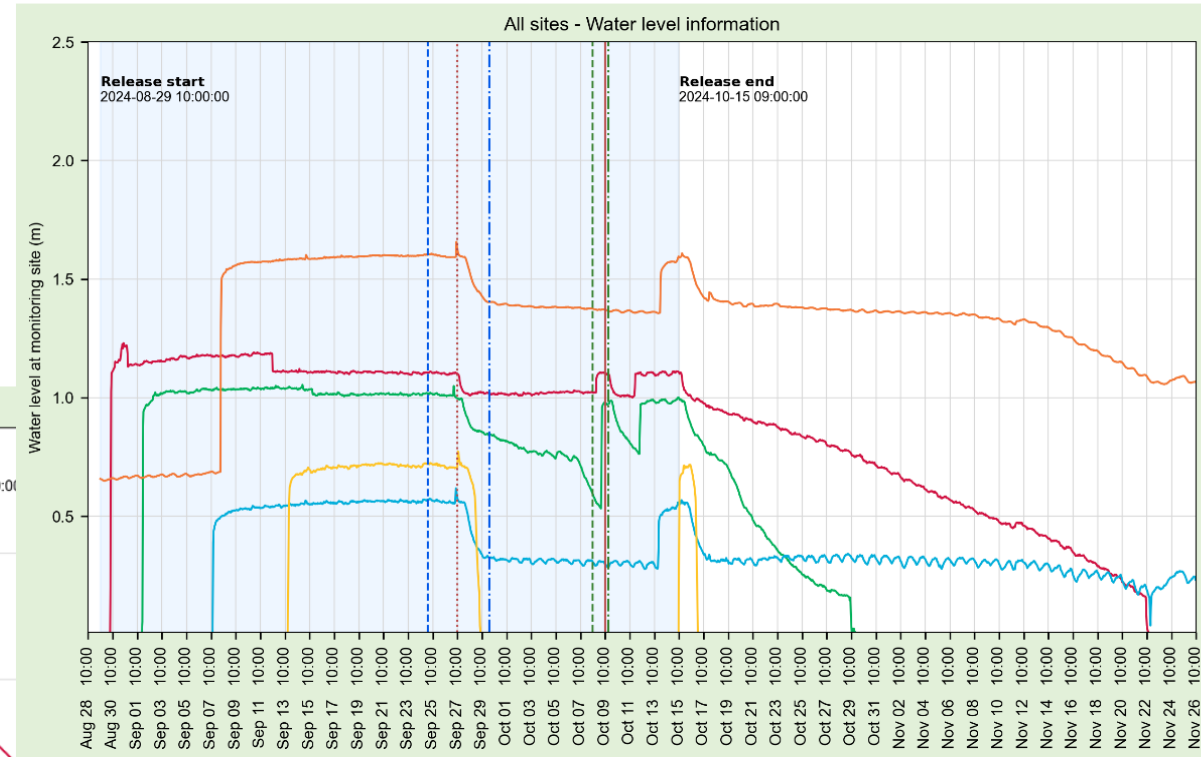
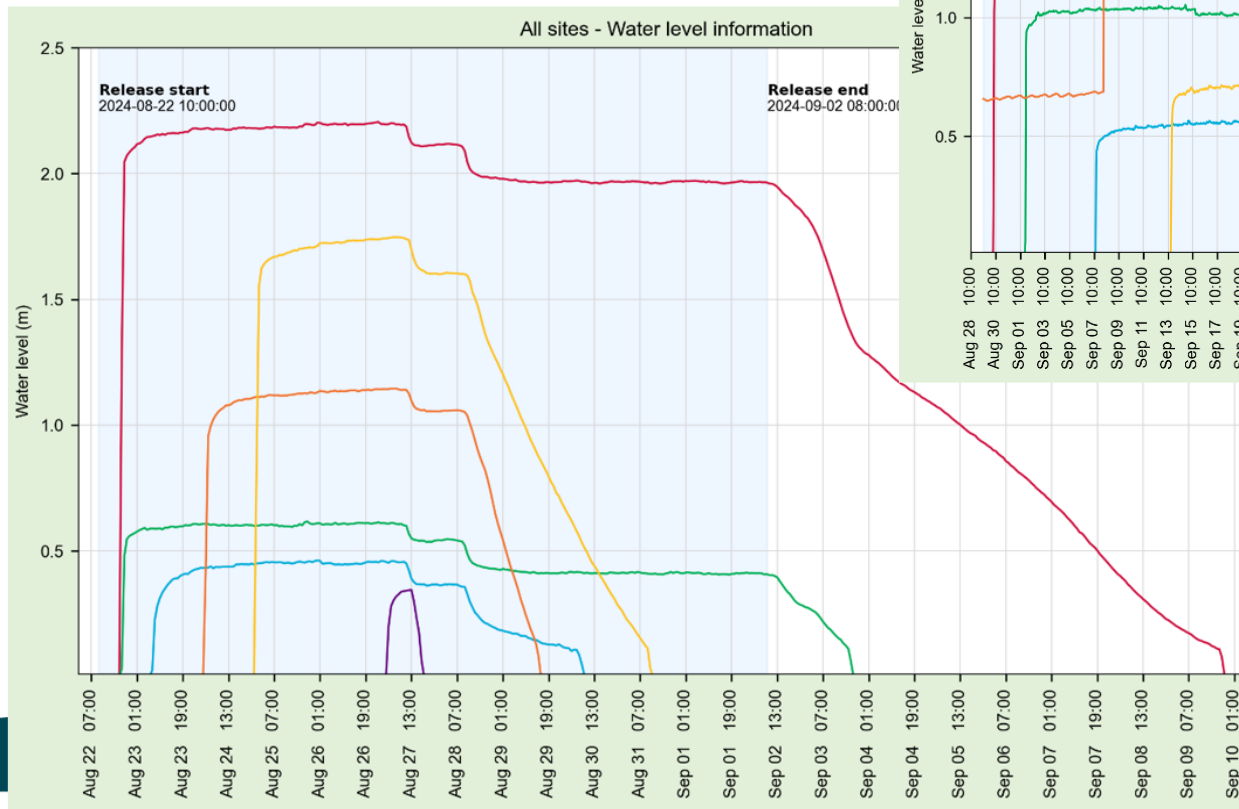




