



Marne Saunders Water Forum

Questions & responses

The Marne Saunders Water Forum was held in February 2022, hosted by the Murraylands and Riverland Landscape Board. This factsheet summarises the questions asked at the forum, together with responses.

Background

The Murraylands and Riverland Landscape Board held a water forum on 25 February 2022 in Cambrai, to present information to the community on the current status and trends of groundwater and surface water in the Marne Saunders Prescribed Water Resources Area (PWRA).

This factsheet summarises questions asked about the Marne Saunders water resources at the water forum, together with responses. The responses are a mix of information provided on the day and collated afterwards.

This 'questions and responses' factsheet complements a series of factsheets that summarise some of the key information discussed at the February 2022 water forum, as well as additional background information:

Factsheet 1: History, licences, and allocations

Factsheet 2: Hydrological cycle in the PWRA

Factsheet 3: Water development and use

Factsheet 4: Resource and ecosystem condition

Factsheet 5: Frequently asked questions on the Marne Saunders water allocation plan

Factsheet 6: How to address concerns

These factsheets, and the presentation slides from the February 2022 water forum, are available at the landscape board's website:

www.landscape.sa.gov.au/mr



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Water resources

What information is used to understand the behaviour of water resources in the area?

Information on water resource behaviour and status presented at the February 2022 water forum comes from long-term monitoring data on streamflow and salinity, and groundwater level and salinity, collected by the Department for Environment and Water (DEW) and other organisations, and long-term data on climate from the Bureau of Meteorology.

Details of the data and analysis used for the surface water and groundwater resource assessments are available in the annual water resources assessment reports:

www.waterconnect.sa.gov.au/Systems/GSR/Pages/default.aspx

For example, the 2019-20 water resources assessment report is available here:

www.waterconnect.sa.gov.au/Content/Publications/DEW/Marne_Saunders_2021_Technical_Note.pdf

Surface water and groundwater monitoring data can be accessed on the Waterconnect website:

www.waterconnect.sa.gov.au/Water-Resources/SitePages/Home.aspx

Information about how this data has been used to understand water resource behaviour for water planning purposes is outlined in the Marne Saunders water allocation plan (WAP) – particularly sections 2.3 and 4.2. The Marne Saunders WAP is available here:

www.landscape.sa.gov.au/mr/water/water-allocation-plans/marne-saunders

Is water from the Marne valley leaking into the Renmark group aquifer and being lost to the River Murray?

It is not likely that there is water leakage to the Renmark group aquifer, then to the River Murray, for several reasons:

- The Renmark group aquifer is absent for much of the Marne Saunders plains area. This means that there is only a very limited area where such downward leakage to the Renmark group aquifer could occur, and limited connection between 'patches' of the Renmark group aquifer.
- The low permeability Ettrick formation (confining layer) above the Renmark group aquifer means that downward leakage into the Renmark group aquifer is unlikely. The Renmark group aquifer is under pressure, which would also reduce downward leakage into this aquifer.
- The Renmark group aquifer drains towards River Murray as the lowest point in the landscape. The Renmark group aquifer is deeper than the River Murray, but there may be upward leakage from the Renmark group aquifer to the River Murray due to pressure in the confined aquifer. This upwards leakage is likely to be very low, due to the low permeability of confining layer above, and the small volumes would be insignificant.



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No streamflow or groundwater information was presented for the Saunders Creek catchment.

The DEW water resources assessment reports include streamflow data for Saunders Creek. The Saunders Creek flow monitoring station started operating in August 2009. The streamflow record is longer for the Marne River, so this data was presented instead to provide a longer-term picture.

There are no DEW groundwater monitoring sites in the Saunders catchment because of the low extraction in the area. Monitoring resources are concentrated in the Marne catchment because the level of groundwater use there is much higher than in the Saunders catchment. Groundwater salinity data from samples provided by licensees in both Marne and Saunders catchments are included in the water resources assessment reports.

The trends in streamflow and groundwater salinity in the Saunders catchment are similar to those presented for the Marne catchment.

