Long-term environmental watering plan for the Eastern Mount Lofty Ranges Water Resource Plan Area

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Acknowledgement of Country

Aboriginal people are the First Peoples and Nations of South Australia. The lands, waters, and sky of the Eastern Mount Lofty Ranges region have supported diverse and unique Aboriginal cultures since time immemorial.

We acknowledge and respect the Traditional Custodians of these lands and waters, and pay our respects to their Elders past and present. We recognise their deep and ongoing spiritual, cultural, social, and economic connections to Country, and the responsibilities to care for.

Aboriginal peoples continue to practise their lore, maintain cultural heritage, and share their knowledge and languages, which remain of vital importance to the health of Country today.

This plan supports meaningful and equitable engagement with First Nations peoples and respects their rights, interests, and obligations in the management of land and water across the Eastern Mount Lofty Ranges region.

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1 Introduction

This long-term environmental watering plan (LTWP) has been developed for the Eastern Mount Lofty Ranges (EMLR) Water Resource Plan (WRP) Area in accordance with the environmental management framework within the Basin Plan. The first LTWP plan for the EMLR was produced in July 2017 and was updated in 2020, following the accreditation and adoption of the EMLR Water Resource Plan (Department for Environment and Water, 2019). The 2025 update is a result of publication of the revised Basin-Wide Environmental Watering Strategy (BWS), triggering a subsequent update of the LTWP.

The EMLR WRP Area is located in close proximity to Adelaide and is an important agricultural region, although there is a growing shift to urban development and the establishment of semi-rural lifestyle properties (South Australian Murray-Darling Basin Natural Resources Management Board, 2017). In recent years, there has been a focussed effort on water planning to address the impacts on water resources in the area, which include a drop in water levels, an increase of salinity of underground water, and reduced average annual stream flow due to capture in farm dams with attendant impacts on water dependent ecosystems. Policies have been developed that guide the sustainable management of the water resources and these sit within two water allocation plans (WAPs) for 1) Marne Saunders Prescribed Water Resources Area (PWRA) (South Australian Murray-Darling Basin Natural Resources Management Board, 2019a) and 2) the Eastern Mount Lofty Ranges PWRA (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b).

The WAPs were developed with a strong ecological basis (South Australian Murray-Darling Basin Natural Resources Management Board, 2012) and an internal review found that their content fulfils the requirements for LTWPs described in s8.19 of the Basin Plan. Therefore, the format of this LTWP is primarily a reference table that directs readers to the relevant sections of the WAPs that relate to each of the content requirements of the LTWP. This approach is supported by s8.19 (8) of the Basin Plan, which states that a LTWP 'may provide that a specified instrument or text, or specified part of an instrument or text, is part of the plan'.

Since the development of the 2017 LTWP, South Australian (SA) legislation has changed from the *Natural Resources Management Act 2004* (NRM Act) to the *Landscape South Australia Act 2019* (the Landscape Act), which came into effect on 1 July 2020. The change of legislation alters the boundaries used for water planning purposes and the management Boards overseeing the planning. However, the boundaries of the prescribed water resources and the associated WAPs remain unchanged. The change of legislation does not change the water resource management controls currently in place and as such, there is no impact on the priority ecological assets or functions.

2 Context

2.1 Planning area

The EMLR WRP Area is defined in Chapter 3 of the Basin Plan and applies to the surface water and groundwater resources in the area. The EMLR WRP Area covers both the EMLR Prescribed Water Resource Area (PWRA) and the Marne Saunders PWRA (Figure 2.1).

The EMLR PWRA is located approximately 50 km east of Adelaide and occupies an area of 2,845 km^2 (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b). The Marne-Saunders PWRA shares the northern boundary of the EMLR PWRA and covers an area of 743 km^2 (South Australian Murray-Darling Basin Natural Resources Management Board, 2019a).

The spatial extents and physical characteristics of the EMLR PWRA and the Marne-Saunders PWRA are well described in their respective WAPs. These two PWRAs share several key characteristics as follows:

- Their catchments can be distinguished into two parts, the hills zone (where the rainfall is relatively high) and the plains zone.
- A number of different aquifers containing underground water lie under the area, with fractured rock aquifers found in the hills zone and sedimentary aquifers in the plains zone.
- Most of the catchments have watercourses that drain into the River Murray or Lake Alexandrina, which are both part of the SA River Murray WRP Area (SA River Murray WRP Area). However, inflows to the SA River Murray WRP Area from the EMLR WRP Area are relatively small, with the EMLR and Marne Saunders PWRAs estimated to contribute only 0.5% of the total annual runoff to the Murray-Darling Basin (Commonwealth Scientific and Industrial Research Organisation, 2007 cited in South Australian Murray-Darling Basin Natural Resources Management Board, 2019b).

