

2020-21 Annual Water for the Environment Priorities for the Eastern Mount Lofty Ranges WRP area



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Background

Priorities for the use of water for the environment in the Eastern Mount Lofty Ranges Water Resource Plan (EMLR WRP) are prepared annually. The development of these annual priorities is in accordance with the principles and methods described in Part 6 of Chapter 8 of the Basin Plan and enables South Australia to meet its obligations under the Basin Plan (Chapter 8 – Environmental Watering Plan).

The Basin Plan allows the level of detail in annual watering priorities to vary according to local conditions, and statutory and other arrangements prevailing in the water resource plan area (Chapter 8, section 8.24, p65).

The EMLR WRP covers both the Eastern Mount Lofty Ranges prescribed water resource area and the Marne Saunders prescribed water resource area. The EMLR WRP area experiences small, unregulated, seasonal flow in ephemeral catchments. Environmental assets are distributed throughout the system with habitats concentrated in the streams, riparian area and small floodplains. The majority of surface water capture is via small private dams concentrated in the headwaters, with some direct watercourse extraction and forestry interception as well. There are no large reservoirs for domestic or irrigation supply, so it is not possible to specifically direct environmental watering or make large-scale environmental water releases.

The diffuse, widely distributed nature of the environmental assets and water capture mean that the most useful and practical approach for providing water to the environment is to set water taking limits and rules that result in a flow pattern that provides an adequate environmental water regime over space and time. That is, environmental water provisions in the EMLR WRP area occur through planned water for the environment, rather than by the use of held water for the environmental.

Identification of priorities

Setting environmental water provisions

Extensive work has been undertaken as part of the water allocation planning process to identify environmental water requirements and to set water taking rules and limits that balance social, economic and environmental water needs.

Determination of environmental water requirements is described in Marne River Environmental Flows Technical Panel (MREFTP) (2003) (Marne), Doeg and van der Wielen (2007) (Saunders) and Van Laarhoven and van der Wielen (2009) (EMLR). These environmental water requirements are summarised in chapter three of the Marne Saunders WAP and chapter two of the EMLR WAP.

The process for determining environmental water provisions and associated water taking rules and limits is outlined in chapter four of the Marne Saunders WAP and in chapters two and four of the EMLR WAP. Key steps in these processes include:

1. Environmental water requirements

- Identify the nature and distribution of water-dependent habitats (grouped into reaches) and species across the region.
- Set environmental water requirement objectives for species or functional groups, in the context of maintaining, restoring or rehabilitating self-sustaining populations.
- Identify ecological processes required to meet the objectives and the components of the water regime associated with those processes (i.e. determine environmental water requirements by species or functional group).
- Develop a conceptual model of environmental water requirements by reach, based on the species and habitats found there and their collective water requirements.
- Quantify environmental water requirements by representing important flow components from the conceptual models as metrics relating to magnitude, frequency, duration and timing of flow.

- Set targets for the flow metrics expected to meet environmental water requirements (at a low level of risk). Targets were generally expressed as 'acceptable' deviation from the natural value.

2. Environmental water provisions and water taking rules

- Identify environmental water provision objectives that maintain water-dependent ecosystems at an acceptable level of risk, while balancing social, economic and environmental water needs.
- Set targets for the flow metrics to meet the environmental water provision objectives. In the EMLR, this was achieved by identifying the desired environmental condition for key assets, and then looking at the relationship between the flow metrics and actual environmental condition of key environmental assets from monitoring data.
- Use surface water models that incorporate existing water resource development to scenario test different management rules, in order to identify options that meet the targets. Modelling was undertaken at points over the whole region, covering the period of 1974-2003 (Marne Saunders) or 1974-2006 (EMLR). Options tested included combinations of different levels of use from dams and watercourse diversions and returning (or not returning) flows below a threshold flow rate from licensed diversion points and larger non-licensed dams. Scenario testing also identified appropriate dam capacity limits to apply to new and enlarged dams.
- Set water taking limits and rules based on the outcomes of the scenario testing.

