

Barossa Prescribed Water Resources Area

2025 Surface water triggers assessment



The amended **Barossa Water Allocation Plan** (the Plan) considers the current water use and storage that, combined with a changing climate, is placing pressure on native water resources and the environment. Results of recent modelling indicate the surface water resource capacity had reduced by at least 25%. It is important to note that while the Plan provides the framework for determining the volume of water available to be used for consumptive purposes (the consumptive pool) the Minister has ultimate discretion to determine the volume of water available for annual allocation.

Please note: Information provided in this fact sheet about proposed policies in the amended plan are indicative only and subject to change pending consideration of the amended plan by the Minister for Climate, Environment and Water.

Regional context

The surface water resources of the Barossa PWRA are managed under the Water Allocation Plan for the Barossa PWRA (the Plan) which is planned to be submitted to enable Ministerial approval by 1 July 2026. The Barossa PWRA consists of 18 surface water consumptive pools (management zones) based on sub-catchment areas (*Figure 1*).

Surface water adaptive management

The Plan proposes an adaptive management approach designed to reduce the risk of declining surface water flows and deteriorating water dependent ecosystems, while supporting the historic use of water resources for consumptive purposes. The adaptive management approach will be implemented for all surface water consumptive pools (except Stockwell Creek).

The adaptive management approach is underpinned by the most up to date surface water data and employs a tiered approach to implementation, described in Table 1. The framework is based on a series of triggers (environmental metrics, and permanent pool and flow day triggers) that will be used to redetermine the volume of the consumptive pool annually. The Minister will consider the volume of the consumptive pool when determining annual allocations. The framework is discussed in more detail within the Plan (principally section 6.5) and summarised below (*Table 1*).

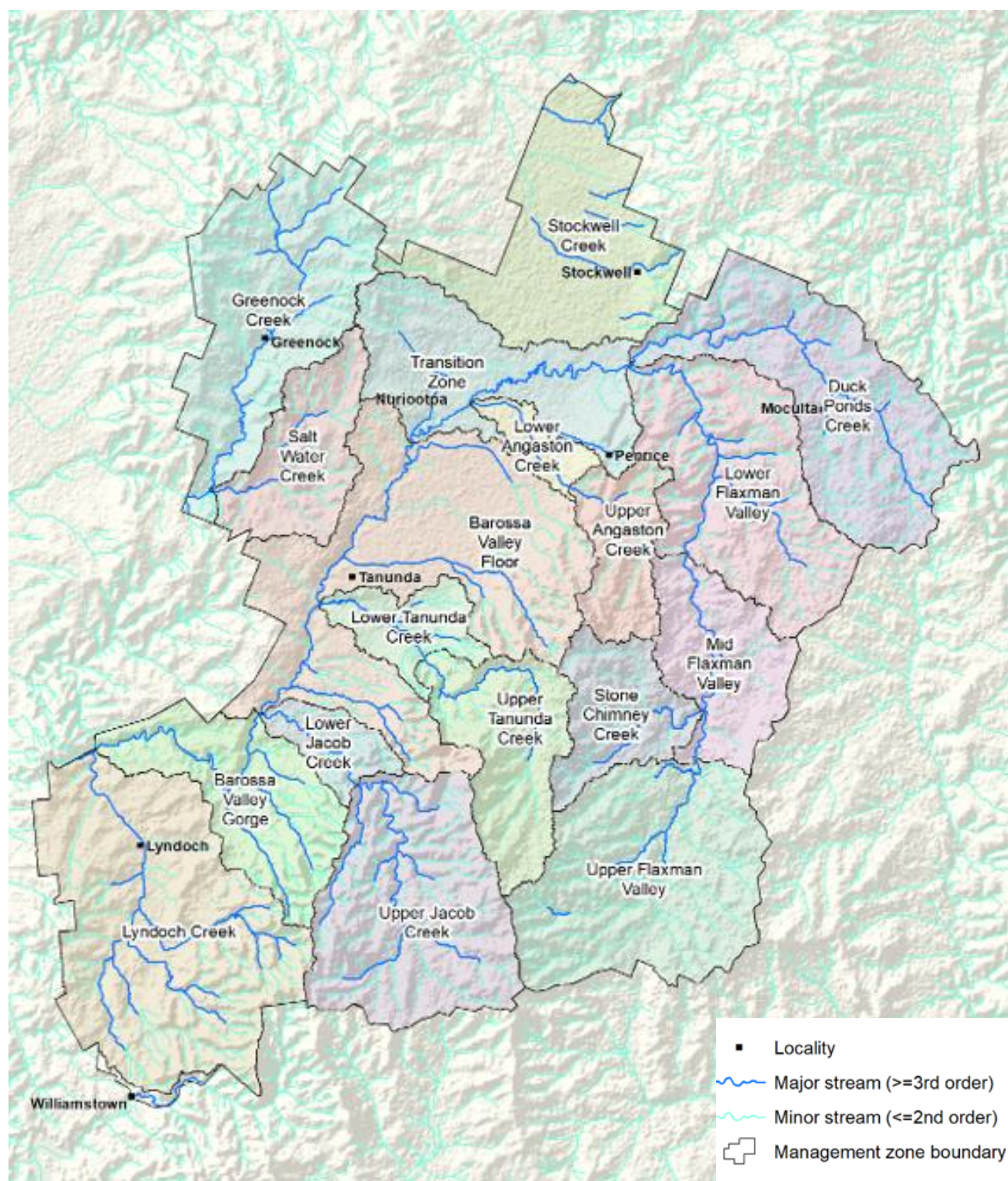
The surface water monitoring data collected across the Barossa PWRA in 2025 has been collated and assessed. Should the Plan be approved by the Minister prior to 1 July 2026, the plan recommends the volume of water to be made available for allocation from each consumptive pool, as outlined in Table 1, with a final decision to be made by the Minister for Climate, Environment and Water.