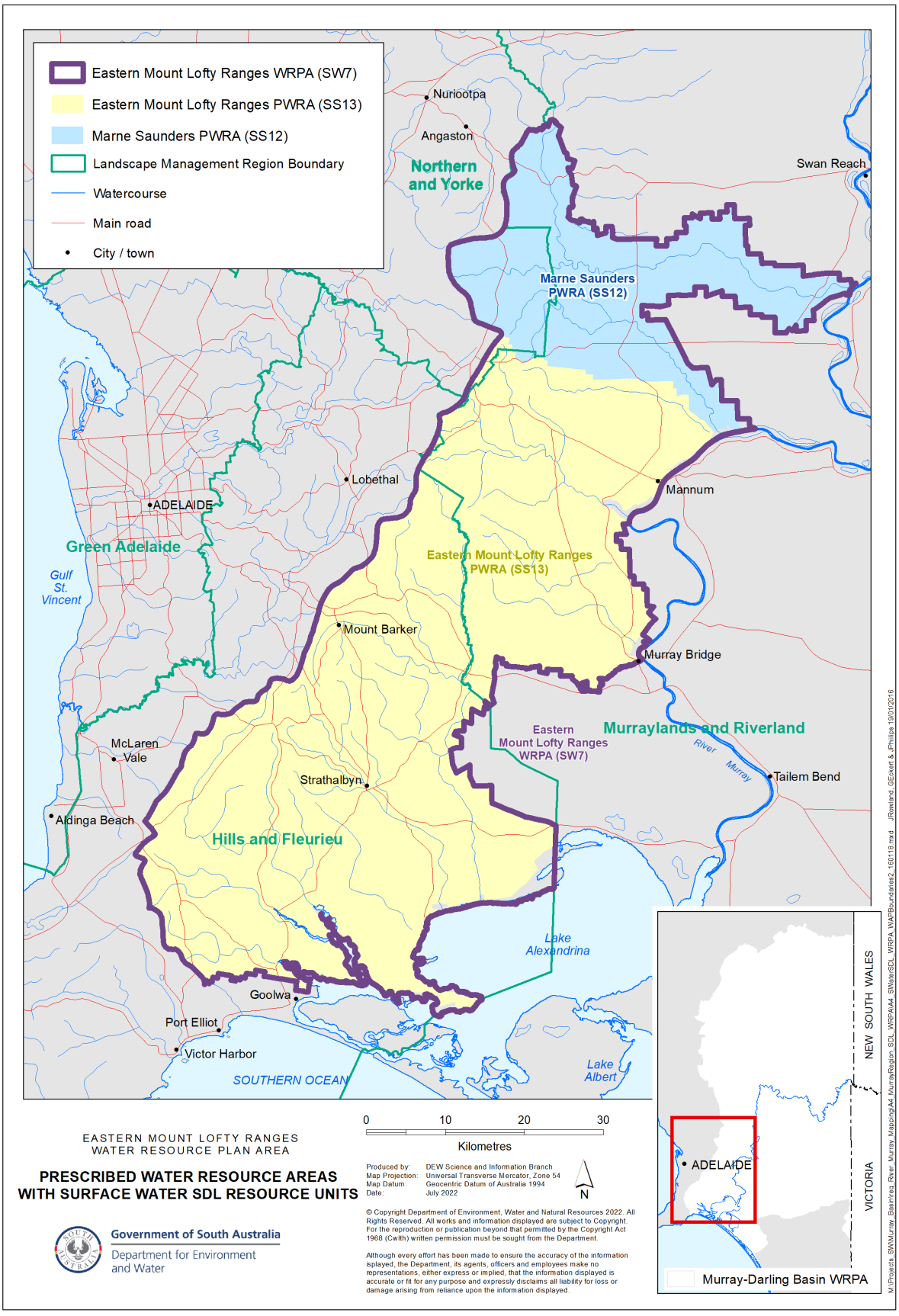

Figure 2.1. The Eastern Mount Lofty Ranges (EMLR) Water Resource Plan Area overlaid with the EMLR and the Marne Saunders Prescribed Water Resources Areas

2.2 Planning frameworks

2.2.1 State water planning framework

The EMLR WRP Area consists of two PWRA, the EMLR PWRA and the Marne-Saunders PWRA. In SA, important water resources are protected and managed by being 'prescribed'. The surface water, watercourses and wells in the EMLR and Marne-Saunders areas were prescribed under the former NRM Act due to the level of water resource development, and WAPs were developed for each of these areas. A WAP is a legal document that sets out the rules for managing the take and use of prescribed water resources to ensure resource sustainability and security for all water users while taking into consideration the needs of the environment and the community (Government of South Australia, 2020).

The WAP for the Marne-Saunders PWRA was adopted in January 2010 and amended in 2019, and the WAP for the EMLR PWRA was adopted in December 2013 and amended in 2019. These WAPs cover surface water, watercourses and underground water resources of the PWRAs. The WAPs set out the rules that guide water allocations, water transfers and water affecting activities such as dam construction and well drilling in the area, as well as ongoing management of allocations (e.g. carryover), and broad monitoring and evaluation.

The water allocation planning process and the associated existing user processes were underpinned by the same water taking limits and requirement to return low flows, which were informed by the same work used to determine environmental water requirements (EWRs) and provisions (EWPs). This LTWP refers to the EWRs as set out in the WAPs.

2.2.2 Murray-Darling Basin planning

The Basin Plan states that a WRP must be prepared having regard to the most recent version of the long-term watering plan prepared in accordance with the requirements of Chapter 8. A WRP sets out how a water resource may be used. The water resource plan must provide for environmental watering to occur in a way that is consistent with the Basin Plan environmental watering plan (Chapter 8) and the BWS.

