

# 2019-20 Annual Environmental Watering Priorities for the South Australian Eastern Mount Lofty Ranges Water Resource Plan Area

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*The information contained in this document is prepared for the purpose of complying with South Australia's obligations in respect to submitting annual environmental watering priorities for the Eastern Mount Lofty Ranges Water Resource Plan Area, in accordance with Chapter 8 of the Basin Plan (Environmental watering plan).*

## 1. Summary

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.

## 2. Introduction

The preparation of annual environmental watering priorities (the priorities) for the surface water in the Eastern Mount Lofty Ranges Water Resource Plan (EMLR WRP) area occurs annually in accordance with the Basin Plan, Chapter 8, Division 4. Chapter 8 - Environmental Watering Plan, requires Basin States to identify the priorities for surface water in each water resource plan area for the upcoming water accounting period.

In the Basin Plan, it is stated (Chapter 8, section 8.24, p65) that:

*“The level of detail in annual watering priorities may vary according to local conditions, and statutory and other arrangements prevailing in the water resource plan area”.*

Under the Basin Plan, the EMLR WRP area includes two surface water Sustainable Diversion Limit (SDL) sub-areas:

- Marne-Saunders (SS12); and
- Eastern Mount Lofty Ranges (SS13).

Both sub-areas include prescribed water resources for environmental, social and economic outcomes. For prescribed water resources a water licensing and allocation system applies and water management, allocations and transfers are governed by a water allocation plan (WAP).

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 through the use of held environmental water.

### **3. 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 VanLaarhoven 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.

#### **4. Identification of priorities**

Table 1 represents the results of an assessment by DEW (undertaken in April 2013) 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 Water Resource Plan Area**

Section	Summary of requirement	Req. Met?	Assessment of annual priorities for EMLR WRP area	References
8.23	Identify annual environmental watering priorities for surface water in each WRP area	Addressed by EWR projects and WAPs	<p>The annual environmental watering 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)</p> <p>Doeg and van der Wielen (2007) (Saunders)</p> <p>VanLaarhoven and van der Wielen (2009) (EMLR)</p> <p>Provisions outlined in:</p> <ul style="list-style-type: none"> <li>• Chapter 4 (MS WAP)</li> <li>• Chapters 2 and 4 (EMLR WAP)</li> </ul>

Section	Summary of requirement	Req. Met?	Assessment of annual priorities for EMLR WRP area	References
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>As indicated above 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>See Table 2 for sections in relevant plans that identify assets. This table has been taken from the LTWP.</p>	<p>EWR project reports:</p> <p>MREFTP 2003 (Marne)</p> <p>Doeg and van der Wielen (2007) (Saunders)</p> <p>VanLaarhoven and van der Wielen (2009) (EMLR)</p>
8.24 (2)(a)	Identify assumptions that priorities are based on, including expected holdings and characteristics of held environmental water	n.a.	<p>No held environmental water in either region.</p> <p>There may be potential for held environmental water in the EMLR in the future.</p>	n.a.

Section	Summary of requirement	Req. Met?	Assessment of annual priorities for EMLR WRP area	References
8.24 (2)(b)	Identify assumptions that priorities are based on, including expected quantities of planned environmental water, and associated rules, and who manages	yes	<p>The rules for planned environmental water are set out in WAP principles.</p> <p>Planned environmental water is to be managed through implementation of the WAP and licensing system by the state government.</p> <p>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.</p>	<p>Water taking rules and limits given in:</p> <p>Chapters 6-8 (MS WAP)</p> <p>Chapters 5-7 (EMLR WAP)</p>
8.24 (3)	Identify cooperative arrangements amongst holders or managers of environmental water and assets	n.a.	<p>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 currently no held environmental water in the regions.</p> <p>All planned environmental water 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>	n.a.
8.24 (4)	Priorities may include a specified instrument or text as part of the priorities	yes	The EWR reports and the WAPs are referenced for the purpose of meeting this requirement.	As above

Section	Summary of requirement	Req. Met?	Assessment of annual priorities for EMLR WRP area	References
8.25 (1)	Must apply principles and methods in part 6 to identify annual priorities	n.a.	<p>The 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 8.53-8.59).</p> <p>This means that the annual environmental watering priorities are outlined in the water allocation plans and EWR reports (see references). That is, 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	n.a.	<p>There is no held environmental water in the area and no environmental watering schedules.</p> <p>As per 8.24 (2)(b), the rules relating to planned environmental water are contained in the WAPs.</p>	n.a.
8.25 (4)	Holders of environmental water to provide information to basin states	n.a.	No specific watering priorities (as per 8.23), and no held environmental water in the region.	n.a.

