

2021-23 Water for the Environment Priorities for the Eastern Mount Lofty Ranges Water Resource Plan Area



DEW-D0012527

Background

The Eastern Mount Lofty Ranges Water Resource Plan (EMLR WRP) area lies at the south western margin of the Murray–Darling Basin in South Australia and covers an area of approximately 3,588 km² (Department for Environment and Water, 2019). The area represents the southerly catchments of the Mount Lofty Ranges that drain to the River Murray and Lake Alexandrina (Department for Environment and Water, 2019).

The EMLR WRP area 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 environmental water, rather than by the use of held environmental water.

Annual environmental watering priorities for surface water (annual priorities) have been prepared for the EMLR WRP area each year since 2013 in accordance with Basin Plan requirements. The Basin Plan provides for the level of detail in annual priorities to vary according to local conditions, and statutory and other arrangements prevailing in the water resource plan area (Section 8.24). It also allows for a single instrument to identify annual priorities for greater than one year (s8.23). Due to the nature of the region and minimal change in annual priorities from year-to-year, this year the information presented within this document represents the annual priorities for the EMLR WRP area for two water years, being 2021/22 and 2022/23. 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).

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 meet environmental water provision targets and balance social, economic and environmental water needs.

Determination of environmental water requirements is described in Marne River Environmental Flows Technical Panel (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 (South Australian Murray–Darling Basin Natural Resources Management Board, 2019a) and chapter two of the EMLR WAP (South Australian Murray–Darling Basin Natural Resources Management Board, 2019b).

The process for determining environmental water provisions and associated water taking rules and limits is outlined in chapter six of the Marne Saunders WAP and in chapter six 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 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 regional Water Affecting Activities Control Policies that apply in this area, but specific assets are not targeted. Table 1 (taken from Department for Environment and Water, 2020) describes the sections in the EMLR and MS WAPs that identify assets and functions.

Table 2 represents the results of an assessment by DEW against requirements set out in sections 8.23 to 8.29 of the Basin Plan in relation to identifying the annual 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: Relevant sections in WAPs that identify priority assets and ecosystem functions

Basin Plan content requirement	Relevant EMLR WAP information	Relevant Marne Saunders WAP information
8.19 (1) (a) Identify priority environmental assets	<p>Refer to surface water catchments (section 1.5.1). Catchments are grouped based on similarities in biology 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; Ferries-McDonald; Sandergrrove Plains) • Southern Group (Currency and Deep Creek) • Northern Group (Bees Knees, Long Gully, Milendella Creek, Preamimma Creek, Long Gully Creek and Salt Creek) 	<p>Refer to surface water catchments (section 2.3.1). 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 (section 2.1.1) 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, and generic reach types. The EWRs were also defined to include connectivity needs at the local, medium and large scale.</p>	<p>A functional approach was taken when developing the EWRs for the Marne-Saunders PWRA, based on environmental reaches, and the habitat, biological and ecosystem processes required to achieve the environmental objectives. Connectivity was also factored into the identification of ecologically important flow metrics (section 3.5).</p>

Table 2: 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	<p>The annual priorities are as outlined in the WAPs and EWR reports (see references).</p> <p>No additional annual priorities for environmental watering have been identified for the EMLR and MS.</p>	<p>MREFTP 2003 (Marne); Doeg and van der Wielen (2007) (Saunders); Van Laarhoven and van der Wielen (2009) (EMLR)</p> <p>Provisions outlined in: Chapter 3 (MS WAP); Chapters 2 and 4 (EMLR WAP)</p>
8.24 (1)	Identify priorities for watering priority assets and functions	Addressed by EWR projects and WAPs	<p>Environmental assets and ecosystem functions that are provided with environmental water through the WAP rules and limits have been identified as part of the environmental water requirements (EWR) projects carried out for the regions.</p> <p>No specific annual priorities for environmental 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.</p>	<p>EWR project reports: MREFTP 2003 (Marne); Doeg and van der Wielen (2007) (Saunders); Van Laarhoven and van der Wielen (2009) (EMLR)</p>

Section	Summary of requirement	Requirement met?	Assessment	References
8.24 (2)(a)	Identify assumptions that priorities are based on including expected holdings and characteristics of held environmental water	Not applicable	No held environmental water in either region. There may be potential for held environmental water 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 environmental water are set out in WAP principles. Planned environmental water is to be managed through implementation of the WAP and licensing system by the state government. The quantity of planned environmental water 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 4-8 (MS WAP); Chapters 5-7 (EMLR WAP)
8.24 (3)	Identify cooperative arrangements amongst holders or managers of environmental water and assets, and for delivery within and between water resource plan areas	Not applicable	<i>Within the water resource plan area</i> No active environmental watering or specific delivery of environmental water occurs within the regions or to connected regions, so there is limited scope for cooperative arrangements. There is no held environmental water in the regions. All planned environmental water is managed by a single entity (through implementation of the licensing system by DEW). There are no specific priority assets targeted – environmental water provisions apply equally across the regions. <i>Between water resource plan areas</i> There is no surface water connection between the EMLR WRP area and South Australian Murray Region WRP area. The surface water resources of the EMLR WRP area are connected to the surface water resources of the South Australian River Murray WRP area. Opportunities to coordinate environmental watering between the two areas are limited. The catchments of the EMLR WRP area flow to the lower River Murray and Lake Alexandrina, with the outflow from these catchments contributing approximately 0.5 per cent of the total annual runoff to the Murray-Darling Basin (CSIRO 2007). The timing and volume of environmental watering in the EMLR WRP area occurs in response to flow events as they occur, rather than being able to be managed or manipulated to achieve coordinated outcomes with environmental watering in the South Australian River Murray WRP area. Any flow reaching	Not applicable

Section	Summary of requirement	Requirement met?	Assessment	References
			Lake Alexandrina cannot be allocated and is considered PEW within the South Australia River Murray WRP area.	
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	Identification of environmental water provisions to all assets across the regions generally is consistent with the principles for identifying watering priorities as outlined in part 6 (where relevant) (section 8.538.59). This means that the annual environmental watering 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).	Water allocation plans and EWR reports
8.25 (2)	Matters to have regard to when determining priorities	Not applicable	There is no held environmental water in the area and no environmental watering schedules. The rules relating to planned environmental water are contained in the WAPs.	Not applicable
8.25 (4)	Holders of environmental water to provide information to basin states	Not applicable	No specific watering priorities and no held environmental water 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	No specific watering priorities. The State manages the planned environmental water through the WAPs and licensing system. Provision of planned environmental water is not actively managed – instead occurs through interaction between fixed taking rules and limits and climate of the year. So planned environmental water 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.	Not applicable
8.25 (6)	Annual watering priorities must be consistent with long-term watering plan	Not applicable	The long-term watering plan for the region was first completed in December 2017 then reviewed and updated in 2020. The environmental watering priorities are essentially the same as the content of the long-term watering plan for the region.	Not applicable
8.26	Provision of annual watering priorities to MDBA by 31 May	Yes	Environmental watering provisions are made across the region via consistent water-taking rules and limits.	Water allocation plans and EWR reports

References

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- 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.
- South Australian Murray-Darling Basin Natural Resources Management Board. (2019a). *Water Allocation Plan for the Marne Saunders Prescribed Water Resources Area*. Adelaide: Government of South Australia.
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