2.3 Planning timeframe

The first version of the EMLR LTWP was released in July 2017 with an indicative timeframe of five years for revision or until a subsequent LTWP is released.

The Basin Plan outlines certain triggers for the review and updating of a LTWP, including the accreditation, amendment or adoption of the WRP for the water resource plan area, or published updates to the BWS that materially affect the LTWP. A WRP for the EMLR WRP Area was accredited on 13 November 2019 and triggered a review and update of the EMLR LTWP. This subsequent update is the result of published updates to the BWS in June 2025. The State may also choose to revise and update the EMLR LTWP at any time.

2.4 Consistency with preparation requirements

The Basin Plan describes requirements for the preparation of long-term watering plans (s8.20), which include:

- consultation requirements
- having regard to the Murray-Darling Basin Authority's BWS
- consistency with the 11 principles to be applied in environmental watering (Basin Plan Division 6)
- to not be inconsistent with relevant international agreements.

The section below briefly describes how the development of the EMLR and Marne-Saunders WAPs align with preparation requirements.

2.4.1 Consultation

Consultation requirements for the LTWP have been met as part of wider engagement undertaken during the development and review of the water planning framework for the region, including for the WAP, WAACP, WRP and Landscape (formerly NRM) Plans.

Significant consultation was undertaken during the development of the EMLR and Marne-Saunders WAPs, including meeting statutory requirements to consult on draft WAPs under Section 79 of the former NRM Act which was the statutory framework at the time. Consultation reports are available that document the consultation processes and responses (South Australian Murray-Darling Basin Natural Resources Management Board, 2012), and the subsequent amendments to the draft EMLR and Marne-Saunders WAPs (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b), (South Australian Murray-Darling Basin Natural Resources Management Board, 2019a).

There were multiple rounds of consultation throughout the development of the WAPs, which involved:

- the establishment and use of water resources planning advisory committees consisting of community representatives
- advertising in local papers
- community meetings with information and discussion sessions
- distribution of discussion papers
- distribution of complete drafts of the WAPs for comment

Stakeholders engaged during the development of the WAPs included industry groups and other water users, environmental groups, local councils, and the broader community. Additional consultation occurred with relevant stakeholders when the WAPs were amended to align with Basin Plan requirements and when the Water Resource Plan was prepared (Department for Environment and Water, 2019). This included significant consultation and engagement activities with Aboriginal Nations.

In addition to the above, and noting that there is no held environmental water or river operators for the Eastern Mount Lofty Ranges Water Resource Plan area, there has been consultation specific to this LTWP with the Department for Environment and Water (DEW) staff, relevant Lansdscape Board staff (Hills and Fleurieu, Northern and Yorke and Murraylands and Riverland) – as managers of PEW, the Landscape Boards of SA's Chairs forum and Murraylands and Riverland Landscape Board Water Advisory Committee – as persons materially affected by the management of environmental water and members of local communities.

2.4.2 Basin-Wide Environmental Watering Strategy

The first BWS was published by the Murray-Darling Basin Authority (MDBA) in 2014 and updated in 2019 and 2025. Its development was a specific requirement of the Basin Plan (s8.13). The purpose of the BWS is to assist environmental water holders and managers to plan and manage environmental watering at the Basin scale. The BWS identifies expected environmental outcomes for four ecological components or 'themes': river flows and connectivity; native vegetation; waterbirds and native fish (Murray-Darling Basin Authority, 2014), (Murray-Darling Basin Authority, 2019), (Murray-Darling Basin Authority, 2025).

As well as having regard to the BWS during preparation, LTWPs must also be consistent with any particular assets or functions, and their requirements, identified within the BWS. Sites considered important for supporting vegetation, waterbirds and fish at the Basin-scale are identified in appendices of the BWS (Murray-Darling Basin Authority, 2025). The EMLR Region is listed once in the BWS as documented in Table 2.1 below.

The waterbird expected outcomes described in the BWS relate to the Coorong, Lower Lakes and Murray Mouth (CLLMM). This asset is covered in the LTWP for the SA River Murray Water Resource Plan Area.

The vegetation expected outcome in the BWS aligns with ecological objectives for vegetation described in Table 5 of the Marne-Saunders WAP. The EWRs in the EMLR WAP incorporate the requirements of floodplain vegetation although there is no specific ecological target for vegetation. The information in the WAPs satisfies the Basin Plan requirements.

The expected outcomes for fish in the BWS align with ecological objectives for fish described in Table 6 of the Marne-Saunders WAP. The EWRs in the EMLR WAP incorporate the requirements of fish species and environmental water provision objectives for fish are described. The information in the WAPs satisfies the Basin Plan requirements.

Table 2.1. Summary of expected outcomes in the BWS relating to the EMLR WRP Area

Theme	Region / WRPA	Asset	Expected outcome
Vegetation	Eastern Mount Lofty Ranges	–	Maintain extent and condition of water-dependent vegetation near river channels (<100 ha river red gum and <100 ha black box); and Closely fringing non-woody water-dependent vegetation or occurring within river channels; and Important wetland areas such as the Fleurieu swamps.
Fish	Basin Wide	-	No loss of native fish species currently present within the Basin Increased movement of key fish species.

