

# Campaspe (SS7)

## 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 Victorian 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 Unit.

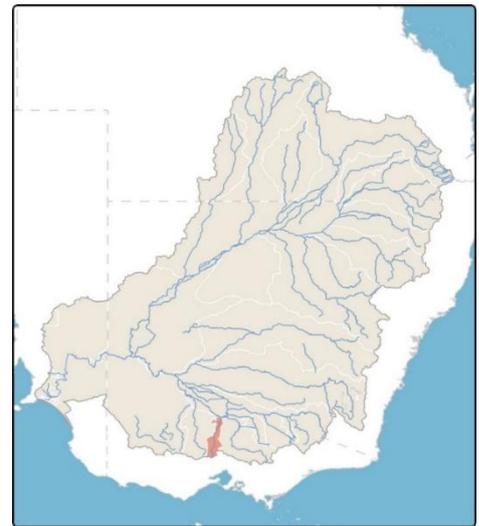


Figure 1: Campaspe SDL Resource Unit

The Authority is assessing whether the Sustainable Diversion Limit (SDL) for the Campaspe SDL Resource Unit (the **Unit**) continues to support environmental outcomes and reflect an environmentally sustainable level of take (ESLT). This initial assessment refers only to outcomes in this Unit.

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 flow regimes support environmental outcomes, the Authority's confidence in that assessment, and the consequence of an at risk finding. Line of Enquiry 2 – full Basin Plan implementation – has been considered as the primary line of enquiry. Assumptions for each Line of Enquiry are documented in the *Summary of Assessment Approach* available on the MDBA website.

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 also available on the MDBA website.

## About this Unit (as at June 2024)

<b>Ramsar sites</b>	None
<b>Contribution to Basin water</b>	0.4% of the total water available in the Murray-Darling Basin
<b>Key waterways</b>	Campaspe River (220km); Tributaries: Coliban River, Axe, McIvor, Mt Pleasant and Sheepwash creeks
<b>Water storages</b>	Lake Eppalock (304 GL) on the Campaspe; Malmsbury (18 GL), Lauriston (20 GL) and Upper Coliban (32 GL) reservoirs on the Coliban
<b>Significant groundwater connections</b>	Goulburn-Murray: Shepparton Irrigation Region (GS8a), Goulburn-Murray: Highlands (GS8b) & Goulburn-Murray: Sedimentary Plain (GS8c)

The Water Resource Plan (WRP) that supports this Unit commenced on [13 June 2020](#). The WRP includes the rules and arrangements that Victoria are using to manage this Unit and maintain

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sustainability. Further information on water recovery for this SDL Resource Unit is available at the Department of Climate Change, Energy, the Environment and Water’s [surface water recovery factsheet](#).

## Current condition

Figure 2 below summarises the observed environmental condition in the Unit (as at June 2024).

The Authority assessed that *native fish* are in **poor** condition, whilst *ecosystem functions* are considered to be in **good** condition and all other themes are considered in **moderate** condition. The Authority has medium confidence in the condition assessment of *flows and connectivity*, *ecosystem functions*, *native fish* and *native vegetation*.

*Other species* were assessed in this Unit, acknowledging that there were deficiencies in the available data and confidence is very low. As such, confidence has been graded as Data Deficient.

In this Unit, *waterbirds* are not a target objective and there is no monitoring data to support a condition assessment. Due to this, *waterbirds* were not assessed in this Unit and as such are graded as Not Assessed (N/A).

This condition assessment covers the entirety of this Unit, including the Coliban River (upstream of Lake Eppalock and downstream of Malmsbury Reservoir), and the Campaspe River (downstream of Lake Eppalock to the Murray River). Most themes are in poorer condition in the Coliban River compared to the Campaspe River. There is limited ability to influence managed flows in the Coliban River contributing to the relatively poor condition of themes in this reach.

