Long-Term Environmental Watering Plan for the Eastern Mount Lofty Ranges Water Resource Plan Area

Acknowledgement of the Traditional Owners

The Department of Environment, Water and Natural Resources acknowledges and pays respect to the Traditional owners, and their Nations, of the Murray-Darling Basin, who have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

Cover photo: Mount Lofty Ranges Southern Emu Wren by Martin Stokes

Contents

1 Introduction

This long-term environmental watering plan (LTWP) is the first such plan to be developed for the Eastern Mount Lofty Ranges Water Resource Plan Area (EMLR WRP Area) in accordance with the environmental management framework within the Basin Plan (MDBA, 2012).

The Eastern Mount Lofty Ranges 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 and an increase of salinity of underground water, and reduced average annual stream flow due to capture in farm dams (South Australian Murray-Darling Basin Natural Resources Management Board, 2013a). Policies have been developed that guide the sustainable management of the water resources and these sit within two water allocation plans (WAPs) (South Australian Murray-Darling Basin Natural Resources Management Board, 2010, 2013b).

The WAPs were developed with a strong ecological basis and a review (South Australian Murray-Darling Basin Natural Resources Management Board, 2012) 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'.

2 Context

2.1 State water planning framework

The Eastern Mount Lofty Ranges (EMLR) WRP Area consists of two prescribed water resource areas (PWRA), the EMLR PWRA and the Marne-Saunders PWRA. In South Australia, important water resources are protected and managed by being 'prescribed' under the South Australian *Natural Resources Management Act 2004* (NRM Act), which means that the water resource must be sustainably managed to provide security for all water users (Government of South Australia, 2014). Under the NRM Act, for each prescribed water resource, a WAP must be developed by the relevant regional Natural Resources Management Board. 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 must take into account the needs of the environment and the community (Government of South Australia, 2014).

Both the EMLR and Marne-Saunders areas have been prescribed under the State NRM Act due to the level of water resource development, and the WAPs have been developed by the South Australian Murray-Darling Basin Natural Resources Management Board (SAMDBNRM Board). The WAP for the Marne-Saunders PWRA was adopted in January 2010 and the WAP for the EMLR PWRA was adopted in December 2013. These WAPs cover both surface water and underground water resources of the PWRAs. The WAPs sets 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.

In addition, when an area is first prescribed, water allocations are granted to existing users through a separate process under the NRM Act (section 164N). Under the NRM Act, this process must recognise the reasonable requirements of existing users as well as the capacity of the resource and the needs of water-dependent ecosystems.

The water allocation planning and existing user processes are underpinned by the same water taking limits and requirement to return low flows, which are 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.

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 PWRA and the Marne Saunders PWRA (Figure 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, 2013b). 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, 2010).

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 South Australian River Murray Water Resource Plan Area (SA River Murray WRPA). 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, 2013b)).

2.2 Planning timeframe

The EMLR LTWP has an indicative timeframe of five years, covering the period July 2017 to June 2022, 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 water resource plan for the water resource plan area, or published updates to the Basin-Wide Environmental Watering Strategy (BWEWS) that materially affect the LTWP. It is anticipated that the first water resource plan for the EMLR WRP Area will be accredited in late 2018, triggering a need to review and update the EMLR LTWP. The State may also choose to revise and update the EMLR LTWP at any time.

2.3 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.

2.3.1 Types of environmental water

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

- held environmental water 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 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 held and planned environmental water, per the *Water Act 2007*, are provided in Appendix 1.

2.3.2 Environmental water holders in the EMLR WRP Area

Currently there is no held environmental water 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 (g)) and in the EMLR

WAP they are called ecosystem allocations (Principles 9 and 14). These principles provide a mechanism for establishing held environmental water. However, at the time of writing this LTWP, no water licences had been endorsed with these types of allocation and there were no immediate plans to do so. Furthermore, due to the limited hydrological connectivity between the EMLR WRP Area and other WRP Areas, it is not possible to trade held environmental water into the EMLR WRP Area.

