



Ten Year Review of the Marne Saunders Water Allocation Plan

December 2019





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1 Summary

The Water Allocation Plan (WAP) for the Marne Saunders Prescribed Water Resources Area (PWRA) was adopted on 18 January 2010. Under the *Natural Resources Management Act 2004* (NRM Act), the relevant NRM Board is responsible for reviewing a WAP within ten years of it being adopted.

'Securing low flows' is the key surface water management policy introduced by the WAP to balance social, economic and environmental water needs. Securing low flows means that the diversion of water into storage occurs only during periods of medium and high flow, with the result that small flows, often occurring during drier periods, are able to flow more easily through a catchment. This greatly reduces the ecological impact of diverting overland and instream flows. This means that compared to dams that do not return low flows, the level of ecological impact is greatly reduced for a given volume of take. On-ground implementation of securing low flows commenced in spring 2017 through the 'Flows for the Future' (F4F) program which was supported by state and Commonwealth funding. Implementation of F4F in the Marne Saunders PWRA is ongoing.

As the securing low flows policy is only just being implemented in the area, there is not sufficient monitoring data to assess how this has affected licensees, flow or water-dependent ecosystems. Therefore it is not yet possible to assess the effectiveness of this central part of the WAP.

The WAP has been reviewed by Natural Resources South Australian Murray-Darling Basin (NR SAMDB) with expert input from the relevant water management units within the Department for Environment and Water (DEW), and with comment from community. The review did not identify any issues with the condition of the resource or the operation of the WAP that necessitated immediate amendments to the WAP.

Deferring making amendments to the WAP will enable the process to take advantage of legislative reforms to simplify the obligation to separate the rights that constitute a water license into different legal instruments (unbundling).

This review recommends that:

- the Marne Saunders WAP not be amended at this time,
- a detailed further review of the Marne Saunders WAP be undertaken once returning low flows has been substantially implemented and there has been a sufficient period of monitoring to make an assessment of the impact of the program on the resource, and
- the preparations for the more detailed WAP review include consideration by the Board of a project partnering with MLDRIN, DEW and other regions to undertake an Aboriginal Waterways Assessment in the Marne Saunders PWRA with the vision of it leading to a cultural flows project.

2 Introduction

The Marne Saunders PWRA lies in the northern part of the Mount Lofty Ranges, arising in the ranges around Springton, Eden Valley and Keyneton, then flowing east past Cambrai and Sanderston across the Murray Plains to meet the River Murray. The WAP for the area was developed by the South Australian Murray-Darling Basin Natural Resources Management (SAMDB NRM) Board (the Board) in consultation with the community, and adopted on 18 January 2010.

The water resources of the Marne Saunders PWRA are relatively small. Table 1 compares key parameters from the Marne Saunders PWRA with two other PWRA's within the SAMDB NRM Region.

Table 1: Comparison between Marne Saunders, Eastern Mount Lofty Ranges (EMLR) and River Murray PWRA's. To enable direct comparison, stock and domestic licenses have been excluded from this table. Figures are as at the end of the 2018-19 water use year. Figures supplied by Water Licensing Branch, DEW.

| PWRA | Number of licenses | Groundwater Allocation ML | Surface and Watercourse Allocation ML | Total Allocation ML |
|----------------|--------------------|---------------------------|---------------------------------------|---------------------|
| Marne Saunders | 152 | 4,511 | 1,629 | 6,140 |
| EMLR | 1,005 | 43,445 | 21,527 | 64,972 |
| River Murray | 757 | 0 | 878,294 | 878,294 |

Under the *Natural Resources Management Act 2004* (NRM Act), the Board is responsible for reviewing the Marne Saunders WAP by 18 January 2020, ten years after the plan was adopted. The NRM Act provides little guidance on the review process. The approach adopted has been to develop a report assessing the condition of the resource, risks to the resource, implementation of risk management strategies and the functionality of the principles of the WAP, together with recommendations on whether the WAP should be amended. This review has been prepared by Natural Resources (NR) SAMDB with input from experts within DEW and the community including:

- Surface Water Team
- Groundwater Team
- Environmental Evaluation and Reporting Team
- Water Licensing
- Water Planning and Security Team
- Flows for the Future
- Aboriginal Partnerships
- Water Users

3 Review Matters

3.1 State of the resource

3.1.1 Surface water

The majority of streamflow in the Marne Saunders PWRA occurs between July and October, and typically accounts for approximately 90% of the total annual flow in any given year. The drier conditions observed during the WAP development and adoption period has continued since the WAP was adopted in 2010, and more recently, since the wet winter of 2016, there have been two consecutive dry years (Figure 2). In 2017-18 the rainfall at the Keyneton monitoring site was 40mm below the long term average of 509 mm, and in 2018-19 rainfall was 152 mm below average at just 357 mm (Figure 1).