Theme	Flows and connectivity	Ecosystem functions	Waterbirds	Native fish	Native vegetation	Other species
Grade						
Confidence	● ● ○	● ● ○	N/A	● ● ○	● ● ○	○ ○ ○

**Figure 2.** Environmental condition assessment in the Unit. Across each theme environmental condition is graded as *Very Poor*, *Poor*, *Moderate*, *Good* or *Very Good* (as indicated by segments) and confidence in this grading is assessed as *Low*, *Medium* or *High* (as indicated by dots), or *Data Deficient* (as indicated by grey dots). ‘Other species’ refers to animals including frogs, platypuses and turtles.

## Environmental outcomes under a fully implemented Basin Plan

Table 1 presents a compilation of:

- the *likelihood* that flows will support environmental outcomes for the five surface water themes for this Unit; and
- the Authority’s *confidence* in that assessment, i.e. low (L), medium (M) or high (H) surety of the finding.

The findings in Table 1 consider condition monitoring, assessment of the relative achievement of Environmental Watering Requirements (EWRs) under river model scenarios, and other relevant evidence that provided additional information. Information on the methodology and EWRs used in this

assessment is available in the *Summary of Assessment Approach* and the *SDL Assessment and Response Framework*.

The likelihood that the pattern and volume of flow will support the objectives for each ecological theme								
Theme	Line of enquiry	Very unlikely	Unlikely	About as likely as not	More likely than not	Likely	Very likely	Confidence
Flows and connectivity	LoE 1				●			● ○ ○
	LoE 2							● ○ ○
Ecosystem functions	LoE 1			●				● ○ ○
	LoE 2			● ○ ○				
Waterbirds	LoE 1							N/A
	LoE 2							
Native fish	LoE 1		●					● ○ ○
	LoE 2		● ○ ○					
Native vegetation	LoE 1				●			● ○ ○
	LoE 2				● ○ ○			
Other species	LoE 1				●			● ○ ○
	LoE 2				● ○ ○			

**Table 1:** Initial likelihood assessment of the flows supporting the objectives for ecological themes in Unit. Note: LoE 1 refers to Line of Enquiry 1 - current Basin Plan implementation and LoE 2 refers to Line of Enquiry 2 - full Basin Plan implementation. ‘Other species’ refers to animals including frogs, platypuses and turtles.

Under both Line of Enquiry 1 and Line of Enquiry 2 it is assessed as **unlikely** that the flow requirements are supporting objectives for *native fish*. This assessment also reflects that it is **about as likely as not** that the flow requirements are supporting objectives for *ecosystem functions*.

For those themes in which the likelihood assessment is rated **about as likely as not**, the MDBA have explored additional lines of evidence to determine whether a consequence assessment is warranted. This process drew on a broader suite of available information to further explore whether there is risk or compromise to the ESLT and the relative influence of the level of take or other identified drivers. This step applied Authority expertise and insight – based on a range of considerations, options, and trade-offs in light of the Basin’s contextual operating environment – to determine the best available information.

The *native fish* and *ecosystem functions* themes are considered ‘at risk’ and were taken through to a further consequence assessment step.

Outcomes for all other themes have been identified as **more likely than not** to be supported by the pattern and volume of flow under Lines of Enquiry 1 and 2 and are considered ‘not at risk’.

Each of the themes in this Unit have been assessed with a **low** level of confidence. This is the combined result of two effects. Firstly, the environmental flow metrics (i.e. environmental water requirements) do not cover all flow regime requirements, such that ecological objectives related to the higher parts of the flow regime are not as well understood in this catchment. There is also a high variability of outcomes spatially across the Campaspe which impacts confidence, specifically between the Campaspe River compared to the Coliban River.

## Consequence assessment

Condition assessments and modelled flow data indicate potential risks to *native fish* and *ecosystem functions* themes. A consequence assessment, primarily considering Line of Enquiry 2, has been undertaken for these themes (Table 2).