Annual Priorities

No additional annual watering priorities have been identified for the Eastern Mount Lofty Ranges Water Resource Plan area, beyond those identified in the Marne Saunders (MS) Water Allocation Plan (WAP) and Eastern Mount Lofty Ranges (EMLR) WAP.

Water dependent environmental assets and functions are managed through local WAPs and natural resources management (NRM) plans that apply in this area, but specific assets are not targeted. There is no held environmental water in the area.

Table 1 represents the results of an assessment by DEW of South Australia's requirements set out in sections 8.23 to 8.29 of the Basin Plan in relation to identifying the annual environmental watering priorities for the EMLR WRP Area. This table includes references to the information the assessment has been based on, including the relevant water allocation plan.



Table 1: Assessment of Annual Priorities for the EMLR Region Water Resource Plan Area

Section	Summary of requirement	Requirement met?	Assessment	References
8.23	Identify annual environmental watering priorities for surface water	Addressed by EWR projects and WAPs	The annual water for the environment priorities are as outlined in the WAPs and EWR reports (see references). No additional annual priorities for environmental watering have been identified for the EMLR and MS.	MREFTP 2003 (Marne); Doeg and van der Wielen (2007) (Saunders); Van Laarhoven and van der Wielen (2009) (EMLR) Provisions outlined in: Chapter 4 (MS WAP); Chapters 2 and 4 (EMLR WAP)
8.24 (1)	Identify priorities for watering priority assets and functions	Addressed by EWR projects and WAPs	Environmental assets and ecosystem functions that are provided with water for the environment through the WAP rules and limits have been identified as part of the environmental water requirements (EWR) projects carried out for the regions. No specific annual priorities for watering are identified for the EMLR and MS. Instead, the rules-based environmental water provisions (planned water) are or will be in future years provided to all assets across these unregulated regions. See Table 2 for sections in relevant plans that identify assets.	EWR project reports: MREFTP 2003 (Marne); Doeg and van der Wielen (2007) (Saunders); Van Laarhoven and van der Wielen (2009) (EMLR)
8.24 (2)(a)	Identify assumptions that priorities are based on including expected holdings and characteristics of held environmental water	Not applicable	There is no held water for the environment in either region. There may be potential for held water for the environment in the EMLR in the future.	Not Applicable
8.24 (2)(b)	Identify assumptions that priorities are based on, including expected quantities of planned environmental water, and associated rules, and who manages environmental water	Yes	The rules for planned water for the environment are set out in WAP principles. Planned water for the environment is to be managed through implementation of the WAP and licensing system by the state government. The quantity of planned water for the environment in any year depends on interaction between the rules and the climate of the year – and so cannot be determined until the end of the year. It may be possible to use existing flow models to determine the likely range for different example years, if required.	Water taking rules and limits given in: Chapters 6-8 (MS WAP); Chapters 5-7 (EMLR WAP)
8.24 (3)	Identify cooperative arrangements amongst holders or managers of environmental water and assets	Not applicable	No active environmental watering or specific delivery of water for the environment occurs within the regions or to connected regions, so there is limited scope for cooperative arrangements. There is no held water for the	Not applicable

			<p>environment in the regions.</p> <p>All planned water for the environment is managed by a single entity (through implementation of the licensing system by DEW).</p> <p>There are no specific priority assets – environmental water provisions apply equally across the regions.</p>	
8.24 (4)	Priorities may include a specified instrument or text as part of the priorities	Not applicable	The EWR reports and the WAPs are referenced for the purpose of meeting this requirement.	Water allocation plans and EWR reports
8.25 (1)	Must apply principles and methods in part 6 to identify annual priorities	Not applicable	<p>Identification of environmental water provisions to all assets across the regions is generally consistent with the principles for identifying watering priorities as outlined in part 6 (where relevant) (section 8.538.59).</p> <p>This means that the annual water for the environment priorities are outlined in the water allocation plans and EWR reports. The rules and limits for environmental provisions are consistent over time and space and include provisions to return critical low flows (essential for maintaining aquatic refuges during dry periods).</p>	Water allocation plans and EWR reports
8.25 (2)	Matters to have regard to when determining priorities	Not applicable	<p>There is no held water for the environment in the area and no watering schedules.</p> <p>The rules relating to planned water for the environment water are contained in the WAPs.</p>	Not applicable
8.25 (4)	Holders of environmental water to provide information to basin states	Not applicable	No specific watering priorities and no held water for the environment in the region.	Not applicable
8.25 (5)	Holders of environmental water to provide information to basin states, including use of water in other water resource plan areas	Not applicable	<p>No specific watering priorities</p> <p>State manages the planned water for the environment through the WAPs and licensing system.</p> <p>Provision of planned water for the environment is not actively managed – instead occurs through interaction between fixed taking rules and limits and climate of the year. So planned water for the environment that reaches the River Murray and Lake Alexandrina arrives when it rains enough to enable sufficient flows. It is not possible to 'actively' manage this flow.</p>	Not applicable
8.25 (6)	Annual watering priorities	Not applicable	The long-term watering plan for the	Not applicable