# Barriers to flow study – Alluvium Consulting

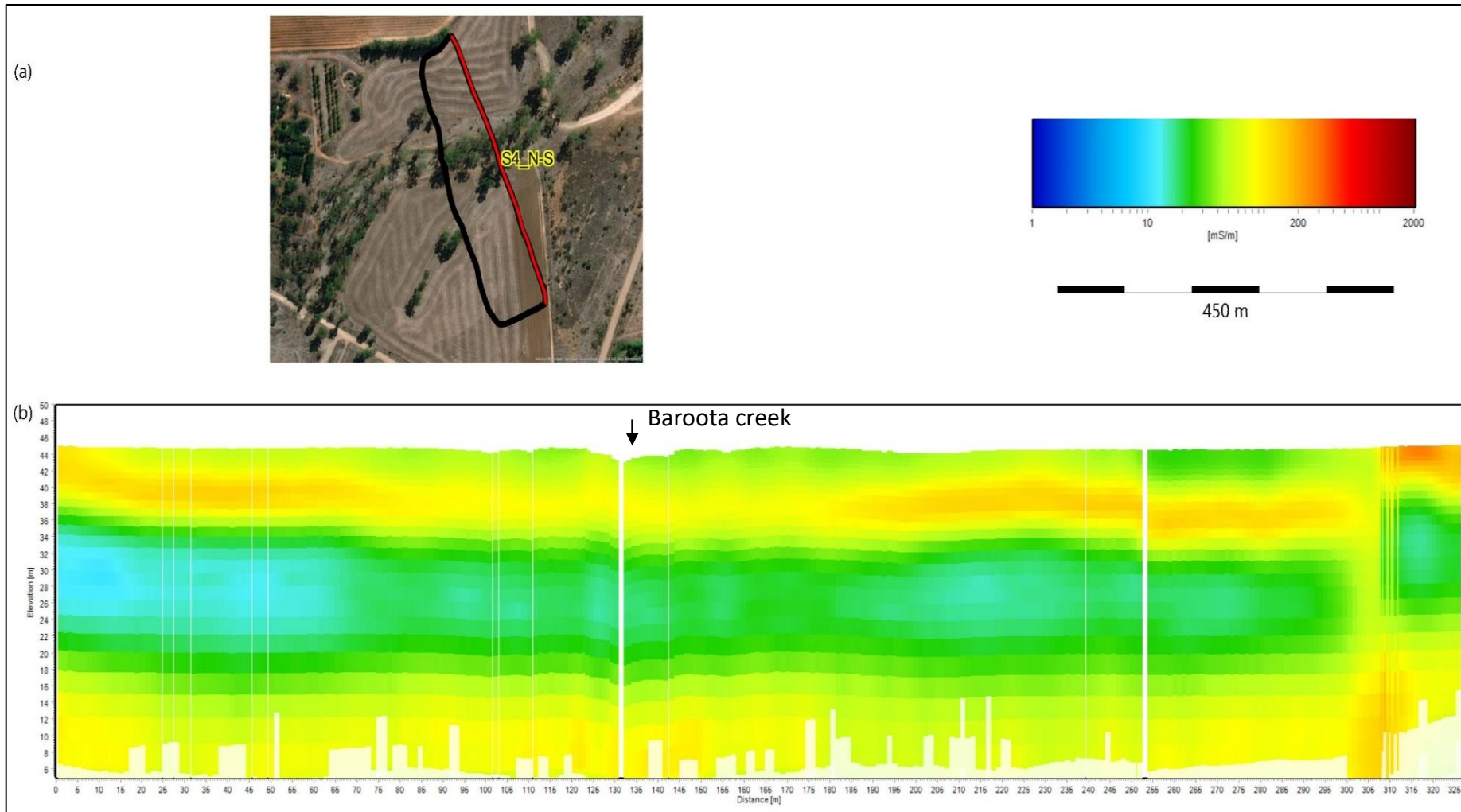


# Flow loggers – Dept. for Environment and Water





# Groundwater science – thanks to Flinders University



Conductivity depth-section (west-east) of Loupe electro-magnetic induction system data collected at Site 4, Baroota Creek, May 2024.

# Tree Condition surveys – thanks to Dr Todd Wallace



**2023**



**2024**



# First Nations collaboration – thanks to Nukunu

## Cultural objectives:

- Return of natural flow regime
- On Country gatherings

## Water releases 2024 attended by:

- Nukunu First Nations people
- SA Native Title representatives
- Aboriginal Way journalist
  - News story & podcast
- Reckless Eye Productions
  - Production of cultural water video with Nukunu





# First Nations collaboration – thanks to Nukunu



- Tree Condition Index methodology training of Nukunu Elders and members in 2023 & 2024



# Project partners & funding

- Nukunu First Nations People
- Landholders
- SA Water
- Flinders University
- Riverwater Life consultancy
- Alluvium Consulting
- Nature Glenelg Trust
- Department for Environment and Water



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**Funded by the Landscape Priorities Fund from the  
Government of South Australia**





# Next steps.....?