This low rainfall is reflected in the streamflow data (Figure 2), with the total flow recorded at the Marne River gauging station during 2017-18 being 1,705 ML, much below the recorded long-term average flow of 5,845 ML. This was followed by 'no flow recorded' during 2018-19 at the Marne gauging station. This implies that all runoff generated during winter was either captured in dams or lost in the system, with no streamflow reaching the streamflow monitoring site at the gorge or to the sections of the river further downstream. As at December 2019, the last time any flow (or salinity) was recorded at Marne Gorge Gauging station (A4260605) was in November 2017.

It is to be noted that such dry spells have been experienced in the past, and further detailed analyses would be required to confirm if this a part of a long-term climate cycle or an overall decreasing trend.

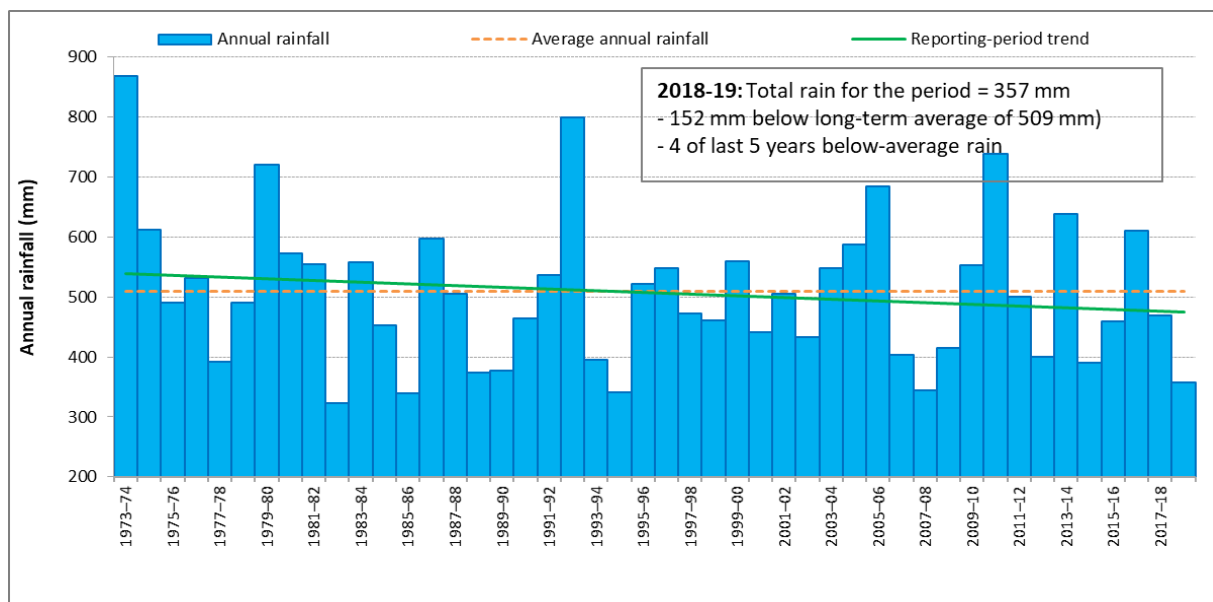


Figure 1: Rainfall 1973-74 to 2018-19.