Table 1: High level summary of the proposed adaptive management framework to be implemented for the consumptive pools for the prescribed surface water resources of the Barossa PWRA.

Resource	Applicable triggers	Management response
Surface water and watercourse tier 1	All environmental metrics are met and No permanent pool or flow day triggers reached	When all 18 environmental metrics are met , the risk to equity of supply between users including the environment is deemed low, therefore the volume of the consumptive pool is set at 100% of the 'Maximum Consumptive Pool Volume'. Flow targets are based on the flow observed in the Barossa PWRA over the period 1997 to 2016 (see section 3 of the Plan for details), from the current condition recorded in 2025, this will require several years of above average rainfall to be achieved.
Surface water and watercourse tier 2	11 to 17 environmental metrics are met and No permanent pool or flow day triggers reached	When between 11 and 17 of the 18 environmental metrics are met , the consumptive pool volume is reduced to 75% of the Maximum Consumptive Pool Volume. This reduction reflects a 25% average reduction in water availability since entitlements were issued and is expected to apply in most years under average contemporary conditions.
Surface water and watercourse tier 3	10 or less environmental metrics are met and/or Any permanent pool trigger is reached for one year, or a flow day trigger is reached for two consecutive years	When 10 or less environmental metrics are met , or the permanent pool or flow day trigger is reached, the volume of the consumptive pool (and all upstream consumptive pools) is reduced based on the average water availability over the past 3 years . E.g. if water availability has reduced by 50% then the volume of the consumptive pool will be reduced by 50%. Reductions to the consumptive pool volume will be staged. In the first year of any tier being reached, the maximum reduction to the size of the consumptive pool will be 25%.



Figure 1: Barossa PWRA consists of 18 surface water consumptive pools based on sub-catchment areas



Surface/watercourse water-dependent ecosystems adaptive management

To assess the environmental water requirements (EWRs) for the surface water-dependent ecosystems (WDEs), environmental metrics were developed to quantify the different parts of the flow regime that are ecologically relevant. The six metrics used in this Plan (*Table 2*) were developed specifically for the Barossa PWRA.

The relevant bounds for these flow metrics were initially defined using a baseline period of 1997 to 2016, a period where the WDEs of the Barossa PWRA were in a stable state. **Each year there are six metrics assessed per consumptive pool zone.**

To account for climate variability the metrics are assessed over a three-year rolling period to provide a more ecologically relevant insight into the condition of the flow regime, and the likely impacts to the WDEs. Thereby **a total of 18 metrics (6 metrics over the rolling 3-year period) are assessed for each of the consumptive pools.**

Table 2: Description of the key flow metrics used to determine the environmental water requirements of the Barossa PWRA.

Flow regime area	Environmental metric	Ecological functions
Intermittency	Number of flowing days per year	- Considered the master variable for intermittent rivers - Longer periods of no flows leads to deteriorating water quality in refuge habitat (permanent pools) - Length of flow period dictates habitat availability and expected lifecycle completion for river fauna
Low flows over the low flow season (Dec – April)	Number of days above the low flow threshold over the low flow season per year	- Flushing of permanent pools - Maintenance of habitat - Watering of in channel riparian vegetation over low flow season - Opportunities for dispersal of fauna
Break of season	Number of days past 1 April that the watercourse commenced substantive flow	- Cues for migration and breeding - Increased stress on refuge habitats - Likelihood of lifecycle completion
Spring flows	Mean daily runoff (ML/day/km ²) for August – November (inclusive)	- Promotes resilience leading into the low flow/cease to flow period - Promotes fish recruitment success - Migration of obligate aquatic fauna - Discourages exotic fish species
Medium flows	Number of days above the median flow threshold (50 th percentile) per year	- Promotes large-scale fish migration - Discourages exotic fish species - Expand riffle habitat for macroinvertebrate species - Inundate vegetation on benches and lower banks - Control terrestrial vegetation in channel
High flows	Number of days above the high flow threshold (80 th percentile) per year	- Inundate vegetation higher on banks - Habitat maintenance including silt removal and algae scouring - Entrain organic material from banks - Plant propagule transport - Management of reed beds

