

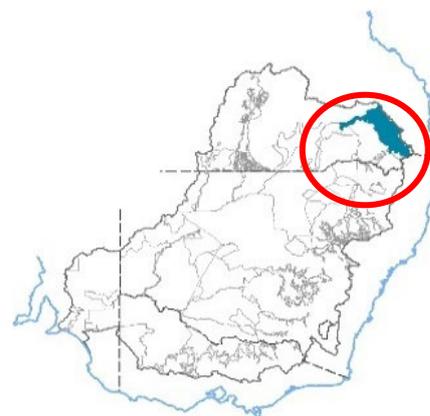
# Upper Condamine Alluvium (Tributaries) (GS64b)

## 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, groundwater decline poses a localised risk to *Groundwater Dependent Ecosystems (GDEs), surface water – groundwater connectivity and 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 Alluvium (tributaries) SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Upper Condamine Alluvium (Tributaries) (GS64b) 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 process for making a submission are available on the MDBA website.

## About this Unit (as at June 2024)

<b>Aquifer Storage/size (GL)</b>	13,696
<b>SDL as at June 2025 (GL/y)</b>	40.5
<b>Entitlement volume (GL/y)</b>	38.71
<b>Recharge estimate range (GL/y)<sup>1</sup></b>	44 - 88
<b>Average annual take (2012/13–2022/23, GL/y)</b>	31.13
<b>Significant surface connections</b>	Condamine-Balonne (SS26)

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

<sup>1</sup> Recharge estimate range is derived from three estimates of recharge: Modelled 84 GL/y, SY2 (diffuse) 88 GL/y and Chloride Mass Balance (CMB) 44 GL/y.

## Utilisation at the time of the review

This Unit comprises highly permeable alluvial sand and gravel layers up to 30m thick which contain low salinity groundwater. Recharge primarily originates as infiltration from streamflow and diffuse rainfall recharge.

The SDL for this Unit of 40.5 GL/y for the Unit is based on a preliminary extraction limit that was derived from the Recharge Risk Assessment Method (RRAM) assessment.

Since 2012, the MDBA, Queensland government and the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) have agreed to an updated baseline diversion limit (BDL) estimate for the Upper Condamine Alluvium (Tributaries) SDL resource unit. After setting the BDL, it was found that the volume included licences which were authorised to take water from three groundwater resources, namely the Tributaries, the Upper Condamine Basalts, and the Great Artesian Basin. The Queensland government has since amended these licences so they may take water from one resource only. As a result, the maximum allowable take in the Tributaries decreased by 1.95 GL/y in 2018, reducing the water recovery target to 3.1 GL/y. The Queensland government has proposed that the BDL be decreased accordingly. This requires a change to Basin Plan Schedule 4 and will be proposed as part of the Basin Plan Review.

Groundwater allocations entitlements are capped in this Unit, and are important to the agricultural industry. There is no unallocated water in this unit, and there is only partial metering of groundwater take not all entitlements are metered. Metering is enforced for about 48% of volume (Oakey 23%, Dalrymple 13% and Cunningham 13% of total UCAT vol respectively), with voluntary metering occurring in Glennallen Creek.

The Queensland Minister's performance report (2024) assessed the implementation of the Water Plan (Condamine and Balonne) 2019 and identified medium risk to Environmental outcome '(22)(1)(h) *To maintain an underground water regime that supports groundwater dependent ecosystems to which this plan applies*' and has assessed the objective to be partially achieved. The Water Plan expires in 2029. The Queensland Minister's performance report (2024) anticipates that the replacement water plan will need to align with the findings under the Basin Plan Review.

Figure 2 below identifies that take has averaged 77% of the limit over the period 2012/13 to 2022/23, with relatively consistent year-to-year take.



Figure 2: Utilisation for the period 2012/13 to 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 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).

#### 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 percentage of 30% or greater in the *declining* category indicates a risk to salinity 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.