In aligning with the BWS requirement to strengthen the involvement and agency of First Nations in environmental planning, ongoing engagement with Aboriginal nations regarding country-based planning and other approaches to ensure that Aboriginal objectives and outcomes are identified, is undertaken as part of the ongoing development and implementation of water planning activities. Table 3.1 identifies relevant sections of WAPs that outline the Aboriginal objectives and outcomes that inform environmental water planning in the Eastern Mount Lofty Ranges Water Resources Plan area. South Australia will continue to engage meaningfully with Aboriginal Nations at all levels of water resource planning and in the development, review and amendment of environmental water planning instruments and priorities.

2.4.3 Division 6 principles

The Basin Plan sets out eleven principles to be applied in environmental watering (Appendix B) and requires Basin States to have regard to consistency with the principles when developing LTWPs. The preparation and content of the EMLR and Marne-Saunders WAPs are considered to be consistent with the principles where applicable (Principles 2, 3, 4, 6, 7, 8 and 11). Some principles are not relevant to the region as there is no active delivery of environmental water to specific areas.

2.4.4 International agreements

The Basin Plan requires that a LTWP must not be inconsistent with relevant international agreements (s8.20 (5)), which include the Ramsar Convention, the Bonn Convention, Japan-Australia Migratory Bird Agreement (JAMBA),

China-Australia Migratory Bird Agreement (CAMBA) and Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

The confluences of the Finniss River and Currency Creek with Lake Alexandrina are part of the internationally listed Coorong and Lakes Alexandrina and Albert Ramsar wetland (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b).

Recordings of migratory bird species in the CLLMM region are generally from areas that are immediately adjacent to the Coorong and Lakes Alexandrina and Albert Ramsar wetland. Due to their proximity to this Ramsar wetland, the water-dependent ecosystems within the EMLR WRP Area are unlikely to be the key habitats supporting migratory bird species.

The requirements for the Coorong and Lakes Alexandrina and Albert Ramsar wetland and for waterbirds listed under international agreements are considered to be supported through the LTWP for the SA River Murray WRP Area.

2.5 Environmental water availability and management

The Basin Plan defines ***priority*** environmental assets and ***priority*** ecosystem functions as environmental assets and ecosystem functions that can be managed with environmental water (s8.49 and s8.50). It is therefore important to understand the availability of environmental water in the EMLR PWRA.

2.5.1 Types of environmental water

Environmental water consists of both 'held' and 'planned' environmental water, where:

- held environmental water (HEW) is water available under a water access right or held on a water licence for the purposes of achieving environmental outcomes (*Water Act 2007 s4*)
- planned environmental water (PEW) is water that is committed or preserved for achieving environmental outcomes through a plan or legislation and cannot be used for any other purpose (*Water Act 2007* s6).

The full definitions for HEW and PEW, per the *Water Act 2007*, are provided in Appendix A.

2.5.2 Environmental water holders in the EMLR WRP Area

Currently there is no HEW or environmental water holders within or relevant to the EMLR WRP Area.

There are principles within the EMLR and the Marne-Saunders WAPs that allow for a water licence to be endorsed with a water allocation specifically for the purpose of supporting water-dependent ecosystems. In the Marne Saunders WAP these are called allocations for water-dependent ecosystem use (Principle 5 (f)) and in the EMLR WAP they are called ecosystem allocations (Principles 9 and 14). These principles provide a mechanism for establishing HEW. However, at the time of writing this LTWP, no water licences had been endorsed with these types of allocation and there are no immediate plans to do so. Furthermore, due to the limited hydrological connectivity between the EMLR WRP Area and other Southern Connected Basin WRP Areas, it is not possible to trade held environmental water into the EMLR WRP Area.

2.5.3 Managers of planned environmental water in the EMLR WRP Area

The Marne-Saunders and EMLR WAPs include a range of water allocation objectives including an objective to 'maintain and where possible rehabilitate/restore water-dependent ecosystems by providing their water needs'. The WAPs establish a policy framework for achieving the allocation objectives, including principles that apply to the allocation of water. PEW is established through principles and rules that limit the take or consumptive use of water, and this supports the needs of water-dependent ecosystems. These principles and rules include the setting

of consumptive use limits for management zones, requirement to return low flows and the protection of baseflows[1].

The policy frameworks providing for PEW apply across the entire prescribed areas. Hence PEW and management of priority environmental assets and functions occurs throughout the WRPA.

A summary of PEW and HEW arrangements in the EMLR WRP area is provided in the EMLR WRP (Department for Environment and Water, 2019) sections 2.5.6.1 – 2.5.6.4, with more information on the 'securing low flows' program in the EMLR WRP section 10.43 (1).

The provisions that give rise to PEW in the EMLR WRPA are provided in Table 9 of the EMLR WRP. It is important to note that implementation of the DEW securing low flows program (referred to as the Flows for the Future program) is essential to allow these provisions to be fulfilled. Further information about this program is available at Department for Environment and Water - Flows for the Future.