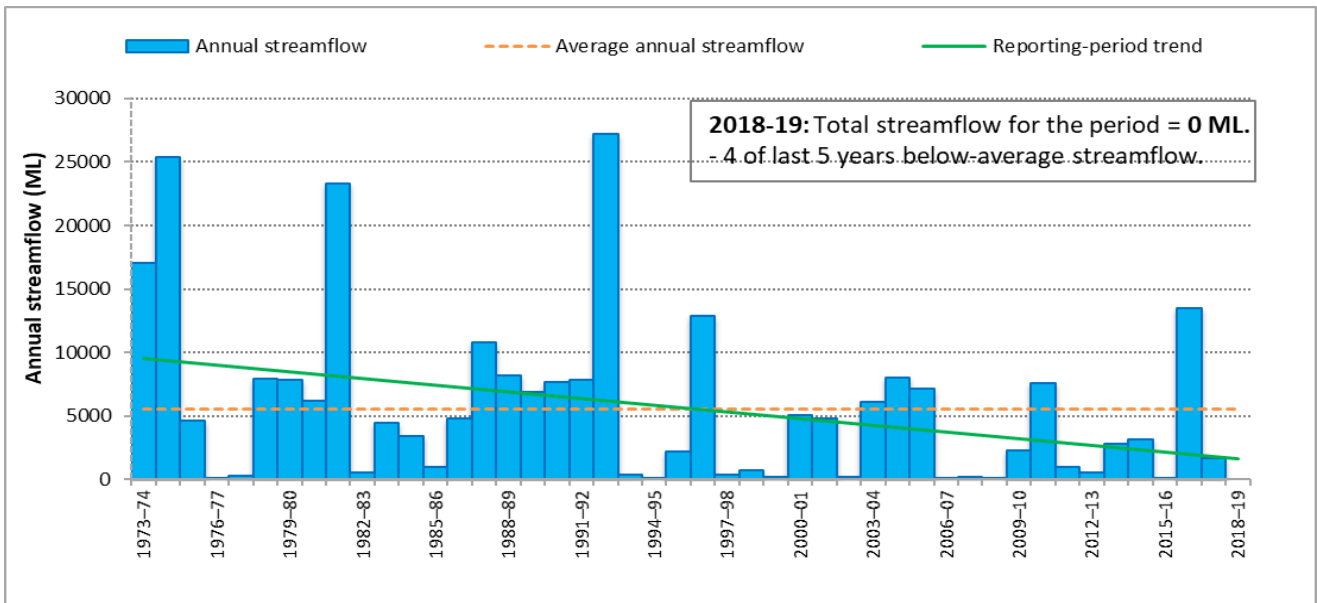


Figure 2: Streamflow 1973-74 to 2018-19. The long-term trend is that annual streamflow volumes recorded at the Marne Gorge gauging station (1973-74 to 2017-19) are declining.

3.1.2 Groundwater

In the hills area of the Marne Saunders Prescribed Wells Area, the level of extraction is low and the trends in salinity and groundwater level are stable and reflect rainfall patterns. On the plains, the groundwater extractions are stable. Water levels are also relatively stable at levels similar to, but not lower than the millennium drought. There have been small increases in salinity in recent years due to a lack of recharge which is a consequence of a lack of flow in the Marne River rather than the impacts of groundwater extraction. This change in condition is not expected to have had any adverse impacts on water users.

Monitoring triggers for salinity and groundwater levels set in the Marne Saunders WAP have been reached. These triggers were set at a level where it was considered prudent to pay closer attention to the condition of the resource, but do not represent a threshold for adverse impact.

On the basis of groundwater monitoring over the last 30 years, there is no need to re-examine groundwater consumptive use limits at this time.

3.1.3 Ecology

The ecological condition of the Marne Saunders PWRA is stable/declining. The fish community condition of the area is declining since a peak in condition following the 2016 high flow event. The macroinvertebrate community is either stable or declining. The total lack of flows over winter 2018 and 2019 suggest a significant decline could be expected in 2019/20.

The SAMDB NRM Board invests in fish monitoring that covers the Eastern Mt Lofty Ranges, including the Marne Saunders PWRA. The latest round of sampling in 2019 showed the upper catchment was in moderate condition while the rest of the catchment was in poor condition with mid-catchment and gorge reaches being devoid of fish.

Of major concern is the disappearance of the regionally rare River Blackfish from the lower reaches of the Marne River.

The EPA have undertaken aquatic ecosystem condition surveys in the area in both 2010 and 2015. The 2010 survey assessed four sites in the PWRA, three in the Marne Catchment and one in Saunders Catchment. Of the four sites, three were considered to be in fair condition, characterised by moderate changes in ecosystem structure and some changes to the way the ecosystem functions. There was evidence of human disturbance, including nutrient enrichment, poor riparian habitat and fine sediment deposition. One site was considered to be in poor condition because there was considerable evidence of human disturbance, including nutrient enrichment, fine sediment deposition and poor vegetation cover in the riparian zone.

In 2015 the EPA sampled one site in the Marne Saunders PWRA. The creek was given a 'poor' rating because the site sampled showed evidence of major changes in ecosystem structure, and moderate changes to the way the ecosystem functions. There was considerable evidence of human disturbance including gross nutrient enrichment, fine sediment deposition and degraded riparian habitats.

In 2017 and 2018, a community based monitoring program, the Waterbug Bioblitz, has been undertaken in the Marne Saunders PWRA. The Bioblitz program has sampled at 12 sites and has shown similar results to the previous EPA sampling with tolerant macroinvertebrate communities, elevated levels of salt and nutrients and a degraded riparian environment.

The years 2018 and 2019 have both been very dry in the Marne Saunders PWRA with no flow being recorded at the main flow gauging stations. This is a significant decrease in the flow through these catchments and will likely have an impact on the ecological condition. Sites in the headwaters that are spring fed may maintain condition, however, sites that rely on surface water flow will likely show significant declines in condition if dry conditions continue.

