Upper Condamine Basalts (GS65)

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**.

However, additional investigation is warranted as groundwater decline poses a localised risk to the *productive base*.

The Authority will continue to work with **Queensland** to ensure that the appropriate rules and management arrangements are in place to manage localised and Unit-scale issues.

Figure 1: Upper Condamine Basalts SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Upper Condamine Basalts 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 trends in groundwater levels and salinity support environmental outcomes, the Authority's confidence in that assessment, and the consequence of an 'at risk' finding.

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 the process for making a submission are available on the MDBA website.

About this Unit (as at June 2024)

Aquifer Storage/size (GL)	10,894
SDL as at June 2025	79
Entitlement volume (GL/y)	61.21
Recharge estimate range (GL/y)[1]	111 - 151
Average annual take (2012/13–2022/23, GL/y)	62.24
Significant surface connections	Condamine-Balonne (SS26).

The Water Resource Plan (WRP) that supports this Unit commenced on 21 September 2019. The WRP includes the rules and arrangements that Queensland are using to manage this Unit and maintain sustainability.

[1] Recharge estimate range is derived from three estimates of recharge: 2010 (diffuse) 115 GL/y, SY2 (diffuse) 111 GL/y and Chloride Mass Balance (CMB) 151 GL/y.

Utilisation at the time of the review

The Upper Condamine Basalts comprises basaltic fractured rock aquifers. The water table is deeper than 10 m below the surface and is typically between 15 m and 20 m below the surface across most of the Unit.

The SDL for this Unit was set based on existing planning arrangements. The SDL of 79.0 GL/y was set at entitlement (61.1 GL/y) plus stock and domestic (estimated to be 17.9 GL/y).

Queensland has management settings in place for this Unit. Recent take has declined (possibly in response to changes in management and availability of surface water), though currently about 50% are metered. The declines in the Unit do not appear to have been abated by management responses or reductions in take.

The Queensland Minister's performance report (2024) has also identified a medium risk to maintaining an underground water regime in the plan area that supports ecosystems dependent on underground water. It proposes that this and other emerging risks will be considered as part of the next water plan review in 2029.

Figure 2 below identifies that annual take shows some variability with time, averaging 79% of the SDL over the period 2012/13 to 2022/23.

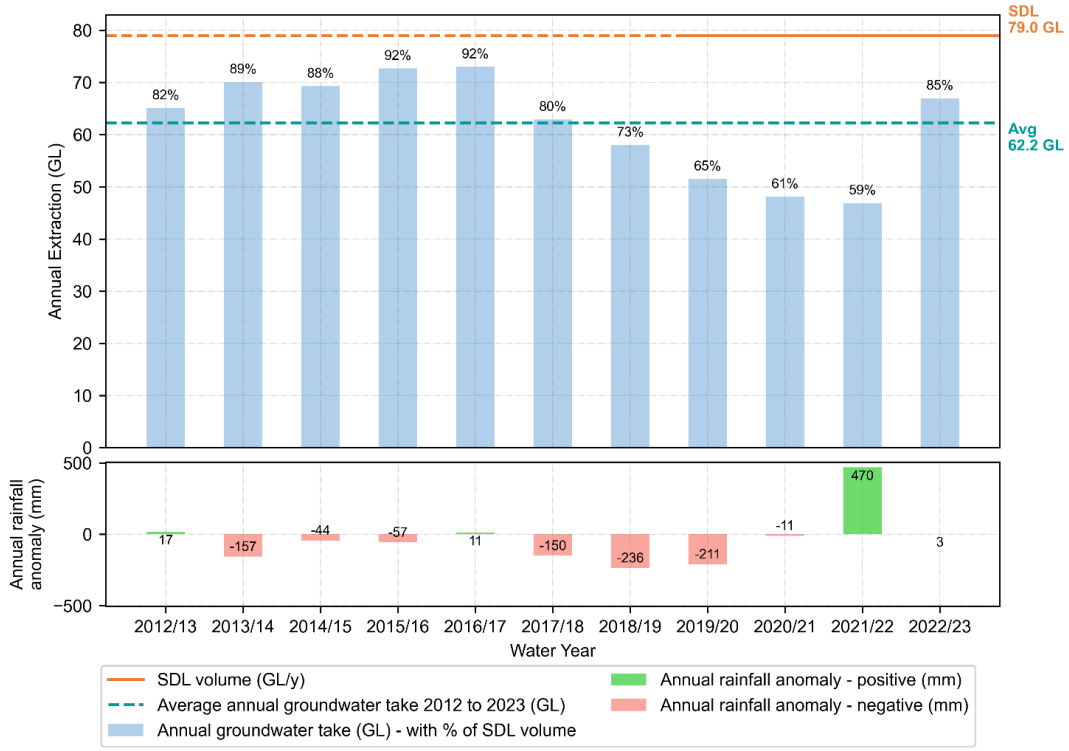

Figure 2: Average annual take (2012/13-2022/23)

