Queensland Border Rivers Alluvium (GS54)

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 Queensland 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: Queensland Border Rivers Alluvium (GS54) SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Queensland Border Rivers 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)	14,602
SDL as at June 2025 (GL/y)	14.0
Entitlement volume (GL)	19.03
Average annual actual take (2012/13–2022/23, GL/y)	11.56
Significant surface connections	Qld Border Rivers (SS24) and NSW Border Rivers (SS23)

The Water Resource Plan (WRP) that supports this Unit commenced on 24 September 2019. The WRP includes the rules and arrangements that Queensland 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. Average annual actual take between 2012/13 to 2022/23 is 83% of the SDL.

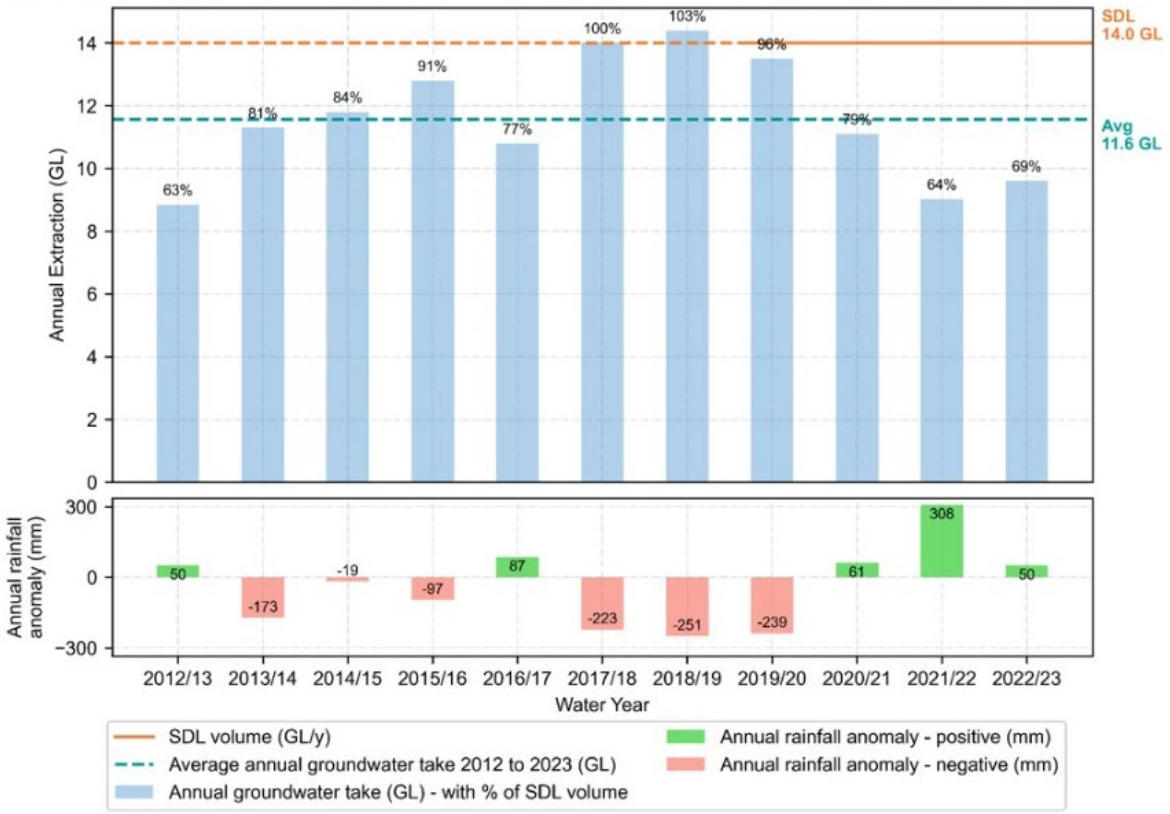

Figure 2: Utilisation for the period 2012/13 to 2022/23

In this Unit, the initial assessment identified localised areas of risk to groundwater dependent ecosystems (GDEs), surface water-groundwater connectivity and productive base in areas with highly localised take. These areas with higher rates of decline in water level are in close proximity to the river channel. GDEs in the Unit include springs, baseflows and groundwater dependent vegetation and fauna.

The assessment notes that the water resource is shared with NSW and is actively managed, with limits on take applied through announced allocations and a ban on trade from the shallow formation to the deep formation.

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)	10%	28%	●●○	6%	33%	●●○
Surface water – groundwater connectivity	17%	23%	●●○	10%	30%	●●○
Productive base	9%	30%	●●○	5%	35%	●●○
Water quality	0%	0%	●○○	19%	0%	●○○

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, four of the assessment characteristics have been identified as having a declining trend of 30% or greater over the long term. Confidence in the assessment is low to medium. Further consideration of underlying data reveals that water level trends show some risk to GDEs, connectivity and productive base, with the long-term data indicating a low magnitude of decline. The short-term trends show decline in fewer bores but there is a slightly higher magnitude of decline for some of the bores.

None of the groundwater characteristics in this Unit have been assessed as being at risk.

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 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	0.61 No risk indicated	0.54	641	High	Low	0.51

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
				●		83

Table 3: Likelihood of take increasing to the SDL

Table 2 reflects that SDL is less than recharge, that total aquifer storage provides a high degree of buffering and low sensitivity to changes in recharge. The initial assessment notes that as this is an alluvial Unit, the SY2 recharge estimate only represents one component of the overall recharge that the Unit receives. Table 3 shows that current average annual actual take is 83% of the SDL and that take increasing to full utilisation of the SDL is *likely*.

At full use of the SDL, the existing risks to the assessment characteristics of productive base and surface water – groundwater connectivity could increase. The aquifer storage indicates that there is high buffering so the resource has lower sensitivity to increases in use, but localised impacts are already being realised.

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 **Low Risk**	Recharge less than SDL **High Risk**		Recharge greater than SDL **Low Risk**	Recharge less than SDL **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 all of the six climate scenarios as recharge remains greater than the SDL.

However, LoE1 identifies current risks for this Unit. This combined with the decrease in recharge modelled for this unit under future plausible climate scenarios, indicates that this catchment may have higher sensitivity to climate change.

Initial Assessment

As noted, the assessment reflects low to medium rates of localised decline in groundwater levels that present risk to groundwater characteristics under current levels of take. The assessment also shows that average annual actual take is already close to the SDL and likely to increase up to the SDL. Further, the assessment notes modelled recharge is currently greater than the SDL but is unlikely to decrease below the SDL under all six climate scenarios.

The assessment has considered the risks to groundwater characteristics and the management settings currently in place and planned by the Queensland 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. Queensland will also be updating the management settings as the Water Plan for this Unit is refreshed in 2029.

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 Queensland under the accredited WRP.

It is recognised that ongoing monitoring, evaluation and assessment will be important to maintain environmental outcomes. 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

The standard evidence sources in the *Summary of Assessment Approach* available on the MDBA website were used to assess this Unit.