The impact of dry conditions ('Climate Extremes') on water dependent ecosystems was examined in the Eastern Mount Lofty Ranges Water Resource Plan Risk Assessment (see section 3.7 for a more detailed description). The risk assessment analysis found that some of the identified risks could be treated by the implementation of securing low flows, while other risks could not be treated due largely to the fact that climate extremes are inherently uncontrollable.

Monitoring of ecological condition, watercourse flows, and groundwater will continue with the results informing the more detailed WAP review that is proposed for when sufficient data on the outcomes of securing low flows is available.



Figure 3: A River Blackfish collected from Black Hill Springs on the Marne River during fish monitoring in 2016. Unfortunately blackfish have not been collected from this site in subsequent monitoring.

3.2 Operation of WAP principles

The Water Licensing Team, Berri has not encountered significant issues with the current Marne Saunders WAP and will continue to work within the WAP principles.

3.3 State Policy

Given the drying trend noted in the surface water and ground water resources and the Bureau of Meteorology prediction of continued dry conditions, DEW has noted the potential for drought to become an increasing source of risk in the Marne Saunders Catchment. The risk assessment outlined in section 3.7 provides potential strategies for dealing with this risk under current policy and management arrangements.

DEW is not aware of any issues relating to the Marne Saunders WAP that are sufficiently serious so as to warrant considering an amendment of the WAP in the immediate future, noting that a future review has been proposed.

3.4 Basin Plan

The Marne Saunders PWRA is part of Murray-Darling Basin. Consequently the Basin Plan includes the area in one of the 33 water resource plans (WRP) that the Basin States are required to develop. The Marne Saunders PWRA is included in the EMLR WRP area. The EMLR WRP area consists of the areas included in both the EMLR PWRA and the Marne Saunders PWRA. The purpose of a WRP is to describe the water planning arrangements in the WRP area and show how they meet the standards set out in the Basin Plan (including by setting the appropriate water take limits). Within the Marne Saunders PWRA, the main water planning instrument is the Marne Saunders WAP, with other instruments including the SAMDB NRM Plan and the NRM Act. A key component, in ensuring that the limits set out in the Basin Plan for the EMLR WRP area are sustainable, is the implementation of the securing low flows policy within the EMLR WRP area. Failure to fully implement this policy may require a future review of the level at which consumptive limits have been set, in order to ensure sustainability of the system.

In order to be consistent with Basin Plan requirements, the Marne Saunders WAP (along with the four other WAPs in the SAMDB NRM Region) were amended to include Aboriginal values and uses. No other amendments were considered necessary to achieve Basin Plan compliance. On 13 November 2019 the EMLR WRP was accredited by the Commonwealth Minister for Water. Consequently it can be concluded that the Marne Saunders WAP is consistent with the Basin Plan.

3.5 Implementation of securing low flows policy (Flows for the Future)

‘Securing low flows’ means that the diversion of water into storage occurs only during periods of medium and high flow, with the result that small flows, often occurring during drier periods, are able to flow more easily through a catchment. This greatly reduces the ecological impact of diverting overland and instream flows. This means that compared to dams that do not return low flows, the level of ecological impact is greatly reduced for a given volume of take. Securing low flows provides a treatment to a number of ecological risks outlined in the WRP. The water take limits in the EMLR WRP and Marne Saunders WAP are set on the assumption that securing low flows will be implemented successfully and deliver the expected environmental outcomes.

On-ground implementation of securing low flows commenced in spring 2017 through the ‘Flows for the Future’ (F4F) program which is supported by state and Commonwealth funding. Roll-out of the F4F program in the Marne Saunders PWRA is still in progress. In October 2019 additional funding was secured under the Basin Plan for implementation of adjustment projects. F4F is scheduled for full completion in December 2023. In the Western Mount Lofty Ranges WAP area, a smaller scale program is supported by the Adelaide and Mount Lofty Ranges NRM Board.

The F4F program forms part of the package of Sustainable Diversion Limit Adjustment Mechanism supply measure projects under the Basin Plan. By implementing the F4F program equivalent environmental outcomes can be achieved with less water, requiring lower water recovery for environmental purposes under the Basin Plan. Implementation of F4F has implications for the current water take limits in the EMLR WRP area and for South Australia’s Murray-Darling Basin water recovery target as a whole. The delivery of F4F outcomes is subject to the Murray-Darling Basin Authority process to reconcile the actual outcomes of Sustainable Diversion Limit Adjustment Mechanism supply measure projects with project proposals. This reconciliation must be completed by June 2024. The F4F reconciliation review is likely to contain information relevant to the proposed more detailed review of the Marne Saunders WAP.