Environmental outcomes at time of the Review

Likelihood and confidence

Groundwater level and water quality (salinity) trends

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

Understanding the groundwater level and salinity trend assessment (Table 1)

For those characteristics informed by groundwater level: The table lists the *percentage of monitoring bores* that are exhibiting either a rising or declining trend in water levels (the remainder refer to bores for which a statistically significant trend could not be detected). A percentage of 30% or greater in the *declining* category indicates a risk to groundwater levels supporting the relevant assessment characteristic.

For those characteristics assessed by reference to water quality: The table lists the *percentage of monitoring bores* that are exhibiting either a rising or declining trend in water quality (the remainder refer to bores for which a statistically significant trend could not be detected). A rising/stable trend means that water quality (salinity) is improving.

Regarding confidence: a single dot indicates low confidence in the trend data, two dots indicate moderate confidence, and three dots indicate high confidence.

The percentages are based on number of monitoring bores providing data over the short and long-term periods. In some Units, the number of monitoring bores has decreased over time, and this is accounted for in the percentages. Also, when necessary, a Unit assessment will further explore the detailed data under the assessments to determine if localised declining trends persist.

Productive base is defined as the capacity of an aquifer to provide a sustainable supply of water for environmental and consumptive uses (domestic, agricultural, and industrial) without compromising the long-term health and function of the resource and dependent ecosystems.

Assessment characteristic	Short term trend (past 12 years)			Long term trend (past 40 years)		
	Rising/ stable	Declining	Confidence	Rising/ stable	Declining	Confidence
Groundwater Dependent Ecosystems (GDEs)	20%	19%	●●○	19%	21%	●●○
Surface water – groundwater connectivity	17%	28%	●●○	14%	33%	●●○
Productive base	20%	21%	●●○	21%	22%	●●○
Water quality	0%	0%	●○○	6%	0%	●○○

Table 1: Groundwater level and salinity trend assessment over the past 12 and 40 years.

The long-term monitoring data indicates a potential risk for *surface water-groundwater connectivity*. This risk is not expressed in the short-term data, which shows fewer bores (less than 30%) with a **declining trend**, however the long-term trend warrants a consequence assessment for this characteristic.

A deeper examination of the underlying data reveals that that some bore sites have experienced a more rapid rate of water level decline over the short-term, particularly in the central part of the Unit around the population centres of Toowoomba, Oakey and Pittsworth where fracture permeability and water quality are favourable. Although not reflected in the whole-of-Unit assessment above, these declines are a potential risk to the *productive base*.

The monitoring data does not indicate that there is a risk to *GDEs* or *water quality* in this Unit.

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 enables a comparison 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.

Understanding modelled recharge information (Table 2)

The 'proportions' presented below 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. Buffering has been categorised using the *proportion of aquifer storage to recharge estimate* as follows: Low buffering = 29 to 111, moderate buffering = >111 to 333, and high buffering = >333.

Recharge information						
Status of recharge knowledge base (SY2)	Proportion of SDL to recharge		Proportion of aquifer storage to recharge estimate			Proportion of average annual take to recharge (SY2)
	SY2	CMB	SY2	Buffering	Sensitivity	
Best available	.71 No additional risk indicated	0.52	97.7	Low	High	0.56

Table 2: SY2 diffuse recharge estimates as a proportion of the SDL, total aquifer storage and average annual actual take (CMB = Chloride Mass Balance).

Potential *likelihood* of full utilisation of the SDL						Current % Average annual take
Very unlikely	Unlikely	About as likely as not	More likely than not	Likely	Very likely	
				●		79

Table 3: Likelihood of take increasing to the SDL

Annual groundwater take is 79% of the SDL, and it is assessed that use of the full SDL is **likely**. SY2 and CMB provide different estimates of aquifer recharge rates, but under both options the average annual take and SDL proportions to these estimates are less than 0.9 (i.e. 90%). Hence there is no additional risk to assessment characteristics if use were to increase to the SDL.

The aquifer storage indicates that there is **low buffering**, hence the resource has **high sensitivity** to changes in recharge.