Section	Summary of requirement	Req. Met?	Assessment of annual priorities for EMLR WRP area	References
8.25 (5)	Holders of environmental water to provide information to basin states, including use of water in other water resource plan areas	n.a.	<p>No specific watering priorities (as per 8.23).</p> <p>State manages the planned environmental water through the WAPs and licensing system.</p> <p>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.</p>	n.a.
8.25 (6)	Annual watering priorities must be consistent with long-term watering plan	n.a.	<p>The long-term watering plan for the region was completed in December 2017.</p> <p>The environmental watering priorities are essentially the same as the content of the long-term watering plan for the regions.</p>	n.a.
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.	As above



**Table 2: Relevant sections in WAPs that identify priority assets and ecosystem functions. This table has been taken from the LTWP, with updates to reflect the 2019 revisions of the EMLR and Marne Saunders WAPs.**

Basin Plan content requirement	Relevant EMLR WAP section	Relevant Marne Saunders WAP section
<b>8.19 (1) (a) Identify priority<sup>1</sup> environmental assets</b>	<p>Refer to surface water catchments (p22). For the purposes of the LTWP it is recommended that catchments are grouped based on similarities in biology and climate. The resulting priority environmental assets are:</p> <ul style="list-style-type: none"> <li>• Angas River</li> <li>• Bremer River</li> <li>• Finnis River</li> <li>• Reedy Creek</li> <li>• Tookayerta Creek</li> <li>• Central Lowlands Group (Angas Plains; Ferries-McDonald; Sandergrrove Plains)</li> <li>• Southern Group (Currency and Deep Creek)</li> <li>• Northern Group (Bees Knees, Long Gully, Milendella Creek, Preamimma Creek, Long Gully Creek and Salt Creek)</li> </ul>	<p>Refer to surface water catchments (p13). For the purposes of the LTWP and consistency with the EMLR PWRA, catchments are used to represent the priority environmental assets, which are:</p> <ul style="list-style-type: none"> <li>• Marne River</li> <li>• Saunders Creek</li> </ul>
<b>8.19 (2) (a) Identify priority<sup>2</sup> ecosystem functions</b>	<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</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</p>

<sup>1</sup> The use of the term **priority** environmental asset in the LTWP is consistent with the meaning provided in Section 8.49 of the Basin Plan as 'an environmental asset that can be managed with environmental water'

<sup>2</sup> The use of the term **priority** ecosystem function in the LTWP is consistent with the meaning provided in Section 8.50 of the Basin Plan as 'an ecosystem function that can be managed with environmental water'

include connectivity needs at the local, medium and large scale (p75).

was also factored into the identification of ecologically important flow metrics (p54).

## References

Department of Environment, Water and Natural Resources (2017), *Long Term Environmental Watering Plan for the Eastern Mount Lofty Ranges Water Resource Planning Area*, Available at:

<http://www.environment.sa.gov.au/topics/river-murray/improving-river-health/environmental-water/environmental-water-planning>

Marne Saunders (MS) water allocation plan (WAP) and Eastern Mount Lofty Ranges (EMLR) WAP available through the 'Water allocation plans' section of the 'Water' page on the Natural Resources SAMDB website at <http://www.naturalresources.sa.gov.au/samurraydarlingbasin/home> .

Environmental water requirements reports:

Doeg, T. and van der Wielen, M. (2007), *Environmental water requirements of Saunders Creek*, South Australia, unpublished report to the SAMDB NRM Board, Adelaide.

Marne River Environmental Flows Technical Panel (2003), *Environmental water requirements of the ephemeral Marne River system*, South Australia, River Murray Catchment Water Management Board, Adelaide.

VanLaarhoven, J. and van der Wielen, M. (2009), *Environmental water requirements for the Mount Lofty Ranges prescribed water resource areas*, Report DWLBC 2009/29, DWLBC and SAMDB NRM Board, Adelaide.