As at December 2018, 116 priority sites for returning low flows had been identified in the Marne Saunders PWRA. Of these, 66 were either completed or pending construction and at a further 21 sites the landowner was engaged and cooperating (total 87 sites). Modelling has been conducted based this level of implementation. The estimated flow returned to the system is 149 ML or 88% of the target volume (if all priority sites in the Marne and Saunders catchments were implemented, the additional returned flow is expected to be 169 ML). As at December 2019, an additional 11 sites (total 98 sites) were expected to pass low flows in the near future. The remaining 18 priority sites include sites with complex engineering issues which as yet are unable to be treated, and sites requiring further consultation with landholders.

While the additional flows expected to be returned to the system under different low flow return scenarios are relatively small in volumetric terms (in comparison to the total flows), they are critical in terms of improving ecologically significant flow regimes i.e. frequency, duration and magnitude of individual flow events during different seasons through the year in these drier catchments.

Monitoring of the outcomes achieved through the provision of low flows is focused on the Angas (EMLR PWRA) and Carrickalinga (Western Mount Lofty Ranges PWRA) catchments. However, ongoing monitoring in the Marne and Saunders catchments includes stream flow gauging stations and annual fish surveys managed by Natural Resources SAMDB. The F4F program in partnership with the Citizen Science program in Natural Resources SAMDB has also re-instated several WaterWatch sites which are monitored monthly by community members, and an annual 'Bioblitz' where community members and scientists collect and analyse macro-invertebrates in selected stream locations.



Figure 4: A typical low flow device. During periods of low flow, the device diverts water around the dam. During medium and high flows, water flows over the device and into the dam. Within the device is a regulator which limits the rate of flow that is diverted around the dam.

3.6 'Unbundling' and proposed reform of water planning legislation

A water license under the NRM Act confers a number of rights, on the holder, including:

- an ongoing right to a portion of a particular water resource,
- the right to extract a specific volume of water in a given water use year,
- the right to use particular infrastructure to extract that water, and
- the right to apply that water to an identified piece of land.

Where the resource is managed under a 'bundled' WAP, such as the Marne Saunders WAP, all these rights are included as a single instrument. In an 'unbundled' system these rights are divided into separate instruments.

Under the NRM Act (and the Landscapes SA Bill 2019), if a 'bundled' WAP undergoes a full amendment process, then the WAP must be 'unbundled' as part of the amendment process (unless the amendments are minor or for specified purposes such as Basin Plan compliance). Recent experiences with developing unbundled WAPs have found this to be cumbersome and complex under the current legislation. This is particularly so for areas similar to the Marne Saunders where it is important to manage the volume of water taken in a local area while still allowing trade. Some key policies in the current Marne Saunders WAP (e.g. a joint limit for surface water and watercourses) are not possible under the current unbundling framework. Small improvements to the workability and practicality of unbundling are expected through the Landscapes SA Bill, and further improvement is anticipated via new and amended regulations and potential future legislative amendments.



Figure 5: Aquatic invertebrate monitoring site at a permanent pool on the Marne River, October 2019.

3.7 Risk assessment

As part of the process of developing the EMLR WRP for Basin Plan implementation, a sophisticated risk assessment¹ was conducted of the water resources covered by the WRP. That risk assessment has also been used to inform this review.

The risk assessment applied South Australia’s risk management framework² for water planning and management (DEWNR, 2012), which in turn draws on the Australia/New Zealand Risk Management standard (AS/NZS 31000:2009). Under this framework risk statements have the following form:

‘There is the potential that [RISK SOURCE] leads to [EVENT] which results in [CONSEQUENCE]’.

A single event statement was used that combined water quality and water quantity impacts. Risk sources were described using seven categories and risk consequences were divided into four categories. The categories of risk sources, the event statement and risk consequence categories are set out in Table 1 below. The risk assessment used the same sub-areas (SDL resource units) as set out in the Basin Plan which consisted of three surface water areas and seven groundwater areas. The combination of risk sources, consequences and sub-areas resulted in 280 unique risk statements for assessment. Risks were assessed as low, medium or high.

Table 1: Categories of risk sources and consequences

| Risk Source | Event | Risk Consequence |
|---|--|--|
| Climate extremes | Change in water quality or Change in water quantity (availability) | Human consumption/domestic needs not met |
| Demand/take (incl. interception activities) | | WDEs impacted |
| Management of connected water resources | | Economic use impacted |
| Infrastructure (affecting natural flow regimes) | | Connected water resources impacted |
| Point source pollution | | |
| Land use | | |
| Managed aquifer recharge | | |

One surface water sub-area and three groundwater sub-areas related to the area covered by the Marne Saunders PWRA, giving 112 risks. Of these 112 Marne Saunders risks, six Marne Saunders risks were assessed as medium or high. These are set out in Table 2 below.