2.3.3 Managers of planned environmental water in the EMLR WRP Area

The Marne-Saunders and EMLR WAPs include a series of water allocation objectives that reflect the role of the WAPs, 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. Planned environmental water is established through the range of principles that limit the take or consumptive use of water in order to support the needs of water-dependent ecosystems, including 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 planned environmental water apply across the entire prescribed areas. Hence managed planned environmental water, and therefore priority environmental assets and functions, are considered to occur throughout the WRPA.

The availability of planned environmental water in the EMLR WRP Area is largely determined by climate conditions. There is limited capacity to actively manage planned environmental water as there are no large-scale reservoirs that can be used to store and regulate water supply throughout the region. Protection and delivery of planned environmental water 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 of Environment, Water and Natural Resources (DEWNR)
- 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 SAMDBNRM Board

On this basis, DEWNR, the SAMDBNRM Board and water users can all be considered managers of planned environmental water in the EMLR WRP Area.

2.3.4 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
- Department of Planning, Transport and Infrastructure
- SA Department for Environment, Water and Natural Resources

Management activities include the protection of the EPBC-listed Fleurieu Swamps, the Mount Lofty Ranges southern 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, 2013b).

[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.

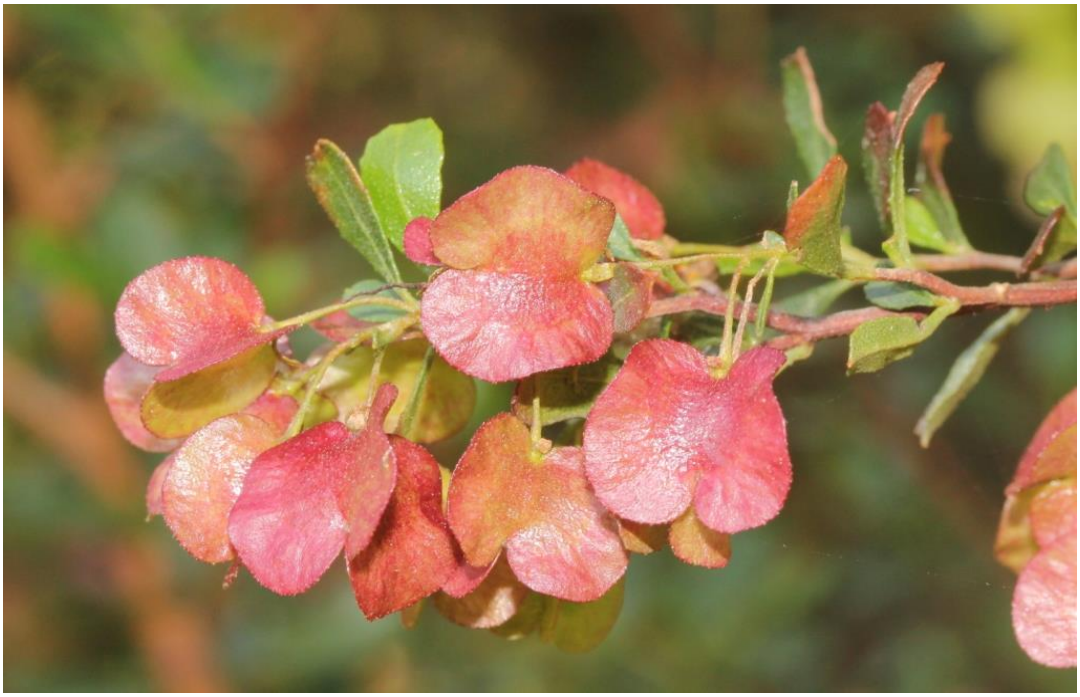

Photo: Sticky hop bush by Martin Stokes

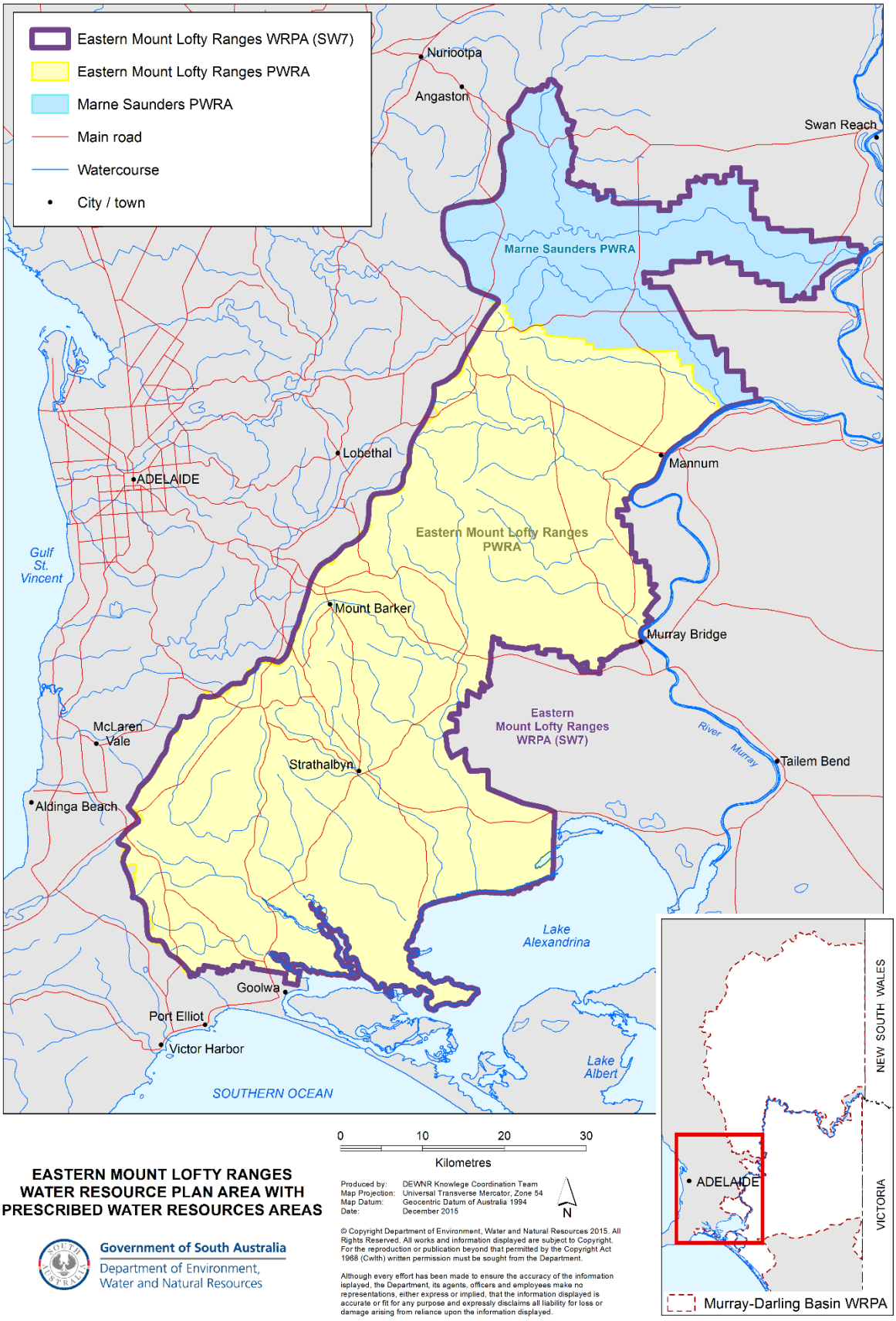

Figure 1. The Eastern Mount Lofty Ranges (EMLR) Water Resource Plan Area overlaid with the EMLR and the Marne Saunders Prescribed Water Resources Areas

3 Consistency with LTWP 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 BWEWS
- 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.

3.1 Consultation

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 *Natural Resources Management Act 2004*. Consultation reports are available that document the consultation processes and responses, and the subsequent amendments to the draft EMLR and Marne-Saunders WAPs (South Australian Murray-Darling Basin Natural Resources Management Board, 2012).

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.

