

Marne Saunders (Murray Group Limestone) (GS4b)

INITIAL SDL ASSESSMENT RESULT

The Authority is **confident** that the SDL continues to reflect an environmentally sustainable level of take and **proposes the SDL is maintained.**

The extent, nature of and planning for continued monitoring, evaluation and assessment by the South Australian government for the management of local and site-specific areas of concern is critical to maintain environmental outcomes.

It is important that the impacts of a changing climate continue to be actively considered for this SDL Resource Unit.



Figure 1: Marne Saunders (Murray Group Limestone) (GS4b) SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Marne Saunders (Murray Group Limestone) SDL Resource Unit (the **Unit**) continues to support environmental outcomes and reflect an environmentally sustainable level of take (ESLT).

This Assessment Summary provides an overview of the factors which are relevant to that work and the Authority's initial view. The summary draws on three 'Lines of Enquiry', engaging with the likelihood that environmental characteristics are met, the Authority's confidence in that assessment, and the consequence of an at risk finding. Line of Enquiry 1 – current Basin Plan implementation – has been considered as the primary line of evidence.

Information on the Lines of Enquiry and methodology used in this assessment is available in the *Summary of Assessment Approach* and the *SDL Assessment and Response Framework*. Information on the *Basin Plan Review Discussion Paper* and process for making a submission are available on the MDBA website.

About this Unit (as at June 2024)

Aquifer Storage/size (GL)	3,354
SDL as at June 2025 (GL/y)	2.38
Entitlement volume (GL)	2.09
Average annual actual take (2012/13–2022/23, GL/y)	1.35
Significant surface connections	Marne Saunders (SS12)

The [Water Resource Plan \(WRP\)](#) that supports this Unit commenced on 16 November 2019. The WRP includes the rules and arrangements that South Australia are using to manage this Unit and maintain sustainability.

Utilisation at the time of the review

The pattern of use in this Unit varies. Given the SDL is a long-term average, the Authority expects variability every year depending on the climate, water availability, licence conditions, and individual water user decisions.

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Figure 2: Utilisation for the period 2012/13 to 2022/23

In this Unit, the initial assessment noted localised areas of low to medium declines in groundwater levels and an additional risk to assessment characteristics if use increased to the SDL. These issues are at a small and/or local scale and do not impact assessment characteristics at the Unit scale. The underlying data also show that many of the declines have steadied with recent wet conditions across the Basin. However, the Authority notes climate as a significant additional driver of risks and encourages the South Australian government to consider these localised issues and future drivers in their own water management rules and arrangements.

Environmental outcomes at the time of the Review

Likelihood and confidence

Table 1 presents a compilation of the groundwater level and salinisation trend for this Unit, and the Authority’s confidence in that assessment (i.e. low (L), medium (M) or high (H) surety of the finding).

Assessment characteristic	Short term (Past 12 years)			Long term (Past 40 years)		
	Rising/Stable	Declining	Confidence	Rising/Stable	Declining	Confidence
Groundwater Dependent Ecosystems (GDEs)	19%	30%	● ● ○	24%	45%	● ● ●
Surface water – groundwater connectivity	19%	31%	● ● ○	23%	56%	● ● ●
Productive base	18%	31%	● ● ○	25%	44%	● ● ○
Water quality	60%	0%	● ● ○	46%	14%	● ● ○

Table 1: Groundwater level and salinisation trend assessment over the last 12 and 40 years. A declining percentage of 30% or greater indicates a risk to groundwater levels supporting the relevant assessment characteristic. Regarding confidence, a single dot indicates low confidence in the trend data, two dots indicate moderate confidence, and three dots indicate high confidence.

As can be seen, six of the groundwater characteristics have been identified as having a declining trend of 30% or greater. Confidence in the assessment is moderate to high. Further consideration of the underlying data behind this result reveals that the Unit shows low to medium rates of decline in groundwater levels at a localised scale affecting the assessment characteristics. The assessment does not indicate risk to water quality.

Recharge and utilisation information

Tables 2 and 3 below provide a summary of recharge information, and an assessment of the likelihood of full utilisation of the SDL. This information is relevant because it informs an assessment of recharge relative to actual take (current and by reference to the SDL) and how sensitive the Unit is to change in recharge (i.e. variability in conditions year to year) and increases in actual take.