¹ Eastern Mount Lofty Ranges Water Resource Plan Area Risk Assessment DEW Technical report 2018/10, available at: <https://www.waterconnect.sa.gov.au/Content/Publications/DEW/DEWNR-TR-2015-12.pdf>

² Risk Management Framework for Water Planning and Management available at: <https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Risk%20Management%20Framework%20for%20Water%20Planning%20and%20Management.pdf>

Table 2: Marne Saunders WAP Area risk profile - medium and high risks

| Sub-area | Risk ID | Risk Source | Consequence description | Risk level |
|-----------------|----------------|---|-------------------------------------|-------------------|
| SS12 | r2 | Climate extremes | Water dependent ecosystems impacted | Medium |
| SS12 | r3 | Climate extremes | Economic use | Medium |
| SS12 | r6 | Demand/take | Water dependent ecosystems impacted | Medium |
| GS4b | r114 | Climate extremes | Water dependent ecosystems impacted | High |
| GS4b | r115 | Climate extremes | Economic use | Medium |
| GS4b | r123 | Management of connected water resources | Economic use | Medium |

Risks r2 and r6 relate to surface water sub-areas with a consequence of 'water-dependent ecosystems impacted'. The strategy for managing these risks is being implemented by the securing low flows through the F4F program, which is expected to reduce the residual risk for these risks to 'low'.

The risk assessment concluded that the remaining risks, r3, r114, r115 and r123 cannot be addressed by strategies available in a WAP, in a manner commensurate with the level of risk. The reasons for this are set out in Table 3 below.

Table 3: Why the risk cannot be addressed in a manner commensurate with the level of risk

| Risk ID | Sub-area ID | Risk Source | Consequence description | Risk level | Why risk cannot be addressed |
|---------|-------------|------------------|-------------------------|------------|--|
| r3 | SS12 | Climate extremes | Economic use | Medium | <p>Risk assessment analysis found that climate extremes are both inherently uncontrollable and their effects are characterised by uncertainty.</p> <p>It is inevitable that water availability will be reduced during drought, resulting in impacts on dependent users. The management of this risk relies on individual landholders adopting strategies. Such strategies might include:</p> <ul style="list-style-type: none"> • having access to alternative sources of water as a backup, e.g. groundwater, or reclaimed or imported water (where available) • having sufficient dam storage to allow water to be carried over from a wet year to a dry year • using water efficiently to maximise production from limited available water • adopting a financial strategy that provides resilience to reduced returns in dry years. <p>These strategies are outside the scope of water resource management and therefore cannot be addressed by the water allocation plan.</p> |

| Risk ID | Sub-area ID | Risk Source | Consequence description | Risk level | Why risk cannot be addressed |
|---------|-------------|------------------|-------------------------------------|------------|--|
| r114 | GS4b | Climate extremes | Water-dependent ecosystems impacted | High | <p>This risk is related to risks r2 and r6. The risk concerns a small population of river blackfish (<i>Gadopsis marmoratus</i>), protected under the <i>Fisheries Management Act 2007 (SA)</i> at the Black Hill springs in the lower Marne catchment. Several individuals of this species were captured during a 2016 survey.</p> <p>The groundwater that provides baseflow to support this population is primarily recharged by very large surface water runoff events generated in the upper catchment. Prolonged dry periods may reduce the incidence of such events and hence reduce recharge and baseflow. Modelling shows current dam development has little impact on the large runoff events. Reducing entitlements from the groundwater resource is not likely to be effective during drought. Securing low flows in the upper catchment may provide some benefit to the Black Hill springs in the lower catchment by pre-wetting the stream channel and allowing high flow events to travel further through the lower catchment.</p> <p>Other non-water resource management options exist for mitigating the impact of extended dry periods and include:</p> <ul style="list-style-type: none"> • in-situ watering • translocation of the fish population during drought. <p>These strategies are outside the scope of water resource management and therefore cannot be addressed by the water allocation plan.</p> |
| r115 | GS4b | Climate extremes | Economic use | Medium | <p>Risk assessment analysis found that climate extremes are both inherently uncontrollable and their effects are characterised by uncertainty.</p> <p>It is inevitable that water availability will be reduced during drought, resulting in impacts on dependent users. The management of this risk relies on individual landholders adopting strategies. Such strategies might include:</p> <ul style="list-style-type: none"> • having access to alternative sources of water as a backup, e.g. roof runoff, effluent • having sufficient dam storage to allow water to be carried over from a wet year to a dry year • using water efficiently to maximise production from limited available water • adopting a financial strategy that provides resilience to reduced returns in dry years. <p>These strategies are outside the scope of water resource management.</p> |