3.2 Basin-Wide Environmental Watering Strategy

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

As well as having regard to the BWEWS during preparation, LTWPs must also be consistent with any particular assets or functions, and their requirements, identified within the BWEWS. Assets considered important for supporting vegetation, waterbirds and fish at the Basin-scale are identified in appendices of the BWEWS. The EMLR Region is listed twice in the BWEWS (Table 1).

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

The vegetation expected outcome aligns with ecological objectives for vegetation described in the Marne-Saunders WAP (Table 2), and the EWRs in the EMLR WAP incorporate the requirements of floodplain vegetation although there is no specific ecological target for vegetation.

Table 1. Summary of expected outcomes in the BWEWS 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)
Waterbirds	SA River Murray/ SA Murray Region/ Eastern Mount Lofty Ranges	Coorong, Lower Lakes and Murray Mouth	Total abundance and diversity; colonial waterbird breeding; shorebird abundance

3.3 Division 6 Principles

The Basin Plan sets out eleven principles to be applied in environmental watering (Appendix 2) and requires Basin States to have regard to consistency with the principles when developing long-term watering plans. The preparation and content of the EMLR and Marne-Saunders WAPs are considered to be consistent with the principles where applicable (see Table 2). However some principles are not relevant to the region as there is no active delivery of environmental water to specific areas.

3.4 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, 2013b).

Recordings of migratory bird species 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.

4 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 content 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 2 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'.

4.1 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 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 (pp23 - 26) and Section 2.2.1.5 of the EMLR WAP (pp53 - 56).

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, 2013b).

Table 2. 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 section	Relevant Marne Saunders WAP section
Identification of environmental watering requirements	8.19 (1) (a) Identify priority[2] environmental assets	Refer to surface water catchments (p13). 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: • 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 (p5). For the purposes of the LTWP and consistency with the EMLR PWRA, 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 objective – refer to the regional environmental water provision objective (p66) '*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 target - refer to the fish and macroinvertebrate environmental water provision objectives (p67) ' *better-than-marginal recruitment in ≥7 out of 10 years for southern pygmy perch and mountain galaxids*' and '*moderate to good macroinvertebrate community condition*'	Ecological objectives - refer to environmental objectives in Table 4 (pp32 - 33). In total 18 environmental objectives relating to vegetation, fish and macroinvertebrates have been identified Ecological target - refer Section 4.3.2.1 Environmental water provisions for surface water and watercourse water (p82), with the intention to '*provide an improvement in the current environmental water regime and improve the likelihood of achieving the environmental objectives*'

[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 section	Relevant Marne Saunders WAP section
	8.19 (1) (c) identify **EWRs** to meet those targets/objectives	85% of the relevant metrics listed in the table in Appendix C are passed in the majority of cases (section 2.2.1.6 (p57-59) and section 2.4.2.2 (p67-68))	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 (p82)
	8.19 (2) (a) Identify priority[3] ecosystem **functions**	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 (p203-221), and generic reach types (p46). The EWRs were also defined to include connectivity needs at the local, medium and large scale (p65).	A functional approach was taken when developing the EWRs for the Marne-Saunders PWRA, based on environmental reaches (pp23 - 26), and the habitat, biological and ecosystem processes required to achieve the environmental objectives (pp35 - 40). Connectivity was also factored into the identification of ecologically important flow metrics (p45).
	8.19 (2) (b) Identify **ecological objectives and targets** for those functions	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	
	8.19 (3) Consistent with particular assets and functions identified in **BWEWS**	Refer to Section 3.2 of this LTWP	