For more information, see the summary water resources assessment report reproduced in factsheet 4. More detail, including more data from the Saunders catchment, can be found in the annual water resources assessment reports:

www.waterconnect.sa.gov.au/Systems/GSR/Pages/default.aspx

For example, the 2019-20 water resources assessment report is available here:

www.waterconnect.sa.gov.au/Content/Publications/DEW/Marne_Saunders_2021_Technical_Note.pdf

Water use

Information presented on groundwater use for different purposes doesn't align with attendee's local observations.

The data presented on groundwater use for different purposes was based on metered usage in combination with recent land use data, but the percentages of use for different purposes were an estimate only. These values were presented for information, but have not been refined further as the water allocation plan doesn't regulate how much water gets used for individual licensed purposes (e.g. different crop types). The role of the water allocation plan is to manage the overall amount of water taken within sustainable limits, regardless of specific use purpose.

How many dams have been built since 1999?

Dam capacity has not increased significantly since 1999 when the Notice of Restriction (moratorium on further development) was placed in the area. The landscape board is not aware of any approved increase in dam capacity since the requirement for a dam construction permit was introduced in 2003.



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How much water is captured in dams?

Factsheet 3 'Water development and use' provides information on the number and volumes of dams, and the volumes taken from them, for the Marne Saunders PWRA. That factsheet also provides similar information for groundwater resource development and use.

Surface water models have been used to estimate what the flow would have been without dams and watercourse diversions, compared to modelled flow under current conditions. The graph below (from the Marne Saunders WAP) shows annual modelled flow for 1974-2003 for the Upper Marne from the modelled no dams and current dams scenarios (pink and blue columns), as well as the percentage reduction of annual flow from the no dams scenario to the current dams scenario for each year (black line). It can be seen that the percentage impact of dams is highest in dry years, and lower in wet years.

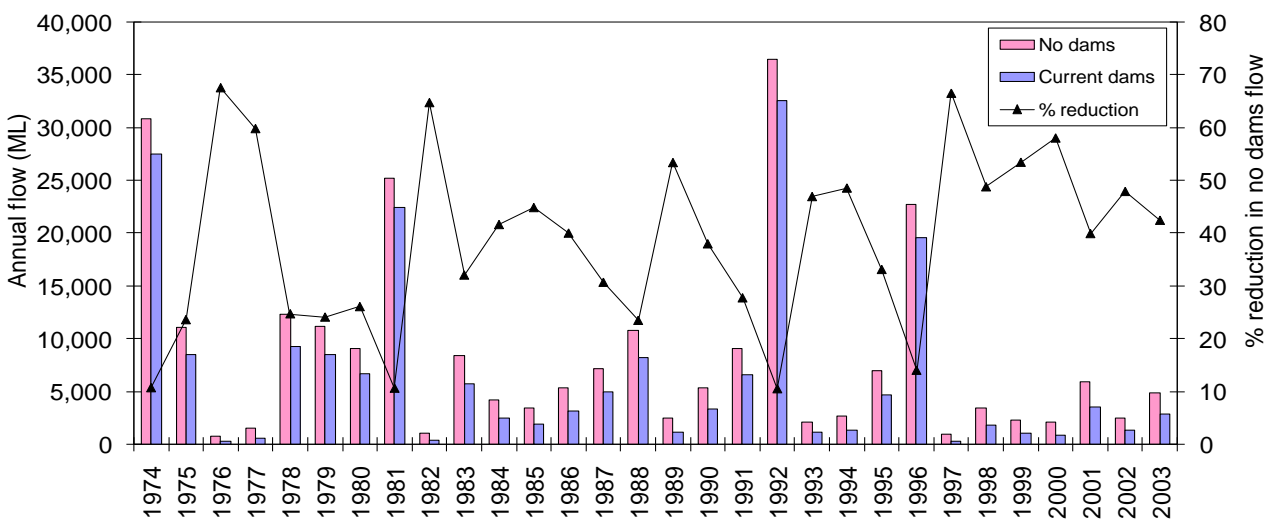


Figure 20 from the Marne Saunders WAP

Modelled annual flow for 1974-2003 for the Upper Marne under the no dams and current dams scenarios, showing percentage reduction from no dams annual flow to annual current dams flow.