Additional information on PEW is provided in EMLR WAP sections 2.4 and 4, and Marne Saunders WAP section 4.3.

The availability of PEW in the EMLR WRP Area is largely determined by climate conditions. There is limited capacity to actively manage PEW as there are no large-scale reservoirs that can be used to store and regulate water supply throughout the region. Protection and delivery of PEW is achieved through the implementation of the policy framework of the WAPs, including:

The issuing of water licences and the endorsement of these licences with a water allocation volume that may be taken and used in a water use year by the Department for Environment and Water (DEW)

Management of water use and take in accordance with the WAP principles, licence conditions and allocated volumes by water users

Water use monitoring and annual reporting by licensees and permit holders to the Hills and Fleurieu, Murraylands and Riverland Landscape Boards and DEW.

On this basis, DEW, the Hills and Fleurieu and Murraylands and Riverland Landscape Boards and water users can all be considered managers of PEW in the EMLR WRP Area.

2.5.4 Environmental site managers

There are numerous stakeholders that manage localised environmental sites within the EMLR WRP Area, including:

- Private landholders
- Councils
- Non-government organisations
- Forestry SA
- SA Department of Transport and Infrastructure (Planning and Land Use Services)
- SA Department for Environment and Water

Management activities include the protection of species and habitat listed under the *Environment Protection and Biodiversity and Conservation Act 1999* (EPBC-listed) including Fleurieu Swamps, the Mount Lofty Ranges southern

[1] In the EMLR and Marne-Saunders WAPs, baseflow is defined as water in a stream that results from underground water discharge to the stream. This discharge often maintains flows during seasonal dry periods and has important ecological functions.

emu wren population and habitat, and various permanent pools and springs throughout the region that provide critical refuges over the summer months for water-dependent species.

Water users undertaking flood irrigation play an important role in supporting the red gum swamps on the Angas and Bremer Plains, with the associated water diversion for flood irrigation being the primary mechanism by which the red gum swamps receive water (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b).

Photo: Red browed firetail by Martin Stokes

3 Meeting the Basin Plan LTWP content requirements

The Basin Plan describes specific content requirements for long-term environmental watering plans (s8.19), including:

- Identification of environmental watering requirements
- Identification of possible co-operative arrangements
- Identification of long-term risks
- Operational constraints

These requirements were cross-checked against the content of the EMLR WAP and the Marne-Saunders WAP. Both WAPs were developed with a strong ecological basis and the information contained within are considered to fulfil the content requirements for LTWPs.

Table 3.1 below identifies the relevant sections of the EMLR WAP and Marne-Saunders WAP that contain information directly relevant to these content requirements. This approach is consistent with s8.19 (8) of the Basin Plan, which states that a LTWP 'may provide that a specified instrument or text, or specified part of an instrument or text, is part of the plan'.

Reference to WAP content relating to Aboriginal values has also been provided in recognition of their importance, the strong alignment to ecological objectives and targets, and the ongoing endeavour to incorporate these values into environmental water planning and delivery where possible.

3.1 Identification of environmental assets

This section summarises the supporting evidence for environmental assets meeting one or more of the assessment indicators for the Schedule 8 criteria for identifying an environmental asset.

The primary criterion that is met by environmental assets listed in Table 2 in the EMLR WRP Area is *Criterion 3: The water-dependent ecosystem provides vital habitat*. Permanent and semi-permanent pools are present in each of the environmental assets and these provide critical refuge habitat for aquatic organisms during periods of low or no flow. Other areas in the assets provide important pathways for faunal movement between pools, enabling local dispersal and recolonisation during periods of higher flows or freshes. Information relating to refugia and dispersal pathways is provided in the reach descriptions in Section 3.2 of the Marne-Saunders WAP and Section 2.2.1.5 of the EMLR WAP.

In addition:

- A portion of a declared Ramsar wetland and species listed under international agreements occur in the EMLR WRP Area (Criterion 1). Further information is provided in Section 3.4 of this document.
- The area supports an EPBC-listed threatened ecological community and EPBC-listed threatened species (Criterion 4), including three nationally vulnerable fish species (South Australian Murray-Darling Basin Natural Resources Management Board, 2019b).

Table 3.1. Alignment of EMLR WAP and Marne-Saunders WAP content with content requirements for long-term environmental watering plans (Basin Plan s8.19)