| Risk ID | Sub-area ID | Risk Source | Consequence description | Risk level | Why risk cannot be addressed |
|---------|-------------|---|-------------------------|------------|---|
| r123 | GS4b | Management of connected water resources | Economic use | Medium | <p>The groundwater used for consumptive purposes in this sub-area in the lower Marne and Saunders catchment (Marne Saunders Murray Group Limestone) is primarily recharged by surface water runoff generated in the upper catchment. Capturing surface water in the upper catchment reduces the amount of recharge and hence groundwater availability in the lower catchment.</p> <p>Water taking limits for surface water in the upper catchment and for groundwater in the lower catchment were set based on resource capacity, environmental water provisions and balancing water user needs, including consideration of upstream vs downstream needs. Existing water users in both areas were allocated less than their maximum theoretical requirements to keep demand within sustainable limits, with users in both areas receiving a similar proportion of their theoretical requirements and hence were considered to be treated equivalently.</p> <p>In order to maintain this balance, new surface water allocations and construction of new net dam capacity are not permitted in the surface water area that recharges this resource.</p> <p>Reducing surface water take in the hills to increase recharge on the plains (and hence reduce economic impacts on the plains) would increase economic impacts for surface water users in the hills. It is considered the current management provides a reasonable balance of economic needs from both connected resources, and so this risk is accepted as being as low as reasonably practicable.</p> |

3.8 Stakeholder comments

In August 2019, the annual Marne Saunders Water Planning Newsletter led with an article informing stakeholders that the Marne Saunders WAP was due for review in January 2020. It stated that as the roll out of returning low flows had only recently commenced there was limited information available to assess how the policy has affected water users, flow and water-dependent ecosystems, or whether the plan is meeting its objectives. Consequently the January 2020 review would be a simple one, with a more detailed review and public consultation to be carried out in a few years' time when better data is available. Nevertheless there was an opportunity to provide comment as part of the current review. We received three comments from that request.

The issues raised in those comments include:

Comment 1

- concern about the impact of neighbors extracting large volumes of groundwater on groundwater quality and their ability to extract water from their own bores.

Comment 2

- recognising that there is likely to be an increase in the use of imported water, it was asked that there to be no unnecessary approvals for the use of imported water,
- the increase in use of imported water may open up the possibility of a program for licensees to return native water entitlements in return for incentives such as on-farm infrastructure, dam lining, efficient infrastructure, automations, soil moisture monitoring, etc.,
- seeking a relaxation of the requirements for storage of effluent (principle 181) so that earthen dams may be used if water parameters of the imported water are within certain water quality parameters (*Currently the WAP requires effluent to be stored in a closed system so as to prevent contamination. The WAP does not provide any guidance on a level of treatment whereby wastewater could be considered to no longer be effluent.*), and
- in relation to principle 144, requesting that dams used for storage of imported water rather than for capture of surface water, not be included in management zones capacity limits. (*Section 8.5 of the WAP states that principles 137 to 163 only apply to dams that collect or divert water, consequently the WAP already addresses this matter.*)

Comment 3

- great work on low flows,
- provided information that several irrigators had expressed the view that the bore buffer zone rules were preventing trade, and
- an alternative assessment method provided by the WAP for groundwater trade applications is for the applicant to undertake a pump test which was quoted at about \$10,000 and has an uncertain outcome. This option is also not viewed as satisfactory. (*The Groundwater Team has advised that discussions with the Groundwater Team about what constitutes an appropriate pump test for any given application should help minimise the costs.*)

These comments raise issues which may warrant further consideration. However it is considered that they are not so serious as to justify undertaking a formal WAP amendment process at this time, particularly given that it is proposed to undertake a detailed WAP review and potential formal WAP amendment process in a few years' time when better monitoring data on the outcomes of returning low flows is available. These above comments will be retained and further considered at the time of the planned more detailed review.

3.9 First Nations

The five water allocations plans in the SAMDB NRM region were amended during 2017-2019 through meaningful engagement with First Nations to include Aboriginal water interests within these plans and to build the regions relationships and nations' capacity for continued engagement in water planning.

Within the Marne Saunders PWRA there are currently no Native Title claims, however the First Nations that have connection with the area include; Peramangk and Ngadjuri, noting that Peramangk has strong family connections with Nganguraku which also extend into the Marne Saunders area. The name of the nation 'Nganguraku' nation was left out during the 2019 amendment but needs to be included in future amendments/reviews (noting that engagement with Nganguraku occurred in 2018 through people who identify as both Peramangk and Nganguraku).