Theme	Nature of impact	Spatial scale of impact	Impact on key values	Final Rating
<b>Native fish</b>	Altered flow regimes and instream barriers are impacting native fish condition with a range of expected native fish species absent, a low proportion of native species compared to introduced species, and poor recruitment, movement and dispersal of native fish.	<b>Moderate</b> – SDL unit impact	<b>No</b> - there are no key environmental sites, and the Basin-wide Environmental Watering Strategy (BWS) has not identified any important environmental outcomes for native fish in this catchment.	<b>MEDIUM</b>
<b>Ecosystem function</b>	River regulation and rapidly fluctuating water levels due to inter-valley trades (IVTs) are driving poor water quality and increased bank erosion, turbidity and fine sediment deposition leading to interrupted macroinvertebrate lifecycles, impacting macroinvertebrate diversity and richness, and lowering instream primary productivity and functional group diversity.	<b>Low</b> – local or site scale	<b>No</b> - there are no key environmental sites, and the Basin-wide Environmental Watering Strategy (BWS) has not identified any important environmental outcomes for ecosystem functions in this catchment.	<b>LOW</b>

**Table 2:** Consequence assessment results.

## Drivers of impact

In this Unit, *native fish* has been rated as **medium** and *ecosystem function* rated **low** in the consequence assessment. The initial assessment has identified flow pattern and in-stream barriers as leading drivers of this outcome.

There are significant differences in the drivers between the Coliban River upstream of Lake Eppalock and the Campaspe River downstream of Lake Eppalock to the Murray River. The Coliban River reach upstream of Lake Eppalock has limited managed releases and only a small volume of environmental water. This contrasts to Campaspe River which can be supplied by releases from Lake Eppalock, as well as water transferred from the Goulburn River (via the Western Waranga Channel).

Risks to *native fish*, *ecosystem functions* and streamside vegetation are driven by altered flow patterns, which are largely influenced by inter-valley transfers (IVTs) from Lake Eppalock and the Western Waranga Channel (at Rochester) to the Murray River. This results in high in-channel flows in summer and autumn when the Campaspe River would naturally have lower flows. Depending on the pattern of delivery, IVTs can either support or compromise environmental flow objectives in the Campaspe River.

Cease-to-flow events can occur in reaches of the Campaspe River between Lake Eppalock and the Campaspe Siphon when releases from the dam are reduced or stopped during dry periods. This poses

significant risk to instream biota, particularly in areas lacking adequate deep pools to act as refugia. Saline groundwater influences in the most downstream reach of the Campaspe River have been extensively studied and are a major threat to aquatic biota due to periods of very high salinity, resulting in very low dissolved oxygen. The reach is actively managed with environmental water to minimise this risk.

There are risks to *native fish* in both the Campaspe and Coliban rivers. Poor condition is driven by altered flow regime because of river regulation. Flow is likely to be more of a driver of risks to *native fish* in the Coliban River, noting that there is limited ability to influence managed flows in the Coliban River. Instream barriers (which impact fish movement, dispersal and genetic diversity) are a key driver in the Campaspe River. Poor water quality, climate change and introduced species are also identified as risks to improving outcomes for *native fish* across this unit.

This initial assessment has identified a risk that flow is not supporting *ecosystem functions* outcomes, but this risk is not consequential for the environmental objectives sought through the Basin Plan, which are part of the Basin-wide Environmental Watering Strategy. Other risks that will impact ecosystem functions (such as connectivity, water quality and habitat loss) are described in the *Discussion Paper* and will be further explored with stakeholders during the Basin Plan Review consultation process. The Authority will test this assessment and the relative contribution of different drivers to this result.

## Environmental outcomes under a climate impacted future

For a description of anticipated climate impacts across the Basin see the *Summary of Assessment Approach* available on the MDBA website.

The future climate is uncertain. The MDBA has applied a set of climate model scenarios to explore the ecological effects of climate change against a plausible range of future climates. Table 3 presents a summary of the anticipated environmental impacts of climate change for the Unit by reference to the likelihood of flow regimes being met for the five environmental themes. The shaded bars represent the plausible range of future climates, and the black dots represent the anticipated likelihood under a median (50<sup>th</sup> percentile) future climate scenario.