Status of water resources and dependent ecosystems

Water capture and use affects water availability, not just climate.

Yes, both climate and water use are important.

Water resource development expanded strongly in the Marne Saunders PWRA in the years leading up to 1999, when moratoriums on further development and then the Marne Saunders WAP placed a cap on further development of the most impacted water resources. At the same time, there has been a long-term trend of declining rainfall, with a series of below average rainfall years from 2017 having particular impact on water availability.



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Are fish declining because of a lack of running water?

Fish can survive in pools with no riffles (short areas of broken, running flow). However, a lack of flow is a big issue for long-term health of fish populations as flow is important to support breeding, growth to adulthood, migration and recolonisation. The trend of fish decline in the Marne Saunders PWRA discussed at the water forum is happening in many places across the state.

Are platypus still in the Marne River – thought they had been seen/recorded only 15 years ago?

Presenters at the February 2022 water forum are unaware of platypus sightings in the Marne or Saunders catchments.

There have been no confirmed records since the 1970s on mainland South Australia, so platypuses have been considered extinct from the wild on mainland South Australia. There have been some recent sightings (unconfirmed) in Sturt Gorge (2017) and the Riverland (2018), as per data available in NatureMaps:

<https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx>

Actions and how to address concerns

Does the Flows for the Future program install weir systems in the river that help to saturate the river and plains, sometimes called ‘leaky weirs’?

The scope of the Flows for the Future program does not include installation of ‘leaky weirs’. Primarily, the program works with landholders in the Eastern Mount Lofty Ranges and Marne Saunders PWRAs to restore more natural flows in the catchments, by installing low flow devices on dams and watercourse diversions to allow the passing of a portion of flows as they naturally occur.

Is the amount of flow being passed by low flow devices monitored?

The Flows for the Future program do not monitor the amount of flow passed on all devices installed. However, a number of monitoring sites have been established along the Marne River and Saunders Creek and are used to measure the outcomes of improved flow. Ecological monitoring also takes place through the landscape board’s fish monitoring program, and community programs such as the Marne Saunders Bioblitz.

Are there alternative water supplies that can be used in the Marne Saunders, such as treated wastewater from Bolivar? Can environmental flow be provided by discharging River Murray water down the Marne?

Alternative water sources could be considered for consumptive use and/or environmental provisions. Environmental water provisions could occur as direct watering, and/or by increasing availability of local water resources to the environment if some consumptive needs can be provided through alternative sources.



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Alternative water sources could include external water brought into the area, as well as alternative local sources such as local wastewater and stormwater. Stormwater is part of the prescribed surface water resource, so using it for licensed purposes is regulated through the water licensing system and water allocation plan.

There is already some use of alternative water sources in the area, such as delivery of 'off-peak' River Murray allocations through the mains, and re-use of treated local wastewater.

Continued development of alternative water sources would require significant ongoing resources and time for planning and implementation, as well as sustainable availability of suitable alternative water sources.

There are a wide range of considerations required – some of them include:

- sustainability of taking water from different alternative water sources (e.g. River Murray is already over-allocated, so it is not sustainable to take more water from there to address issues in the Marne Saunders PWRA)
- the need to consider the manner of environmental provisions (e.g. timing, water quality, and transmission losses – direct watering may be more beneficial for emergency actions).

Would discharging River Murray water into the Marne to provide environmental water kill the native fish?

This is unlikely. Native fish can adjust to other waterways. For example, fish have been translocated to dams in the Eastern Mount Lofty Ranges as an emergency measure or to establish backup populations.

Are there other options for fish breeding or stocking to keep native fish in the Marne Saunders system?

Yes, this may be an option. These actions would require funding, and don't address the current issue of reduced flow conditions.

Version 1



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