In June 2019, there was an opportunity to employ a Peramangk/Nganguraku water officer on a part-time, short-term contract in collaboration with AMLR NRM Region and DEW. The water officer undertook a review of the Marne Saunders WAP which had been amended in to include Aboriginal water interests in February 2019. This initial First Nations review of the WAP provides guidance on what needs to be considered when a full review of the WAP is undertaken in a few years' time. A summary of the main points provided by the Peramangk/Nganguraku water officer include:

- acknowledgement of Nganguraku as a nation that has connection with the area,
- maintain relationships with First Nations rather than ad-hoc engagement, and be aware of any Native Title claims that may occur,
- WAP objectives to include an objective to, protect Aboriginal cultural values and uses,
- information about First Nations to be more integrated throughout the WAP rather than just in the sections referring to Aboriginal water interests,
- better integration of how WAP policies already in place can also protect Aboriginal cultural values and heritage sites,
- to include cultural needs/demand in ML/year through calculations or a cultural flows case study,
- to recognise that First Nations view dams as a constraint to cultural flows,
- monitoring to aspire to have First Nations involved, including cultural monitoring of the waterways, and
- extra maps to be included depicting cultural information for wider community understanding

Other considerations when undertaking a review of the Marne Saunders WAP in the coming years is to include a cultural risk assessment – this is currently being developed through research with Goyder Institute, DEW, Flinders University and Ngarrindjeri. The cultural risk assessment named Yannurami is being trialed in 2019 and will be included as part of the DEW Water Policy Risk Assessment process by 2020. In addition Amendments to the DEW current Risk Management Framework are currently being trailed to incorporate First Nation values and interests as part of this project.

Lastly, in the lead up to a review of the Marne Saunders WAP, it is proposed that the Board consider partnering with the Murray Lower Darling Rivers Indigenous Nations, DEW and other regions for Aboriginal Waterways Assessments to be undertaken in the Marne Saunders catchment with the vision of it leading to a cultural flows project. This information will be invaluable for determining cultural needs/demands in ML/year in the next iteration of the WAP.



Figure 5: Representatives from Kurna, Peramangk and Ngadjuri nations, together with Departmental representatives at a two day engagement workshop held in the Barossa Valley in February 2018. The discussions from this workshop informed the review of the Barossa WAP, amendments relating to Aboriginal values and uses made to the SAMDB NRM Region's WAPs and the development of South Australia's Basin Plan compliant water resource plans.

4 Discussion

The major issues identified in this review relating to the water resources of Marne Saunders PWRA are:

- reduced surface water flows due to drought and a consistently drying climate, and
- poor health of water dependent ecosystems.

It is noted that the implementation of securing low flows is expected to address some aspects of these issues, however the full extent of benefits cannot be realised without sufficient rainfall in the system. No WAP amendments have been identified which would assist in mitigating these issues at this point in time. A future review will focus on the success of securing low flows and impacts of a drying trend within the catchment.

Stakeholder consultation has identified a small number of issues relating to the principles of the WAP which may warrant further consideration. However it is considered that they are not so serious as to justify undertaking a formal WAP amendment process at this time, particularly given that it is proposed to undertake a detailed WAP review and potential formal WAP amendment process in a few years' time when better monitoring data on the outcomes of returning low flows is available.

It is also noted that:

- Securing low flows is one of the key surface water management policies introduced through the Marne Saunders WAP. The F4F program commenced on-ground work in spring 2017 and its work on sites in the Marne Saunders PWRA is still in progress. A number of years of monitoring data will be required to assess the effectiveness of this strategy, consequently it is not yet possible to review a central element of the Marne Saunders WAP.
- The delivery of F4F outcomes is subject to a Murray Darling Basin Authority reconciliation of the actual outcomes against the project proposal. This review must be completed by June 2024. The review is likely to contain information relevant to the proposed more detailed review of the Marne Saunders WAP.
- The Landscape SA Act will simplify some aspects of the WAP amendment process, specifically unbundling. This legislation is expected to be fully operational by July 2020.

In summary:

- there are no critical issues that need to be addressed by an immediate amendment to the MS WAP, and
- there are advantages in delaying making amendments to the Marne Saunders WAP, namely:
 - availability of a period of monitoring data for securing low flows,
 - access to the F4F reconciliation review, and
 - legislation reform.

5 Recommendation

It is recommended that:

- the Marne Saunders WAP not be amended at this time,
- a detailed further review of the Marne Saunders WAP be undertaken once returning low flows has been substantially implemented and there is a sufficient period of monitoring data available to make an assessment of the impact of the program on the resource, and
- the preparations for the more detailed WAP review include consideration by the Board of a project partnering with MLDRIN, DEW and other regions to undertake an Aboriginal Waterways Assessment in the Marne Saunders PWRA with the vision of it leading to a cultural flows project.