	Basin Plan content requirement	Relevant EMLR WAP information	Relevant Marne Saunders WAP information
Identification of environmental watering requirements	8.19 (1) (a) Identify priority[2] environmental assets	Refer to surface water catchments (section 1.5.1). Catchments are grouped based on similarities in biology and climate, based on this grouping the priority environmental assets are: • Angas River • Bremer River • Finniss River • Reedy Creek • Tookayerta Creek • Central Lowlands Group (Angas Plains; Ferries-McDonald; Sandergrove Plains) • Southern Group (Currency and Deep Creek) • Northern Group (Bees Knees, Long Gully, Milendella Creek, Preamimma Creek, Long Gully Creek and Salt Creek)	Refer to surface water catchments (section 2.3.1). Catchments are used to represent the priority environmental assets, which are: • Marne River • Saunders Creek
	8.19 (1) (b) Identify **ecological objectives and targets** for those assets	Ecological objectives – refer to the regional environmental water provision objective Section 2.4.2 'to maintain water-dependent ecosystems at an acceptable level of risk for meeting the overall objective of maintaining/restoring self-sustaining populations of aquatic/riparian flora/fauna that are resilient to drought'. Ecological targets - refer to the fish and macroinvertebrate environmental water provision objectives (section 2.4.2.2) ' *better-than-marginal*	Ecological objectives - refer to environmental objectives in Section 3.4.1 Table 4). In total 18 environmental objectives relating to vegetation, fish and macroinvertebrates have been identified. Ecological targets Chapter 3 Needs of water dependent ecosystems. Section 4.3.2.1 Environmental water provisions for surface water and watercourse water, with the intention to 'provide an improvement in

[2] The use of the term ***priority*** environmental asset in this 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'

	Basin Plan content requirement	Relevant EMLR WAP information	Relevant Marne Saunders WAP information
		recruitment in ≥7 out of 10 years for southern pygmy perch and mountain galaxids' and '*moderate to good macroinvertebrate community condition*'.	the current environmental water regime and improve the likelihood of achieving the environmental objectives'.
	8.19 (1) (c) identify **EWRs** to meet those targets/objectives.	85% of the relevant metrics listed in the table in Appendix C[3] are passed in the majority of cases (section 2.2.1.6 and section 2.4.2.2).	Achieving a moderate or better level of environmental stress (equal to or less than a rating of 2 for Table 12) for all flow metrics.
	8.19 (2) (a) Identify priority[4] ecosystem **functions.**	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.	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).
	8.19 (2) (b) Identify **ecological objectives and targets** for those functions.	Captured in the priority environmental asset objectives and targets.	Captured in the priority environmental asset objectives and targets.
	8.19 (2) (c) identify **EWRs** to meet those targets/objectives.	Captured in the priority environmental asset EWRs.	Captured in the priority environmental asset EWRs.
	8.19 (3) Consistent with particular assets and functions identified in **BWS.**	Refer to Section 2.4.2 of this LTWP.	Refer to Section 2.4.2 of this LTWP.

[3] Refers to Appendix C within the EMLR WAP

[4] The use of the term priority ecosystem function in this 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'

	Basin Plan content requirement	Relevant EMLR WAP information	Relevant Marne Saunders WAP information
Identification of possible co-operative	8.19 (4) (a) Identify possible **co-operative arrangements** within the WRPA.	Section 3.3 Assessment of effect on Marne Saunders PWRA. Table 4.1 Major elements of the surface water and watercourse management framework); Section 4.4 Interactions between water resources in the Eastern Mount Lofty Ranges PWRA.	Section 5 Effects on other water resources; 4.3.2 Developing the surface water and watercourse water allocation limits and extraction rules; 4.3.3 Developing the underground water allocation limits and extraction rules.
	8.19 (4) (b) Identify possible **co-operative arrangements** with upstream/downstream WRPAs.	Section 3 Assessment of effect on other water resources.	Section 5 Effects on other water resources.
Identification of long-term risks	8.19 (5) (b) Identify **long-term risks** to providing for the EWRs of the assets/functions.	Section 1.6.3 Effects of climate variability and climate change on water resource capacity; Section 2.3 Capacity of the water resource to meet environmental water.	Section 4.3.1.1 Climate variability and change; Section 4.2.3 Impacts of current water resource development on water-dependent ecosystems.
	8.19 (5) (b) Identify strategies to manage those risks.	Section 2.4.2.3 Determination of environmental water provisions; Section 4 The water management framework for the plan; Section 8 Monitoring, evaluation, reporting and improvement.	Section 4.3 A new water management framework; Section 9 Monitoring.
Operational constraints	8.19 (6) (a) Identify any **operational constraints** to e-watering.	Reduced flow has the potential to reduce water availability to downstream users and the environment (Section 4.2.2).	Section 4.2.3 Impacts of current water resource development on Water Dependant ecosystems.
	8.19 (6) (b) Identify strategies to manage/overcome those constraints.	Bypassing low flows i.e. not capturing flows below a defined threshold flow rate (section 4.2.2).	Low flows at or below a threshold flow rate must be bypassed, returned or not captured by all licensed dams and other diversion structures, including those of existing users, as a key part of the environmental water provisions (Section 4.3.2.2).

