

Lower Murrumbidgee Deep Alluvium (GS28b)

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.**

It is recognised that the extent, nature of and planning for continued monitoring, evaluation and assessment is tailored by the New South Wales government for the management of local and site-specific areas of concern to maintain environmental outcomes.

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



Deep Alluvium (GS28b) SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Lower Murrumbidgee Deep Alluvium 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)	716,322
SDL as at June 2025 (GL/y)	273.6
Entitlement volume (GL)	275
Average annual take (2012/13–2022/23, GL/y)	225
Significant surface connections	Not applicable

The [Water Resource Plan \(WRP\)](#) that supports this Unit commenced on 09 November 2023. The WRP includes the rules and arrangements that NSW 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.

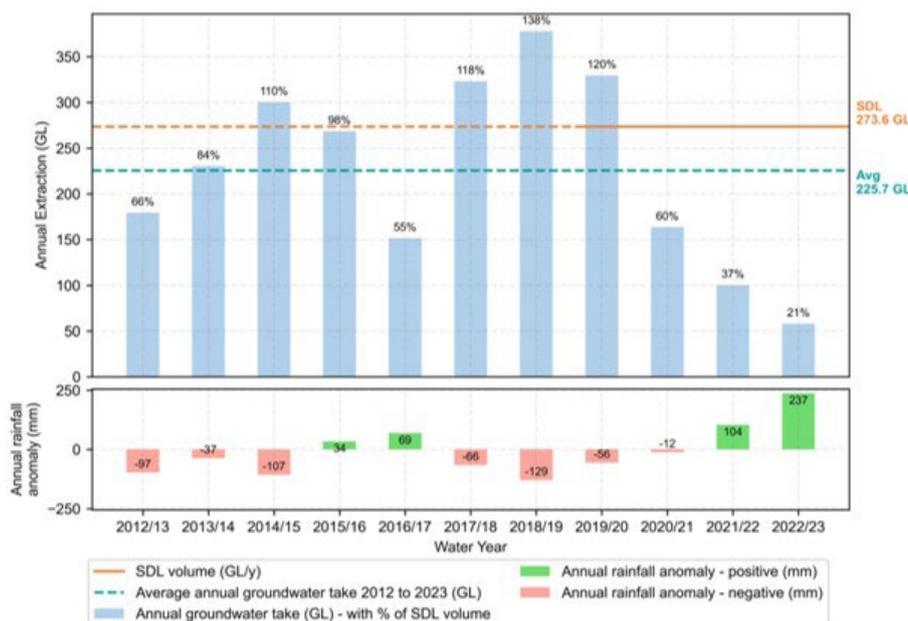


Figure 1: Utilisation for the period 2012/13 to 2022/23

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)	12%	9%	● ○ ○	4%	20%	● ○ ○
Surface water – groundwater connectivity	14%	11%	● ○ ○	7%	19%	● ○ ○
Productive base	19%	9%	● ○ ○	7%	24%	● ● ○
Water quality	6%	0%	● ○ ○	8%	1%	● ○ ○

Table 1: Groundwater level and salinisation trend assessment over the past 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, none of the groundwater characteristics have been identified as having a declining trend of 30% or greater. Confidence in the assessment is low to medium. None of the groundwater characteristics in this Unit have been assessed as being at risk.

Noting there is limited monitoring data on changes in groundwater salinity, the assessment does not indicate risk to water quality.

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 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 aquifer storage to recharge estimate			Proportion of average annual take to recharge (SY2)
		SY2	Buffering	Sensitivity	
Best available	N/A	N/A	N/A	N/A	N/A

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
				●		82

Table 3: Likelihood of take increasing to the SDL

Tables 2 and 3 reflect that there is no evidence regarding the relationships between estimated recharge and the SDL, aquifer storage or average annual take. Given total aquifer storage is 716,322 GL it is anticipated that the aquifer offers at least moderate buffering against and sensitivity

to changes in recharge. The assessment also shows that current average annual take is greater than half of the SDL and because of that full utilisation up to the SDL is *likely*.

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.

Climate change through to the 2036 Basin Plan Review and 2050

As there is no recharge information for this unit, modelling of impacts to recharge under full utilisation and future climate scenarios could not be undertaken. The WRP indicates that this Unit has a high storage-to-recharge ratio and is therefore considered relatively resilient to climate change. As such the assessment considers there is low risk to the assessment characteristics from full use at the SDL under future climates.

Initial Assessment

As noted, the assessment reflects that groundwater characteristics are currently supported under current levels of take and the SDL. While this Unit is not yet displaying any at risk assessment characteristics, it is anticipated that risks may emerge over the coming decades in relation to climate change which bear ongoing monitoring and evaluation.

On the balance of all three Lines of Enquiry the Authority is **confident** that the SDL reflects an environmentally sustainable level of take and is supporting the Basin Plan's environmental outcomes under full implementation conditions with none of the groundwater characteristics having been identified as at risk.

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

It is recognised that ongoing monitoring, evaluation and assessment will be important to maintain environmental outcomes. Whilst this assessment has not identified any at risk assessment characteristics, the Discussion Paper engages with well-known challenges at a sub-Basin and Basin scale including river connectivity, salinity and groundwater re-charge.

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:

- Crosbie R, Wang B, Kim S, Mateo C, and J Vaze, (2023), Changes in the surface water – Groundwater interactions of the Murray-Darling basin (Australia) over the past half a century. *Journal of Hydrology*, 622, doi:10.1016/j.jhydrol.2023.129683