In considering Table 2 below, note that:

- The ‘proportions’ can also be interpreted as a percentage. For example, a proportion of 1.29 indicates that the SDL is 129% of (or, 29% above) the recharge rate.
- If the SDL as a proportion of recharge is 1:1 they are equal, and if it is more than 0.9, risk is indicated because take is approaching the level of recharge.
- ‘Buffering’ relates to how big total aquifer storage is compared to recharge. An aquifer with a very large total storage will offer high buffering because it will take a long time for changes in recharge to affect overall groundwater levels. In that scenario, the aquifer is described as having ‘low’ sensitivity to changes in recharge. The reverse applies where total aquifer storage is relatively small. In that case it would have ‘high’ sensitivity to changes in recharge.

Recharge information						
Status of recharge knowledge base (SY2)	Proportion of SDL to recharge (SY2)	Proportion of SDL to CMB recharge (CMB)	Proportion of aquifer storage to recharge estimate			Proportion of average annual take to recharge (SY2)
			SY2	Buffering	Sensitivity	
Best available	0.6 No risk indicated	N/A	N/A	N/A	N/A	0.34

Table 2: SY2 diffuse recharge estimates as a proportion of the SDL, total aquifer storage and average annual actual take.

Potential likelihood of full utilisation of the SDL						
Very unlikely	Unlikely	About as likely as not	More likely than not	Likely	Very likely	% Average annual take
		●				57

Table 3: Likelihood of take increasing to the SDL

Tables 3 and 4 reflect that the SDL is less than recharge, noting data for buffering and sensitivity to changes in re-charge is not available. The assessment also shows that current average annual actual take is less than 60% of the SDL and that full utilisation up to the SDL is *about as likely as not*.

Environmental outcomes under a fully utilised SDL and climate impacted future

Full use of the SDL

It is important that the work of the review is conducted against the backdrop of a fully utilised SDL, reflecting that it is the SDL that must reflect an ESLT. As summarised in Tables 2 and 3, the initial assessment has considered a scenario where take increases and use reaches up to the SDL. This analysis considered new information about diffuse recharge as a proportion of the SDL, our knowledge of total aquifer storage and average annual actual take.

Climate change through to the 2036 Basin Plan Review and 2050

Table 4 presents a summary of the anticipated environmental impacts of climate change for the Unit by reference to the future recharge estimates.

SY2 climate scenario	Trend towards 2036		SY2 climate scenario	Trend towards 2050	
	Recharge greater than SDL	Recharge less than SDL		Recharge greater than SDL	Recharge less than SDL
	Low Risk	High Risk		Low Risk	High Risk
Warmer and slightly wetter	●		Hotter and slightly wetter	●	
Warmer and drier	●		Hotter and drier	●	
Warmer and much drier	●		Hotter and much drier	●	

Table 4: Risk to assessment characteristics at full use of SDL using estimates of future recharge under future climate

Noting the low degree of certainty associated with the climate scenarios, this analysis showed low risk to groundwater levels across the six climate scenarios as recharge is greater than the SDL.

Initial Assessment

As noted, the assessment reflects low to medium rates of decline in groundwater levels at a localised scale that present a risk to groundwater characteristics under current levels of take and the SDL. The assessment also shows that average annual take is slightly above half the SDL and that the SDL is less than recharge and unlikely to decrease under the modelled climate scenarios.

The assessment has considered the risks to groundwater characteristics and the management settings currently in place and planned by the South Australian government. While this Unit is displaying at risk assessment characteristics, the risks are localised and could be addressed through application of existing state management tools.

On the balance of all three Lines of Enquiry the Authority is **confident** that the SDL reflects an environmentally sustainable level of take at the resource unit scale and is supporting the Basin Plan’s environmental outcomes under full implementation conditions.

It is recognised that ongoing monitoring, evaluation and assessment will be important, as will planning for and supporting maintenance of groundwater levels and quality.

Consideration of Response

The assessment considers that the localised risk to assessment characteristics that have been identified are best managed through application of management settings currently available to South Australia under the accredited WRP. The assessment also notes that South Australia has conducted a review of the Marne Saunders Water Allocation Plan in order to identify options to respond to the localised areas of concern.

Evidence summary

In addition to the standard evidence sources in the *Summary of Assessment Approach* available on the MDBA website, the following specific evidence sources were used to assess this Unit:

- Water for the Environment Research Project #RQ6 and RQ8b