	Basin Plan content requirement	Relevant EMLR WAP information	Relevant Marne Saunders WAP information
		Implementation of a program to return low flows[5]	Implementation of a program to return low flows while allowing users to capture higher flows[5]
Indigenous values	8.35 (b)(iv) Principle 3—Maximising environmental benefits Subject to the principles in sections 8.33 and 8.34, environmental watering is to be undertaken in a way that maximises its benefits and effectiveness by having regard to **Indigenous values.**	Section 1.3 Aboriginal water interests; Section 1.7.1 Aboriginal water needs See also EMLR Water Resource Plan Part 14 – Indigenous values and uses	Section 1.5 Aboriginal water interests; Section 4.1.1 Aboriginal water needs See also EMLR Water Resource Plan Part 14 – Indigenous values and uses
Social and economic outcomes	8.35 (b)(iv) Principle 3—Maximising environmental benefits. Subject to the principles in sections 8.33 and 8.34, environmental watering is to be undertaken in a way that maximises its benefits and effectiveness by having regard to **social and economic outcomes.**	See section 1.1.1 Approach and objectives. Note: there is no HEW or active delivery of environmental water in the EMLR PWRA. Consideration of social and economic outcomes is taken into account when determining the environmental water provisions and setting the WAP's sustainable extraction limits.	See section 1.1 Objectives of the Marne Saunders Water Allocation Plan. Note: there is no HEW or active delivery of environmental water in the Marne Saunders PWRA. Consideration of social and economic outcomes is taken into account when determining the environmental water provisions and setting the WAP's sustainable extraction limits.

[5] A program to secure low flows in the Mount Lofty Ranges has progressed significantly since the publication of the WAPs. Further information about this program is available at Department for Environment and Water - Flows for the Future

4 Reporting requirements

Schedule 12 of the Basin Plan lists four 'Matters' that relate to reporting against the implementation of the Environmental Watering Plan (Basin Plan Chapter 8), three of which South Australia is required to report on (Table 4.1). The MDBA and Commonwealth Environmental Water Holder (CEWH) are responsible for reporting against the fourth Matter (Matter 7 - the achievement of environmental outcomes at a Basin-scale) and information provided by the Basin States will contribute to Matter 7 reporting.

Annual reporting against Matters 9 and 10 is required each year by 31 October. Five-yearly reporting against Matter 8 is required, with the first report on 31 October 2020 and subsequent report due in 2025.

Additional reporting requirements (outside of Basin Plan Schedule 12) have not been presented in this LTWP. These requirements may include reporting to funding bodies that have supported investigations and works for environmental outcomes, broader natural resource management reporting and reporting on the implementation of the water allocation plan.

Table 4.1. Reporting requirements for Basin States relating to Basin Plan Chapter 8 Environmental Watering Plan

Item	Matter	Reporting frequency	Due
8	The achievement of environmental outcomes at an asset scale.	Five-yearly	31 October 2020
9	The identification of environmental water and the monitoring of its use.	Annual	31 October each year
10	The implementation of the environmental management framework (Part 4 of Chapter 8).	Annual	31 October each year

5 Appendices

A. Definitions of held and planned environmental water

The following definitions of held and planned environmental water are taken from Sections 4 and 6 of the *Water Act 2007*.

Held environmental water means water available under:

(a) a water access right; or

(b) a water delivery right; or

(c) an irrigation right;

for the purposes of achieving environmental outcomes (including water that is specified in a water access right to be for environmental use).

Planned environmental water

(1) For the purposes of this Act, planned environmental water is water that:

(a) is committed by:

(i) the Basin Plan or a water resource plan for a water resource plan area; or

(ii) a plan made under a State water management law; or

(iii) any other instrument made under a law of a State;

to either or both of the following purposes:

(iv) achieving environmental outcomes

(v) other environmental purposes that are specified in the plan or the instrument; and

(b) cannot, to the extent to which it is committed by that instrument to that purpose or those purposes, be taken or used for any other purpose.

(2) For the purposes of this Act, **planned environmental water** is water that:

(a) is preserved, by a law of a State or an instrument made under a law of a State, for the purposes of achieving environmental outcomes by any other means (for example, by means of the setting of water flow or pressure targets or establishing zones within which water may not be taken from a water resource); and

(b) cannot, to the extent to which it is preserved by that instrument for that purpose or those purposes, be taken or used for any other purpose.

(3) The water may be committed to, or preserved for, the purpose or purposes referred to in paragraph (1)(a) or (2)(a) either generally or only at specified times or in specified circumstances.

(4) Without limiting paragraph (1)(b) or (2)(b), the requirements of paragraph (1)(b) or (2)(b) are taken to have been met even if the water is taken or used for another purpose in emergency circumstances in accordance with:

(a) the instrument referred to in that paragraph; or

(b) the law under which the instrument is made; or

(c) another law.

B. Basin Plan Principles to be applied in environmental watering

(Taken from Basin Plan, Chapter 8, Division 6)

Principle 1—Basin annual environmental watering priorities

Environmental watering is to be undertaken having regard to the Basin annual environmental watering priorities.

Note: There may be reasons why it is not possible in particular circumstances to undertake watering in accordance with these priorities. Section 8.44 then applies.

Principle 2—Consistency with the objectives in Part 2

Environmental watering is to be undertaken consistently with the objectives in Part 2.

Principle 3—Maximising environmental benefits

Subject to the principles in sections 8.33 and 8.34, environmental watering is to be undertaken in a way that:

a) maximises multiple environmental benefits of environmental watering; and
b) maximises its benefits and effectiveness by:
    i) co-ordinating environmental watering between all holders of held environmental water and managers of planned environmental water; and
    ii) co-ordinating environmental watering with flows regulated for consumptive use; and
    iii) utilising local knowledge and experience; and
    iv) having regard to Indigenous values; and
    v) having regard to social and economic outcomes; and
    vi) enhances existing flow events, where possible, so as to ensure improvement in the delivery of a full range of flow conditions, including high flow events; and
    vii) takes into consideration the relative ecological benefits of applying environmental water to achieve one environmental outcome over another environmental outcome; and
    viii) takes into consideration the variability of the natural flow regime, for example, by mitigating or avoiding seasonal inversion of flows; and
    ix) incorporates strategies to deal with a variable and changing climate; and
    x) enables information to be shared between the Authority, the Commonwealth, Basin States, holders of held environmental water and managers of planned environmental water to ensure efficient and effective use of environmental water.