The likelihood that the pattern and volume of flow will support the objectives for each ecological theme

Theme	Line of enquiry	Very unlikely	Unlikely	About as likely as not	More likely than not	Likely	Very likely	Confidence
Flows and connectivity	LoE 3 (~2030s)	■	■	◀	●	▶	■	● ○ ○
	LoE 3 (~2050s)	■	■	◀	●	▶	■	● ○ ○
Ecosystem functions	LoE 3 (~2030s)	■	■	◀	●	▶	■	● ○ ○
	LoE 3 (~2050s)	■	■	◀	●	▶	■	● ○ ○
Waterbirds	LoE 3 (~2030s)	■	■					N/A
	LoE 3 (~2050s)	■	■					N/A
Native fish	LoE 3 (~2030s)	■	■	◀	●	▶	■	● ○ ○
	LoE 3 (~2050s)	■	■	◀	●	▶	■	● ○ ○
Native vegetation	LoE 3 (~2030s)	■	■	◀	●	▶	■	● ○ ○
	LoE 3 (~2050s)	■	■	◀	●	▶	■	● ○ ○
Other species	LoE 3 (~2030s)	■	■	◀	●	▶	■	● ○ ○
	LoE 3 (~2050s)	■	■	◀	●	▶	■	● ○ ○

**Table 3:** Assessment of the flows supporting the objectives for ecological themes at 2030 and 2050 levels of global warming in the Unit. Note: LoE 3 (~2030s) refers to Line of Enquiry 3 - possible future 2030s hydroclimate sequences and LoE 3 (~2050s) refers to Line of Enquiry 3 - possible future 2050s hydroclimate sequences. Confidence in this grading is assessed as *Low*, *Medium* or *High*. ‘Other species’ refers to animals including frogs, platypuses and turtles.

For this Unit, a consistent finding across the plausible range is that *ecosystem functions* and *native fish* are anticipated to be the most exposed to climate change. The 2025 Sustainable Yields and the MDB Outlook demonstrated that water availability and runoff are very likely to decline throughout the southern Basin such that reduced inflows and higher evaporation rates is likely. This is expected to see an increasing risk to channel connectivity, declining water quality driven by dissolved oxygen and water temperatures, and increased risk of habitat contraction likely driven by an increase in the likelihood and severity of bushfires due to drier fuels, reduced breeding and vegetation recruitment opportunities and survival rates, restricted migration, and shrinking refuge habitats during drought sequences.

## Initial Assessment

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.** *Native fish* has been identified as an ‘at risk’ theme, however this risk is driven primarily by pattern of flow in the Coliban River (in which there is limited ability to influence managed flows) and in-stream structures in the Campaspe River. Primary driving factors include water sharing rules, management arrangements, and decisions made by environmental water holders.

As Basin Plan implementation is still underway, the MDBA has made assumptions about water recovery under the 450GL program, the completion of infrastructure and rules projects under the SDL Adjustment Mechanism (SDLAM), and the completion of the 2026 SDLAM Reconciliation. The

analysis demonstrates that additional water recovery in the southern Basin (beyond the recovery status as of June 2024) would yield improved environmental benefits in this Unit.

## Consideration of response

The Authority recognises that ongoing monitoring, evaluation and assessment will be important, as will planning for and supporting delivery of environmental watering events to maintain environmental outcomes.

Whilst this assessment has not identified any risks to themes that are consequential for the Basin Plan, the Discussion Paper engages with well-known challenges at a sub-Basin and Basin scale including river connectivity and the connection between rivers and their floodplains, water delivery challenges and physical constraints, native fish decline and the impacts of invasive species. The risks of a changing climate continue to be actively considered in the Basin.

## Evidence summary

The standard evidence sources are presented in the *Summary of Assessment Approach* on the MDBA website.

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.