[3] 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 section	Relevant Marne Saunders WAP section
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 (p77); Table 4.1 Major elements of the surface water and watercourse management framework (pp86 - 88); Section 4.4 Interactions Between Water Resources In The Eastern Mount Lofty Ranges PWRA (p95)	Section 5 Effects on other water resources (pp90-91); 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 (pp76-80)	Section 5 Effects on other water resources (pp90-91)
Identification of long-term risks	8.19 (5) (b) Identify **long-term risks** to providing for the EWRs of the assets/functions	Section 1.5.3 Effects of climate variability and climate change on water resource capacity (p31); Section 2.3 Capacity Of The Water Resource To Meet Environmental Water (p60)	Section 4.3.1.1 Climate variability and change (p78); 4.2.3 Impacts of current water resource development on water-dependent ecosystems (pp62 - 75)
	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 (pp81 - 124); Section 8 Monitoring, Evaluation, Reporting and Improvement (pp191 - 200)	Section 4.3 A New Water Management Framework (pp75 - 89); Section 9 Monitoring (pp 130 - 133).
Operational constraints	8.19 (6) (a) Identify any **operational constraints** to e-watering	Bypassing low flows i.e. not capturing flows below a defined threshold flow rate (p85) High demand management zones where demand exceeds consumptive use limits (refer Tables 4.3, 4.5 and 4.7).	The ability to bypass, return or not capture low flows at or below a threshold flow rate (p83)

	Basin Plan content requirement	Relevant EMLR WAP section	Relevant Marne Saunders WAP section
	8.19 (6) (b) Identify **strategies to manage/overcome those constraints**	Implementation of a program to return low flows[4] Implementation of a program to manage high demand[5]	Implementation of a program to return low flows while allowing users to capture higher flows (p83)[4]

[4] 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 www.naturalresources.sa.gov.au/samurraydarlingbasin/projects/all-projects-map/low-flows

[5] Further information about the program to managing high demand is available at www.naturalresources.sa.gov.au/samurraydarlingbasin/projects/all-projects-map/implementation-emlr-wap

5 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 3). The MDBA and 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 due 31 October 2017.

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. The EMLR WAP notes that reporting is expected to occur through existing mechanisms (e.g. water resource status reporting, regional outcome reporting).

Table 3. 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	First report due 31 October 2017
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

6 References

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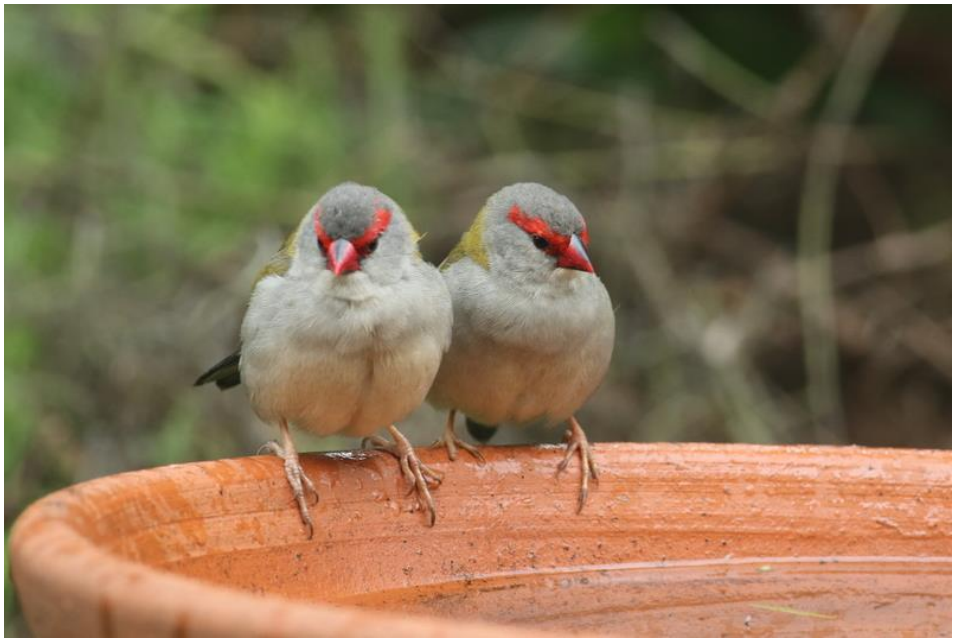

Photo: Red browed firetail by Martin Stokes

Appendix 1. 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.

Appendix 2. 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.

SOUTH AUSTRALIA

Government of South Australia

Department of Environment, Water and Natural Resources