The assessment of EWRs for the Barossa PWRA (Table 3) shows that in 2025 no consumptive pool met the full 18 environmental metrics required to completely meet the EWRs. Further, of the 17 consumptive pools that are assessed (all except Stockwell Creek) as part of the process, 12 were below the 11 metrics threshold. The location with the highest number of metrics passing is Upper Tanunda Creek with 15, down from 18 in 2024. The locations with the lowest number of metrics passing are Upper and Lower Jacob Creek and Stone Chimney Creek, all with only 6 metrics being met.

The shading in each column reflects whether the three-year **environmental metric** assessment for each consumptive pool has been met or not. Each year there are six metrics assessed per consumptive pool, therefore the maximum passing in any 3-year assessment is 18.

Green means the consumptive pool is meeting all acceptable conditions, i.e. 3-year average is 18 and the volume of the consumptive pool is set at 100% of the 'Maximum Consumptive Pool Volume'.

Yellow means the consumptive pool is meeting minimum acceptable condition, i.e. 3-year average observed 11-17 metrics being met and the volume of the consumptive pool is reduced by 25%.

Red means the consumptive pool is below minimum acceptable condition, i.e. 3-year average observed 10 or less metrics being met and the consumptive pool is recalculated based on the change in water availability over the past three years.

In addition to the environmental metrics there are two additional triggers required for annual assessment – the flow day and the permanent pool triggers.

For the **flow day** assessment **Green** means the minimum number of flowing days for a consumptive pool was met and the volume of the consumptive pool is set at 100% of the Maximum Consumptive Pool Volume. **Yellow** means that for one year the minimum number of flowing days was not met, a warning is raised but the volume of the consumptive pool remains set at 100% of the Maximum Consumptive Pool Volume. **Red** means that for a second year the minimum number of flowing days for the consumptive pool was not met, and the consumptive pool is recalculated based on the change in water availability over the past three years (see note below).

For the **permanent pool** assessment if any water level in one permanent pool, within a particular consumptive pool, is **not** measured to be above the minimum level observed over the 2024-25 water year, or the level of the logger instrument (whichever is higher) then the trigger is deemed breached and the volume of the consumptive pool is recalculated based on the change in water availability over the past three years (see note below).

The 2025 assessment in Table 3 highlights that the triggers for all consumptive pools have been breached and that 25% reductions are recommended, as per the Tiers 2 and 3 management responses in Table 1.

Note: Any reduction in consumptive pool volume will be staged, such that a 25% reduction is the first-year response to metrics and triggers not being met and if maintained for a second year the consumptive pool volume will be reduced further based on the change in water availability over the past three years.

Table 3: Historic summary of the number of **environmental metrics** passed for each rolling 3-year assessment period including the current period of 2023 – 2025 (**in bold**), and **flow day** and **permanent pool** assessments for 2025.

Site	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Flow day assessment	Permanent pool assessment
Barossa Valley Floor	18	18	17	16	13	9	6	8	13	15	11	Fail	Pass
Barossa Valley Gorge	18	18	17	14	10	5	3	NA	4	8	9	Warning	NA
Duck Ponds Creek	18	18	18	18	15	11	8	10	13	13	9	Fail	NA
Greenock Creek	18	18	17	16	12	9	8	11	14	12	7	Fail	NA
Lower Angaston Creek	18	18	18	17	13	8	5	8	11	12	7	Warning	NA
Lower Flaxman Valley	18	18	18	17	15	10	NA	8	8	11	9	Fail	Fail
Lower Jacob Creek	18	18	17	15	9	4	0	4	8	10	6	Fail	Pass
Lower Tanunda Creek	18	18	17	15	11	6	3	5	10	12	9	Fail	NA
Lyndoch Creek	18	18	17	16	14	13	13	13	15	16	14	Warning	NA
Mid-Flaxman Valley	18	18	17	15	11	7	5	7	11	12	9	Fail	Fail
Saltwater Creek	18	18	17	17	14	11	10	12	15	16	12	Warning	NA
Stone Chimney Creek	18	18	18	17	13	8	4	6	9	10	6	Fail	NA
Transition Zone	18	18	18	18	16	12	8	10	13	14	9	Fail	NA
Upper Angaston Creek	18	18	18	17	14	11	9	12	13	13	7	Warning	NA
Upper Flaxman Valley	18	18	18	18	NA	16	14	12	NA	11	NA	NA	Fail
Upper Jacob Creek	18	18	17	15	10	5	1	4	8	10	6	Fail	Pass
Upper Tanunda Creek	18	18	18	18	15	11	9	12	16	18	15	Warning	Fail

Figure 2: Location of permanent pool monitoring sites in the Barossa PWRA.