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)	40%	20%	● ● ○	30%	37%	● ● ○
Surface water – groundwater connectivity	40%	20%	● ● ○	23%	41%	● ● ○
Productive base	46%	19%	● ● ○	29%	41%	● ● ○
Water quality	0%	0%	● ○ ○	22%	2%	● ○ ○

**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 3 characteristics in this Unit. 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 these characteristics:

- *GDEs* (moderate confidence)
- *Surface water-groundwater connectivity* (moderate confidence)
- *Productive base* (moderate confidence)

Monitoring of groundwater levels over the longer term shows moderate to very high levels of decline (0.5 to over 2 meters per year) from bores near Chinchilla, in the sub-area Oakey Creek Alluvium and to a limited extent near Glengallan Creek Alluvium. In the short-term there has been some stabilisation of groundwater levels for some parts of Oakey Creek.

Long term and short term trends do not indicate a risk to *water quality* (low confidence for trend over the past 12 years and for trend over the past 40 years), noting that there is limited monitoring data regarding salinity changes.

### 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' 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	0.46 No risk indicated	0.92	155	Moderate	Moderate	0.35

**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	
				●		77

**Table 3:** Likelihood of take increasing to the SDL

Annual groundwater take is 77% of the SDL, and it is assessed that use of the full SDL is **likely**. Under both scenarios (i.e. a continuation of existing take, or an increase of take to the SDL), the proportion of take to recharge is less than 0.9, and hence there is no additional risk to assessment characteristics if use were to increase to the SDL.

The assessment finding is based on a comparison of the SDL with the MDB Sustainable Yields 2 (SY2) recharge estimate, which has the highest confidence for diffuse forms of recharge. A comparison with an alternative estimate of recharge (CMB) is also provided for context; in this instance it provides a different result and reduces confidence in the finding.

The aquifer storage indicates that there is **moderate buffering** and that the total resource will have a relatively **moderate sensitivity** to an increase in use or changes in recharge.

### Consequence assessment

The risk assessment has detected declining trends in water levels at more than 30% of monitoring bores and noted that average annual water take is greater than recharge rates, 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 key values. Table 4 presents the outcome of the consequence assessment.

Long term and short-term monitoring data indicates potential risks to the ESLT characteristics of *GDEs, surface water – groundwater connectivity* and the *productive base*.

**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.

Characteristics	Nature of impact	Spatial scale of impact	Impact on values	Final rating
<b>GDEs</b>	Potential to reduce discharge to surface water systems, which could lead to compromised condition of vegetation.	<ul style="list-style-type: none"> <li>Low</li> <li>Local (Oakey creek and Glengallan creeks)</li> </ul>	<b>High</b> <ul style="list-style-type: none"> <li>GDEs in the alluvium areas Oakey and Glengallan Creeks - including natural springs, baseflow ecosystems, and vegetation and fauna which rely on shallow groundwater</li> </ul>	<b>MEDIUM</b>
<b>Surface water-groundwater connectivity</b>	Potential increase in losing streams, (therefore increase in loss of surface water to groundwater). Potential reduction in base flows and low flows in surface water systems, which are important for supporting ecological values such as native fish.	<b>Low –</b> Local (Oakey creek and Glengallan creeks)	<b>High</b> <ul style="list-style-type: none"> <li>Important for baseflows.</li> <li>Strong connectivity during high flows</li> </ul>	<b>MEDIUM</b>
<b>Productive base</b>	Potential impacts on provisioning services. Structural integrity of aquifer potentially compromised.	<b>Low</b> Local (Oakey creek and Glengallan creeks)	<b>High</b> <ul style="list-style-type: none"> <li>Moderate to very high levels of decline in localised areas</li> <li>Moderate risk from ratio of recharge and sensitivity to increase in use</li> </ul>	<b>MEDIUM</b>

**Table 4:** outcome of consequence assessment

## Drivers of impact

In this Unit, *GDEs*, *surface water – groundwater connectivity* and the *productive base* have 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	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 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 risk that *GDEs, surface water – groundwater connectivity* and the *productive base* are being impacted in localised areas (specifically Oakey creek and Glengallan creeks).

## Consideration of Response

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

- Targeted changes to rules or management settings.

The risk of a changing climate continues 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

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.