Principle 4—Risks

Environmental watering is to be undertaken having regard to:

(a) potential risks, including downstream risks, that may result from applying environmental water and measures that may be taken to minimise the risks; and

(b) risks arising from impediments to the delivery of water to water-dependent ecosystems, including risks of extraction of that water for other uses, and inadequate accounting of water flows.

Principle 5—Cost of environmental watering

Environmental watering is to be undertaken having regard to the quantity of water and other resources required relative to the expected environmental benefits.

Principle 6—Apply the precautionary principle

A lack of full scientific certainty as to whether there are threats of serious or irreversible environmental damage should not be used as a reason for postponing measures to prevent environmental degradation.

Principle 7—Working effectively with local communities

Environmental watering should be undertaken having regard to the views of:

(a) local communities, including bodies established by a Basin State that express community views in relation to environmental watering; and

(b) persons materially affected by the management of environmental water.

Principle 8—Adaptive management

Adaptive management should be applied in the planning, prioritisation and use of environmental water.

Note: See section 1.07 for the meaning of **adaptive management**.

Principle 9—Relevant international agreements

Environmental watering should be undertaken in a way that is not inconsistent with relevant international agreements.

Note: A purpose of the Basin Plan, including Chapter 8, is to give effect to relevant international agreements (see paragraph 20(a) and subsections 21(1), (2) and (3) of the Act). This provision is a further check to ensure that this purpose is achieved.

Principle 10—Other management and operational practices

River management and operational practices should be reviewed, and if necessary altered, to ensure that rivers can be managed to achieve multiple objectives, including the objectives in Part 2.

Principle 11—Management of water for consumptive use

Management of water for consumptive use should, where possible, be undertaken in a way that is consistent with achieving the objectives in Part 2.

6 Glossary

Basin State — Defined in the *Water Act 2007* to mean (a) New South Wales; (b) Victoria; (c) Queensland; (d) South Australia; (e) the Australian Capital Territory.

Bonn Convention — The Convention on the Conservation of Migratory Species of Wild Animals - an environmental treaty aimed at conserving terrestrial, aquatic and avian migratory species throughout their range.

BWS — Basin-Wide Environmental Watering Strategy – published by the Murray-Darling Basin Authority, a legislative requirement under Chapter 8 of the Basin Plan.

CAMBA — China-Australia Migratory Bird Agreement – a bilateral agreement to protect and conserve migratory birds and their habitat.

CEWH — Commonwealth Environmental Water Holder.

CLLMM — Coorong, Lower Lakes and Murray Mouth.

DEW — South Australian Department for Environment and Water.

Discharge — The volumetric flow rate of water i.e. volume of streamflow over a given time. In South Australia, this is often represented as ML/day.

EMLR — Eastern Mount Lofty Ranges.

EPBC listed — Listed as threatened under the *Environment Protection and Biodiversity and Conservation Act 1999*.

EWP — Environmental water provision - those parts of the environmental water requirements that can be met.

EWR — Environmental Water Requirement - the water regime needed to sustain the ecological values of aquatic ecosystems and biological diversity at a low level of risk.

HEW — Held Environmental Water – defined in Section 4 of the *Water Act 2007*.

HF — Hills and Fleurieu.

JAMBA — Japan-Australia Migratory Bird Agreement – a bilateral agreement to protect and conserve migratory birds and their habitat.

Landscape Act — *Landscape South Australia Act 2019*.

LTWP — Long-Term Environmental Watering Plan – a legislative requirement under Chapter 8 of the Basin Plan.

MDBA — Murray-Darling Basin Authority.

ML/day — Megalitres per day – a measure of flow or discharge, where a megalitre equals 1,000,000 litres.

MR — Murraylands and Riverland.

NY — Northern and Yorke.

PEA — Priority Environmental Asset – defined in s8.49 of the Basin Plan as an environmental asset that can be managed with environmental water.

PEF — Priority Environmental Function - defined in s8.50 of the Basin Plan as an ecosystem functions that can be managed with environmental water.

PEW — Planned Environmental Water – defined in Section 6 of the *Water Act 2007*.

PWRA — Prescribed water resource area.

ROKAMBA — Republic of Korea-Australia Migratory Bird Agreement – a bilateral agreement to protect and conserve migratory birds and their habitat.

SA River Murray WRP Area (also SARM) — South Australian River Murray Water Resource Plan Area – defined in Chapter 3 of the Basin Plan.

WAP — Water allocation plan.

WRP Area — Water Resource Plan Area – water planning units identified for the purpose of implementing the Basin Plan. The water resource plan areas are listed in Chapter 3 of the Basin Plan.

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