	must be consistent with long-term watering plan		region was completed in December 2017. The water for the environment priorities are essentially the same as the content of the long-term watering plan for the regions.	
8.26	Provision of annual watering priorities to MDBA by 31 May	Yes	Water for the environment provisions are made across the region via consistent water-taking rules and limits.	Water allocation plans and EWR reports

Table 2: Relevant sections in WAPs that identify priority assets and ecosystem functions

Basin Plan content requirement	Relevant EMLR WAP section	Relevant Marne Saunders WAP section
8.19 (1) (a) Identify priority environmental assets	<p>The catchments are grouped based on similarities in ecology and climate. The resulting priority environmental assets are:</p> <ul style="list-style-type: none"> • Angas River • Bremer River • Finnis River • Reedy Creek • Tookayerta Creek • Central Lowlands Group (Angas Plains; FerriesMcDonald; Sandergrove Plains) • Southern Group (Currency and Deep Creek) • Northern Group (Bees Knees, Long Gully, Milendella Creek, Preamimma Creek, Long Gully Creek and Salt Creek) 	<p>Catchments are used to represent the priority environmental assets, which are:</p> <ul style="list-style-type: none"> • Marne River • Saunders Creek
8.19 (2) (a) Identify priority ecosystem functions	<p>A functional approach was taken when developing the EWRs for the EMLR PWRA, based on generic functional groups of aquatic and riparian flora and fauna, the ecological processes required to support them and associated flow components (pp215-233), and generic reach types (p56). The EWRs were also defined to include connectivity needs at the local, medium and large scale (p75).</p>	<p>A functional approach was taken when developing the EWRs for the Marne-Saunders PWRA, based on environmental reaches (pp31 - 35), and the habitat, biological and ecosystem processes required to achieve the environmental objectives (pp43 - 49). Connectivity was also factored into the identification of ecologically important flow metrics (p54).</p>

Note: This table has been taken from the LTWP, with updates to reflect the 2019 revisions of the EMLR and Marne Saunders WAPs.

References

- CSIRO. (2007). *Water Availability in the Eastern Mount Lofty Ranges. A report of the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project*. Canberra: Australian Government.
- Department of Environment, Water and Natural Resources. (2017). *Long Term Environmental Watering Plan for the Eastern Mount Lofty Ranges Water Resource Planning Area*. Adelaide: SA Murray Darling Basin Natural Resources Management Board.
- Doeg, T. et al. (2007). *Environmental water requirements of Saunders Creek, South Australia*. Adelaide: unpublished report to the SA MDB NRM Board.
- Marne River Environmental Flows Technical Panel. (2003). *Environmental water requirements of the ephemeral Marne River system, South Australia*. Adelaide: River Murray Catchment Water Management Board.
- Natural Resources SAMDB. (2010). *Marne Saunders Water Allocation Plan*. Adelaide: SA Murray Darling Basin Natural Resources Management Board.
- SA MDB NRM Board. (2019). *Eastern Mount Lofty Ranges Water Allocation Plan*. Adelaide: SA Murray Darling Basin Natural Resources Management Board.
- Van Laarhoven, J. et al. (2009). *Environmental water requirements for the Mount Lofty Ranges prescribed water resource areas, Report DWLBC 2009/29*. Adelaide: DWLBC and SA MDB NRM Board.