Consequence assessment

The risk assessment has found declining water levels at more than 30% of bores corresponding to the *surface water-groundwater connectivity.* Furthermore, a deeper examination of the data has found that the central part of the Unit has experienced more rapid rates of water level decline, creating a potential risk to the *productive base*. Hence a consequence assessment has been undertaken which describes the nature of potential impact, the likely spatial scale of impact and the potential impact on these key values.

Understanding the consequence assessment (Table 4)

Potential nature of impact describes the potential impact of groundwater level or water quality decline on connected GDEs (including whether the GDEs support significant sites or communities), connectivity and/ or impacts on the productive base.

Spatial scale is assigned as either: Low, site specific/local; Moderate, sub-unit; or High, SDL unit to Basin scale impacts.

Key values include: impact on connected GDEs and connected surface water, and, if known, the significant sites or communities they support (Ramsar, TLM Icon sites, EPBC-listed values). Impact on the productive base which may include impacts to provisioning and other ecological services.

Final rating: a low rating requires no further action. Medium or High ratings will require a response.

Characteristic	Nature of impact	Spatial scale of impact	Impact on key values	Final rating
Surface water – groundwater connectivity	Potential increase in losing streams, (therefore increase in loss of surface water to groundwater).	**Low** local (South of Toowoomba)	**Low** • No Ramsar sites • Some sites identified as being important for native fish in the	**LOW**

	Potential reduction in base flows and low flows in surface water systems, which are important for supporting ecological values such as native fish.		Basin-wide Environmental Watering Strategy. • The surface water assessment for this area shows environmental outcomes in moderate condition and likely to be supported under full Basin Plan implementation scenario.	
Productive base	Potential impacts on provisioning services. Structural integrity of aquifer potentially compromised.	**Moderate** Sub-unit	**Low** • Some decline in current groundwater level observed however ratio of recharge to take does not indicate significant risk.	**MEDIUM**

Table 4: outcome of consequence assessment

The assessment for *surface water – groundwater connectivity* has drawn on information in the Condamine-Balonne surface water SDL unit (SS26) which overlaps with this Unit. This surface water assessment found that native fish and native vegetation are in moderate condition and groundwater connectivity is not identified as a limiting driver. Hence the identified risk for *surface water – groundwater connectivity* in this Unit is assessed as low consequence.

Drivers of impact

In this Unit, the *productive base* has been identified to be at risk. The initial assessment has identified declining groundwater levels due to groundwater take as a driver, with the rate of recharge (which encapsulates climate change impacts to date) an exacerbating factor. The Authority will test this assessment and the relative contribution of different drivers to this result.

Environmental outcomes under a fully utilised SDL and climate impacted future

Full use of the SDL

Many groundwater units across the Basin experience water take which is substantially less than the SDL, but it is important that the work of the Basin Plan Review is conducted with awareness of the effects of a fully utilised SDL — it is the SDL that must reflect an ESLT.

As summarised in Tables 3 and 4, the initial assessment has considered a scenario where take increased and use reached 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. The analysis used an SDL to recharge proportion of 0.9 or more as an indicator of potential risk to maintaining groundwater levels within resource condition limits that support assessment characteristics.

Climate change through to the 2036 Basin Plan Review and 2050

Table 5 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 5: Risk to assessment characteristics at full use of SDL using estimates of future recharge under future climate

An examination of the results in Table 5 demonstrates that under a range of plausible climate futures there is no additional risk to the assessment characteristics.

Initial Assessment

On the balance of all 3 Lines of Enquiry, the initial assessment has found that the Authority **is confident that the SDL reflects an environmentally sustainable level of take**, but there is a localised risk to the *productive base* (specifically the central part of the Unit).

Consideration of Response

The Authority will work with Queensland, to understand whether management rules and arrangements are in place and suitable and to identify appropriate responses to address this risk. High-level response options currently under consideration for this Unit include:

- targeted changes to rules or management settings.

The risks of a changing climate continue to be actively considered in the Basin.

Evidence summary

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

- Queensland Department of Regional Development, Manufacturing and Water (2024) Minister's Performance Assessment Report: Water Plan (Condamine and Balonne) 2019
- Queensland Department of Natural Resources Mines and Energy (DNRME), (2019) Condamine and Balonne Risk Assessment Report. Department of Natural Resources, Mines and Energy, Queensland Government, Brisbane (pp 240).

The Authority utilised the best available evidence. Through the Basin Plan Review 12-week public consultation process, and the subsequent consideration of submissions and engagements over the

course of the 2026 Basin Plan Review, the Authority will continue to build on the evidence used through the initial SDL Assessments to address uncertainties and knowledge gaps.